

ABSTRACT BOOK

**Shaping a
global strategy.
Mobilising for
local action.**



**World Conference on
Drowning Prevention**



Co-sponsored by



Co-hosted by



World Conference on Drowning Prevention 2023

Co-sponsored by



**World Health
Organization**

Co-hosted by



**ROYAL LIFE SAVING
AUSTRALIA**



Reception host

**Bloomberg
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Event partners



**BUSINESS
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PERTH**



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EXHIBITION CENTRE**

Scholarship partner



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OF MONACO
FOUNDATION**

Stream partner



**Shaping a
global strategy.
Mobilising for
local action.**

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This document can be downloaded from the conference website at: www.WCDP2023.org

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Acknowledgement of Country

WCDP 2023 organisers acknowledge the Whadjuk Nyoongar people as the Traditional Custodians of the lands and waters where the World Conference on Drowning Prevention will be held, and pay our respect to Elders past and present. We pay our respects to all Aboriginal and Torres Strait Islander and First Nation's cultures.

Welcome

On behalf of co-hosts Royal Life Saving Society – Australia and Surf Life Saving Australia, we welcome you to the World Conference on Drowning Prevention 2023, Perth - Western Australia.

Co-sponsored by the World Health Organization, WCDP 2023 has gathered experts in drowning prevention, lifesaving, and water safety with the goal of Shaping Global Strategy and Mobilising for Action.

Building on previous World Conferences, together we aim to make this a globally significant event. It is our hope that WCDP 2023 focuses the world's attention on drowning prevention and seeds future leadership, research, innovation, collaboration, and momentum for community-level drowning prevention action.

Tragically, more than 236,000 people die in drowning incidents annually, this estimate excluding those who drown in disaster and transport. Many more, especially children, are affected by non-fatal drowning.

Since we last met in Durban for WCDP 2019, there has been great momentum generated for drowning prevention:

1. The United Nations General Assembly passed its first Resolution on Global Drowning Prevention in 2021, calling on all nations to take steps to coordinate responses, including to develop a national drowning prevention plan and embed swimming and water safety in school curriculum.
2. The 76th World Health Assembly then passed its first resolution on accelerating action for global drowning prevention. This resolution confirmed plans to develop the first ever Global Status Report on Drowning Prevention, establish a Global Alliance, and investigate the creation of a Global Strategy for Drowning Prevention.
3. Drowning prevention and lifesaving systems are emerging from the Covid-19 pandemic with a new sense of purpose, innovation, and determination.

More than 450 posters and presentations will be delivered at WCDP 2023. This work reflects a shared commitment to addressing the challenges and opportunities of reducing drowning in all communities, nations, and regions.

These presentations cover every aspect of drowning prevention and water safety, from measuring and mapping the drowning burden; to addressing prevention in life stages, activities, places, and occupational settings; to advancing drowning prevention through policy, partnerships, and planning. WCDP 2023 will showcase world leading innovations in coastal safety, swimming and water safety education, and aquatic industry leisure management. Sessions will advance the science of medical treatment and explore how we can confront the challenges of disaster and climate change.



This is the first time the WCDP has been hosted in Australia. As co-hosts, Royal Life Saving Society – Australia (RLSS) and Surf Life Saving Australia (SLSA) are immensely proud, and eager to welcome you to Perth.

WCDP 2023 has been twelve months in planning, and so we pay tribute to all those who have contributed so much to make this event memorable. From our Presidents and Boards who backed this last-minute proposal, to committee members, and our local partners. We thank our dedicated event teams, led by Monique Sharp, Maria Matheos and Lauren Nimmo, and we acknowledge John Martin ILS event director who have worked hard, especially in recent months.

We acknowledge our event supporters Business Events Perth, Tourism Australia, and Bloomberg Philanthropies, as well as those who contributed to the scholarship program, including Princess Charlene of Monaco Foundation.

Finally, we have three pieces of advice for those attending:

- 01 **Mix:** The drowning prevention field includes different specialities and sectors, each of central importance but often siloed, approaching the problem in different ways. WCDP aims to create a conference community and culture that encourages you to meet and mix, debate, and learn from each other.
- 02 **Mentor:** Often the best and most enduring drowning prevention mentorship starts from one of the many incidental WCDP discussions, the walks to and from the venue, the casual chats after a session, and grows into great partnerships. Meet, share ideas, and perhaps create a project or exchange of information that can grow in time for the next event.
- 03 **Embrace:** Reach out to people who seem to be navigating the conference alone. Find someone who thinks and works differently to you. Embrace the diversity of the event, take the opportunity to learn from someone else's perspective.

Enjoy, have fun, and help us create a great conference with many impacts.

Justin Scarr

Chief Executive Officer,
Royal Life Saving Society – Australia
ILS Drowning Prevention Commission Chair

Adam Weir

Chief Executive Officer,
Surf Life Saving Australia
ILS Rescue Commission Chair



Foreword

International Life Saving Federation

Welcome to Perth - Australia and the World Conference on Drowning Prevention 2023.

On behalf of the International Life Saving Federation (ILS), it gives me great pleasure to welcome all participants to the World Conference on Drowning Prevention 2023 (WCDP 2023).

The ILS vision is “A world free from drowning”. Drowning continues to be a major global public health and sustainable development issue, bigger than many know, understand, or accept, and is almost entirely preventable.

The World Conference on Drowning Prevention is the ILS’s flagship educational event. This globally significant event will focus world attention on drowning prevention. WCDP 2023 gathers experts in drowning prevention, lifesaving and water safety with the goal of Shaping Global strategy and Mobilising for Action.

Experts in research, systems and information on drowning prevention, rescue, water safety and lifesaving convene in Perth to exchange, debate, and development are designed to find ways to further reduce drowning death and injury in all aquatic environments worldwide.

The ILS is once again extremely proud that the WCDP 2023 is co-sponsored by the World Health Organisation (WHO). This co-sponsorship further highlights the joint effort by the ILS and the WHO to raise global, regional, and national awareness of drowning and its prevention.

The ILS is a world authority on drowning prevention, and leads, supports, and collaborates with national and international organisations engaged in drowning prevention, water safety, rescue and lifesaving. At this point in time, 176 organisations are members of the ILS.

ILS is committed to establishing and promoting global best practices in lifesaving, water safety and drowning prevention. We seek to engage with every organisation who shares our aspirations to see a world free from drowning.

On behalf of the ILS, I would like to thank our co-hosts, Royal Life Saving Society - Australia and Surf Life Saving Australia. Planning and delivering the event at short notice is a testament to your shared capacity, committed to collaboration and is greatly appreciated by all in attendance.

I must also thank the Western Australian Government and Business Events Perth for their generous grant funding they have committed to support the organisation of this event.

The WCDP 2023 provides a significant opportunity to advance the cause of the global reduction of drowning and I look forward to meeting all the participants at the conference.

Graham Ford AO

President
International Life Saving Federation



Foreword

Co-Sponsor World Health Organization

On behalf of the World Health Organization (WHO) it gives me great pleasure to welcome all participants to the World Conference on Drowning Prevention 2023. WHO is pleased to co-sponsor this conference, which promises to be an exciting opportunity to highlight the latest research and approaches to prevent drowning.

Over 2.5 million people have lost their lives to drowning in the last decade, and WHO has called upon the global community to do more to prevent this leading killer. Since there is no single cause of drowning, efforts need to take place across a range of sectors to prevent drowning. This year's conference will highlight this multisectoral nature of drowning, with findings and insights that are relevant to drowning prevention from sectors as diverse as disaster risk management, climate change risk mitigation, maritime and boating safety, national policy development, child health, rural development, and lifesaving and lifeguarding.

The multisectoral breadth of this year's conference is a good reflection of the framing of drowning as a global public health challenge. This framing is supported by the United Nations General Assembly's first ever resolution on drowning – adopted in 2021, and the World Health Assembly's first ever resolution on drowning adopted in 2023.

Exciting developments stem from these resolutions. Governments – particularly those with high drowning burdens – should be primed to support evidence-based drowning prevention efforts. And WHO will update this conference with progress it has made in efforts directly related to the resolutions, including coordinated action on drowning within the UN system, establishment of a global alliance for drowning, and preparation of a global status report on drowning.

Drowning has come a long way in the last 10 years but much more remains to be done. I wish you all a productive conference and thank you for your engagement and commitment to preventing a leading killer.

Etienne Krug

Director, Social Determinants of Health
World Health Organization
Geneva, Switzerland



COMMITTEES

The World Conference on Drowning Prevention 2023 has been made possible by the support of the following teams and committees.

Event Management Team

John Martin, Event Director,
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Dr Jonathon Webber, Senior Lecturer,
The University of Auckland

Stacey Willcox-Pidgeon, National Manager –
Research and Policy, Royal Life Saving Society – Australia

Scholarship Fund

World Conference on Drowning Prevention 2023 organisers established the Developing Countries Scholarship Fund as a strategy to ensure that the conference is accessible to those in greatest need but without the resources required to attend an international conference of this type.

Contributions to the fund assisted in areas such as subsidising registration, travel and accommodation.

Scholarship partner



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Crowd Funding Supporters

A crowd funding opportunity was created for delegates to support the fund at the time of registration.

Thanks to all the delegates and organisations who supported this initiative.

CONFERENCE PROGRAM

Tuesday 5th December 2023:

World Conference On Drowning Prevention 2023 Day One

07:45 - 08:29	<p>Early Career Drowning Prevention Professionals - Daily catchup M10 - Douglas 'Pete' Peterson Room</p>							
08:00 - 17:45	<p>WCDP 2023 Day One posters (set up 8:00, runs to 17:45) Dr Heather McGowan OAM Poster Gallery</p>							
08:30 - 10:30	<p>SESSION 1: Official opening and morning plenary session - shaping global strategy and mobilising for local action Riverside (Dr Ian Mackie) Theatre</p>							
10:30 - 11:29	<p>Extended morning tea break (incorporating opening of the World Lifesaving Exhibition) Dr Heather McGowan OAM Poster Gallery</p>							
11:30 - 13:00	<p>SESSION 2 Commences at 11:30</p>							
	<p>S2 POLICY: National Coalitions Riverside (Dr Ian Mackie) Theatre</p>	<p>S2 LEISURE: Supervision research M1 - Elizabeth 'Tizzy' Bennett Room</p>	<p>S2 PREVENTION: Equity M2-3 - Dr Margie Peden Room</p>	<p>S2 SWIMMING: Research M4 - Prof Bob Stallman Room</p>	<p>S2 RESCUE: Human factors M5 - Prof Mike Tipton Room</p>	<p>S2 EMERGENCY: Climate impacts M6 - Dr David Szpilman Room</p>	<p>S2 RESEARCH 1: Epidemiology M7 - Dr Linda Quan Room</p>	<p>S2 RESCUE: Coastal safety M8 - Prof Olive Kobusingye Room</p>
13:00 - 13:59	<p>Lunch Dr Heather McGowan OAM Poster Gallery</p>							
14:00 - 15:30	<p>SESSION 3 Commences at 14:00</p>							
	<p>S3 ADVOCACY: Coastal Safety Riverside (Dr Ian Mackie) Theatre</p>	<p>S3 PREVENTION - Programs M1 - Elizabeth 'Tizzy' Bennett Room</p>	<p>S3 PREVENTION: Children M2-3 - Dr Margie Peden Room</p>	<p>S3 SWIMMING: Frameworks M4 - Prof Bob Stallman Room</p>	<p>S3 RESCUE: Physical Hazards M5 - Prof Mike Tipton Room</p>	<p>S3 EMERGENCY: Disaster flooding M6 - Dr David Szpilman Room</p>	<p>S3 RESEARCH: Epidemiology M7 - Dr Linda Quan Room</p>	<p>Room not used M8 - Prof Olive Kobusingye Room</p>
15:30 - 15:59	<p>Afternoon tea break Dr Heather McGowan OAM Poster Gallery</p>							
16:00 - 17:30	<p>SESSION 4: Day one afternoon plenary - Shaping future strategies for drowning prevention – equity, rescue, and swimming Riverside (Dr Ian Mackie) Theatre</p>							
17:45 - 20:00	<p>Welcome Reception Hosted by Bloomberg Philanthropies Summer Garden</p>							

Wednesday 6th December 2023:

World Conference On Drowning Prevention 2023 Day Two

07:45 - 08:29	<p>Early Career Drowning Prevention Professionals - Daily catchup M10 - Douglas 'Pete' Petersonn Room</p>							
08:00 - 17:00	<p>WCDP 2023 Day Two posters (set up 8:00, runs to 17:00) Dr Heather McGowan OAM Poster Gallery</p>							
08:30 - 10:30	<p>SESSION 5: Day two morning plenary - Future strategies for drowning prevention - migration, climate, disaster and Africa Riverside (Dr Ian Mackie) Theatre</p>							
10:30 - 10:59	<p>Morning tea break Dr Heather McGowan OAM Poster Gallery</p>							
11:00 - 12:30	<p>SESSION 6: Commences at 11:00</p>							
	<p>S6 FUTURE FOCUS: Advocacy for action Riverside (Dr Ian Mackie) Theatre</p>	<p>S6 LEISURE: Management M1 - Elizabeth 'Tizzy' Bennett Room</p>	<p>S6 PREVENTION: Culture & diversity M2-3 - Dr Margie Peden Room</p>	<p>S6 SWIMMING: Aquatic competence M4 - Prof Bob Stallman Room</p>	<p>S6 RESCUE: Coastal safety M5 - Prof Mike Tipton Room</p>	<p>S6 RESEARCH: Meet the editors M6 - Dr David Szpilman Room</p>	<p>S6 RESEARCH: Data Systems M7 - Dr Linda Quan Room</p>	<p>S6 POLICY: Forming coalitions M8 - Prof Olive Kobusingye Room</p>
12:30 - 13:29	<p>Lunch Dr Heather McGowan OAM Poster Gallery</p>							
13:30 - 15:00	<p>SESSION 7: Commences at 13:30</p>							
	<p>S7 FUTURE FOCUS: Unpatrolled beaches Riverside (Dr Ian Mackie) Theatre</p>	<p>S7 LEISURE: Boating & fishing M1 - Elizabeth 'Tizzy' Bennett Room</p>	<p>S7 PREVENTION: Children M2-3 - Dr Margie Peden Room</p>	<p>S7 SWIMMING: Inclusion M4 - Prof Bob Stallman Room</p>	<p>S7 ADVOCACY: Community based M5 - Prof Mike Tipton Room</p>	<p>S7 EMERGENCY: Medical M6 - Dr David Szpilman Room</p>	<p>S7 RESEARCH: Context M7 - Dr Linda Quan Room</p>	<p>S7 POLICY: Policy agendas M8 - Prof Olive Kobusingye Room</p>
15:00 - 15:29	<p>Afternoon tea break Dr Heather McGowan OAM Poster Gallery</p>							
15:30 - 17:00	<p>SESSION 8: Commences at 15:30</p>							
	<p>S8 FUTURE FOCUS: Global priorities, Global Alliance Riverside (Dr Ian Mackie) Theatre</p>	<p>S8 LEISURE: Lifejackets M1 - Elizabeth 'Tizzy' Bennett Room</p>	<p>S8 PREVENTION: Young people M2-3 - Dr Margie Peden Room</p>	<p>S8 SWIMMING: Assessment tools M4 - Prof Bob Stallman Room</p>	<p>S8 RESCUE: Coastal research M5 - Prof Mike Tipton Room</p>	<p>S8 EMERGENCY: Medical M6 - Dr David Szpilman Room</p>	<p>S8 RESEARCH: Need assessments M7 - Dr Linda Quan Room</p>	<p>S8 POLICY: Local action M8 - Prof Olive Kobusingye Room</p>
19:00 - 23:30	<p>Conference Dinner</p>							

CONFERENCE PROGRAM

Thursday 7th December 2023:

World Conference On Drowning Prevention 2023 Day Three

07:45 - 08:29	Early Career Drowning Prevention Professionals - Daily catchup M10 - Douglas 'Pete' Peterson Room							
08:29 - 08:30	WCDP 2023 Day Three posters (set up 8:00, runs to 17:00) Dr Heather McGowan OAM Poster Gallery							
09:00 - 10:30	SESSION 9: Commences at 9:00							
	S9 FUTURE FOCUS: Non-fatal drowning Riverside (Dr Ian Mackie) Theatre	S9 LEISURE: Pool lifeguarding M1 - Elizabeth 'Tizzy' Bennett Room	S9 PREVENTION: Inland waterways M2-3 - Dr Margie Peden Room	S9 SWIMMING: Schools M4 - Prof Bob Stallman Room	S9 RESCUE: AI and Machine Learning M5 - Prof Mike Tipton Room	S9 SWIMMING: Low resource settings editors M6 - Dr David Szpilman Room	S9 RESEARCH: Populations M7 - Dr Linda Quan Room	S9 ADVOCACY: World drowning prevention day M8 - Prof Olive Kobusingye Room
10:30 - 10:59	Morning tea break Dr Heather McGowan OAM Poster Gallery							
11:00 - 12:30	SESSION 10: Commences at 11:00							
	S10 FUTURE FOCUS: Coalitions or plans? Riverside (Dr Ian Mackie) Theatre	Room not used M1 - Elizabeth 'Tizzy' Bennett Room	S10 PREVENTION: Community impacts M2-3 - Dr Margie Peden Room	S10 SWIMMING: Water safety programs M4 - Prof Bob Stallman Room	S10 RESCUE: Lifeguarding M5 - Prof Mike Tipton Room	S10 EMERGENCY: Medical M6 - Dr David Szpilman Room	S10 RESEARCH: UK risk factors M7 - Dr Linda Quan Room	Room not used M8 - Prof Olive Kobusingye Room
12:30 - 13:29	Lunch Dr Heather McGowan OAM Poster Gallery							
13:30 - 15:00	SESSION 11: Commences at 13:30							
	S11 FUTURE FOCUS: WCDP Declaration Riverside (Dr Ian Mackie) Theatre	S11 PREVENTION: Community impacts M1 - Elizabeth 'Tizzy' Bennett Room	S11 PREVENTION: Focus on adults M2-3 - Dr Margie Peden Room	S11 SWIMMING: Teaching techniques M4 - Prof Bob Stallman Room	Room not used M5 - Prof Mike Tipton Room	S11 EMERGENCY: Medical M6 - Dr David Szpilman Room	S11 PREVENTION: Building partnerships M7 - Dr Linda Quan Room	Room not used M8 - Prof Olive Kobusingye Room
	Afternoon tea break Dr Heather McGowan OAM Poster Gallery							
15:30 - 17:00	SESSION 12: WCDP 2023 Closing Plenary - Campaigning our way to ZERO Riverside (Dr Ian Mackie) Theatre							
Closing Party Pick a place, catch up with new friends, celebrate, explore Perth								

VENUE MAP

Perth Convention and Exhibition Centre - Level 2



LEGEND

- Toilets
- Information
- Lift
- Disabled Access
- Stairs
- Café
- Views
- Pavilion Meeting Room
- Office

ROOM NAMES

Riverside (Dr Ian Mackie) Theatre

Foyer Dr Heather McGowan OAM

- M1** Elizabeth 'Tizzy' Bennett Room
- M2-3** Dr Margie Peden Room
- M4** Prof Bob Stallman Room
- M5** Prof Mike Tipton Room
- M6** Dr David Szpilman Room
- M7** Dr Linda Quan Room
- M8** Prof Olive Kobusingye Room
- M10** Douglas 'Pete' Peterson



PLENARY SESSIONS

SESSION 1: Official opening and morning plenary session - shaping global strategy and mobilising for local action

Welcome to Boorloo Traditional Owner

Robyn Collard - Whadjuk Ballardong Elder

Mr Graham Ford AO

ILS President

The Hon Dr Tony Buti MLA

Minister for Education; Aboriginal Affairs; Citizenship and Multicultural Interests. Government of Western Australia

Part 2: Global Perspectives

Keynote address:

Generating momentum for drowning prevention

Dr David Meddings, World Health Organization

Dr Joanne Vincenten, UNICEF

Kelly Larsen, Bloomberg Philanthropies

Global Momentum - short presentations highlighting key contexts, and emerging solutions with the aim of covering all regions, and a diversity of drowning prevention solutions.

Dr Jonathon Passmore, WHO Europe

HH Shaikha Nayla Bint Hamad Ibrahim Al Khalifa, Royal Life Saving Bahrain

Dr Frederick Oporia, Makerere University School of Public Health, Uganda

Dr Tessa Clemens, United States Centre for Disease Control, USA

Dr Catarina Quieroga, on behalf of Pan American Health Organization

Dr Aminur Rahman, Centre for Injury Prevention and Research, Bangladesh

Suchada Gerdmongkolgan, Department of Disease Control, Ministry of Public Health, Thailand

Part 3: Australia in focus

Dr Bobby Porykali, Guunu-maana (Heal) Aboriginal & Torres Strait Islander Health, The George Institute for Global Health

Dr Amy Peden, University of NSW and Royal Life Saving Australia

Dr Jaz Lawes, Surf Life Saving Australia

Lauren Nimmo, Royal Life Saving Western Australia

SESSION 4: Day one afternoon plenary - Shaping future strategies for drowning prevention – equity, rescue, and swimming

Three panels discussing future strategies for drowning prevention with an emphasis on equity, rescue and swimming.

Part 1: Addressing equity

Panellists:

Dr Terina Raureti, Te Koronga, University of Otago, Dunedin, New Zealand

Dr Rehana Parveen, Centre for Injury Prevention and Research Bangladesh (CIPRB), Dhaka,

Mariko Rooks, Loyola Marymount University, Los Angeles, USA

Part 2: Shaping the future of rescue

Panellists:

Shane Daw, Surf Life Saving Australia

Steve Wills, Royal National Lifeboat Institution

Yasuko Nagakawa, Japan Life Saving Association

Part 3: Teaching the world to swim

Panellists:

Doan Thi Thu Huyen, Global Health Advocacy Incubator – Vietnam

Stacey Pidgeon, Royal Life Saving Society – Australia

Dr Bill Ramos, American Red Cross

SESSION 5: Day two morning plenary - Future strategies for drowning prevention - migration, climate, disaster and Africa

Day two official welcome address

Mr John Baker ESM, President, Surf Life Saving Australia

Part 1: Climate, disaster and migration

Keynote address:

Drowning risk and climate change: State of the Art Review

William Koon, University of New South Wales

Keynote Address:

Missing Migrants Project

Julia Black

Missing Migrants Project International Office of Migration (UN Migration)

Followed by a panel discussing implications for drowning prevention, and featuring:

Julia Black, Missing Migrants Project, UN Migration

Adrian Mayhew, Surf Life Saving Great Britain

Assoc Prof Jagnoor Jagnoor, The George Institute for Global Health

Dr Ana Domínguez Pachón, Real Federación Española de Salvamento y Socorrismo

Part 2: Drowning Prevention Priorities for Africa

A panel discussion exploring the contexts for drowning prevention across Africa and celebrating the progress that is being made.

Panellists:

Dr Mohamed Saleh, President, ILS Africa and Egyptian Diving and Lifesaving Federation

Dr Colleen Saunders, University of Cape Town, Cape Town, South Africa Lifesaving South Africa, Durban, South Africa

Dr Frederick Oporia Makerere, University School of Public Health, Kampala, Uganda

Prof Emmanuel Nakua Kwame Nkrumah, University of Science and Technology, Kumasi, Ghana

SESSION 12: WCDP 2023 Closing Plenary - Campaigning our way to ZERO

An entertaining panel discussion highlighting the role of advocacy, communications and campaigning in drowning prevention.

Expert panellists with media and advertising experience, but limited exposure to drowning prevention, will be joined by drowning prevention insiders to review and discuss several drowning prevention campaigns. From the hilarious to the serious, the highly emotional to the light-hearted, what sort of messages work? Sharing their reactions, tips, and experience, the panel will debate best practice in the space and engage the audience in a fun and interactive session.

Followed by closing summary and declaration.



ADVOCACY

Using research and evidence to drive the RNLI's lifesaving Float to Live drowning prevention campaign

Jon Powell¹, Ross Macleod¹, Mike Tipton²

1RNLI, Poole, United Kingdom. 2University of Portsmouth, Portsmouth, United Kingdom

Background

On initial cold water immersion floating reduces the risk of cold water shock which can make you gasp uncontrollably, reduces swimming ability and increases the strain placed on the heart and risk of drowning. Since 2017, the RNLI has taken an evidence-based approach to sharing the message to float if you get into trouble in the water by:

1. Trialling floating in real life scenarios.
2. Testing communications materials with the target audience of males who are most at risk.
3. Tracking recall of the key message over time.
4. Actively collecting and managing real world survivor case studies.

Methods

1. Practical float trials, 2018 and 2022, most recently with a focus on recreating real life scenarios with participants covering a range of floating confidence levels.
2. Qualitative creative testing of adverts and communication materials, mix of focus groups and depth interviews, most recently 2023.
3. UK and Ireland nationally representative tracking surveys, plus boosts for target audiences, before and after key campaign periods measuring recall of key float message and how this connects to recognising campaign and advertising materials.
4. Case study collection and management.

Results

1. RNLI float advice can be applied in realistic open water settings but could be improved further with additional instructions (2022 study).
2. Target audience responded well to the highest priority additional instructions recommended from (1) that have been incorporated into new creative concepts, using a mixture of text, audio, and visuals.
3. Advertising recognisers are significantly more likely to recall to float than non-recognisers in UK and Ireland. Spontaneous recall to float is generally higher post campaign than pre campaign UK and Ireland, 2017 to 2022.
4. Over 30 people have contacted the RNLI to confirm that floating helped save their life.

Conclusions

The float message is a practical survival skill that has helped save lives, and continues to be a relevant, and memorable way of engaging the UK and Irish public (and beyond) with water safety. Furthermore, this has been the catalyst for developing work on a lives saved by prevention project to help quantify the impact of drowning prevention.

'Float to Survive' - evaluation of a new Australian beach safety campaign

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Introduction

'Float to Survive' is a beach safety campaign aimed at reducing drowning by promoting floating as the key action for those in distress while swimming. It has been adapted from the Royal National Lifeboat Institute (RNLI) 'Float to Live' campaign. In the 2022/2023 summer Randwick City and Waverley City Councils in Sydney, New South Wales developed and implemented a pilot campaign for Float to Survive in Council areas including some of Sydney's most popular beaches. The campaign involved advertising a core Float to Survive infographic and video promoted at bus stop advertising, digital screens at beaches, Council eNewsletters, websites and social media, cinema ads as well as numerous mainstream media.

Methods and Results

An online pre-campaign survey (n = 719) was administered through the Council eNewsletters and social media prior to the launch of the campaign on December 1, 2023. The survey gathered basic demographic information, knowledge of various beach safety messaging and opinions about floating and the Float to Survive message. A shorter version (n = 366) was administered face to face on beaches in both Council areas in February 2023.

A post-campaign survey (n= 242) was administered online through the Councils following the end of the campaign to see if awareness of the campaign had improved, which marketing approaches were most successful, and to gather opinions on the message for those who saw it. Results showed the majority of respondents were able to float in the ocean (90%), found the message easy to understand (90%) and supported promotion of the message throughout Australia (85%). People were more likely to be supportive and enthusiastic about Float to Survive after seeing the campaign.

Conclusion

Float to Survive is a simple message that has potential to be communicated more widely to the Australian beachgoing public, but could be improved by incorporating additional information about what a person should do after floating.

Investigating Land Manager's Perceptions, Knowledge, and Understanding of Aquatic Selfie-Related Deaths and Injuries

Samuel Cornell, Robert Brander, Amy Peden

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Background

Selfie-related deaths and injuries are a growing problem of the social-media age, particularly in aquatic locations. These incidents are of concern to Land Managers who have risk management responsibilities over varied jurisdictions including national parks, council lands and most public or Crown Land areas. This study aims to gather Australian Land Manager's perspectives on the issue and potential solutions.

Methods

We will conduct online surveys and interviews with staff members of organisations with land management responsibilities across Australia. Surveys will comprise predominately closed-ended questions about their experiences of selfie-related injuries at lands under their control and recruit for in-depth one-on-one interviews. Interviews will be conducted online and will seek to elucidate Land Managers' understanding and perspectives on social-media related deaths and injuries, including planned activities to reduce harm. Interviews will be analysed thematically. Surveys will be analysed via descriptive statistics and qualitatively via content analysis.

Results

This research is currently underway and preliminary discussions on the topic with land managers indicate: the issue of preventing injury to the public due to selfies is one that is being faced by land managers; traditional approaches such as signage, barriers and even closure of the sites may not always be effective, and land managers themselves must be aware of how they promote the locations under their management via social media. Results from the surveys and interviews will identify the scope, concerns, and challenges faced by Land Managers in relation to preventing selfie-related incidents. The presentation will explore these and other themes as they emerge.

Conclusions

This qualitative investigation will enable us to discuss in depth the issue of injury due to selfies at aquatic locations with decision makers and identify high-risk locations and demographics. This in turn will inform conduct of the next phases of our research which aims to develop communication strategies targeting at-risk groups of social media users who frequent hazardous aquatic locations. Land managers are pivotal in conducting this work.

Alcohol advertising around waterways: a pilot project to capture adverts on the beach

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Background

The alcohol industry spends more than \$100 million on alcohol advertising annually [1]. Young people see alcohol advertising on television, billboards, and bus shelters, which can contribute to earlier drinking initiation, and participation in potentially harmful drinking behaviours. Alcohol use in and around water is a risk factor for fatal and non-fatal drowning. In Western Australia, young people are over-represented in water-related injury statistics and drowning deaths [2]. This paper describes a pilot project to explore and quantify young people's exposure to outdoor advertising in and around aquatic settings in Perth.

Methods

A purposive sample of metropolitan coastal locations (n=5) were identified and mapped to measure the volume of outdoor alcohol advertisements located in a radial 200m buffer zone that included surf life saving clubs, areas adjacent to alcohol outlet(s), hospitality venues, and locations that host events e.g. surf carnivals, outdoor concerts. Teams worked in pairs and used tablets loaded with a customised application to collect data in December 2022 and January 2023. For each outdoor advertisement identified, the geolocation was recorded along with digital photographs. Advertisement characteristics were recorded using standard outdoor advertising reporting criteria: Size, Type, Setting, Alcohol or non-alcohol advertisement, Aquatic location or aquatic activity featured. Alcohol advertisements were further coded using the Alcohol Beverages Advertising Code. Advertisements were geocoded in ArcGIS, and descriptive statistics summarised density, size, type of alcohol advertisements in each coastal location.

Results

Characteristics of the outdoor advertisements identified at the five metropolitan locations over two time periods spanning Christmas (19/12/2022- 21/12/2022) and New Year (02/01/2023 – 05/01/2023) will be presented and a detailed breakdown of the frequency and content of outdoor alcohol advertising around waterways in metropolitan Perth will be provided.

Conclusion

This pilot project used geocoding methods to map and audit outdoor alcohol advertising around metropolitan aquatic locations. To the best of our knowledge it is the first time that such research has been attempted. We outline the strengths and pitfalls of the methods we used to collect, collate and analyse the data captured. Methods may have utility in other locations where alcogenic aquatic environments are common.

Evaluating and extending safety messaging: Moving beyond the Flags

Sean Kelly, Shane Daw, Jaz Lawes

Surf Life Saving Australia, Sydney, Australia

Introduction

The Think Line is SLSA national safety campaign. Between 2016-21 it focused on rip currents and building awareness, challenging community beliefs, and understanding, then encouraging behaviour change. The Think Line introduces the concept of a line in the sand to ask the community to Stop, Look and Plan how to stay safe before entering the water. Since then, the Think Line concept to Stop Look has been adapted and extended to be applied to other popular coastal activities, including Boating, Watercraft, Rock Fishing, and Snorkelling and Diving.

Methods

Behaviours, attitudes and risk perception of Australian adults (aged 16+) who participate in popular coastal activities between 2018 – 2023 will be collated, as well as evaluation of the extended concept in the community will be conducted in SLSA's annual National Coastal Safety Survey 2023 (NCSS23 – run in April 2023).

Results

This presentation will analyse behaviours, attitudes and risk perception of Australian adults (aged 16+) who participate in boating, watercraft, rock fishing, and snorkelling and diving between 2018 – 2023, and will present a preliminary evaluation of the newly developed resources that have extended the Think Line concept beyond rip current to the other popular coastal activities.

Discussion

Our initial evaluation of the rip current campaign showed that we have developed an effective behaviour change tool – but need greater campaign exposure for behaviour change within the broader community. Strategies to address this challenge of campaign exposure moving forward will be discussed. This flexible and broadly applicable campaign is the next step in encouraging the community to take their own safety into consideration by asking beachgoers, paddlers, fishers to all STOP, LOOK and PLAN how to stay safe when on the coast.

Kangaroo Beach – An interactive approach with international reach for engaging younger children in water safety education

Rhiannon Brinckman, Jaz Lawes, Cherie Kellett, Shane Daw

Surf Life Saving Australia, Sydney, Australia

Background:

To save lives, water safety messaging needs to be embedded within the subconscious from a very young age and continually reinforced. Award winning Kangaroo Beach is a series developed to entertain and educate pre-schoolers and early primary school children around water safety. The series, supported with an interactive website and a teaching toolkit, provides a water safety education resource for kids aged 3-8 years.

Description

Kangaroo Beach is a series where four young animal friends share an action-packed summer training program as cadets with their lifeguard heroes, keeping the water safe. Under the guidance of grown-up lifeguards, the cadets gain imperative water safety skills that will help keep themselves and other beachgoers safe all summer.

Lessons learned

Data collected in SLSAs National Coastal Safety Survey suggests that one in three adults with a child under the age of nine have heard of kangaroo beach and, among those who have watched the program, 98% stated they found the show very or somewhat useful. The Toolkit that accompanies the show includes engaging lesson plans that complement school swimming lessons and PD/H/PE Australian Curriculum content. Lesson plans correspond to key learning areas in the National Swimming and Water Safety Framework, addressing Hazards and Personal Safety, Entries and Exits, Flotation, Swimming, Underwater, Lifesaving, Rescue, and Survival Sequence. Each lesson identifies a relevant Kangaroo Beach episode, water safety message, and student activity sheet. The resource improves/consolidate knowledge of safe behaviours around water, empowering contributions to their own safety.

Conclusion

Kangaroo Beach has been a big success by filling a need for accessible and engaging water safety education. Season 1 has now been aired in several countries internationally, and Season 2 aired in Australia January 2023. The award-winning series appeals to young audiences and families all over the world by exploring the familiar world of water play – on the beach, in the sea, in swimming pools, rivers and rock pools, while empowering viewers with an understanding of water and beach safety in every episode. Engaging series represent a novel and strategic initiative to increase awareness and engage families in water safety.

The day I couldn't dive! Olympic diving champion, Sylvie Bernier, witnessed the drowning of her nephew Raphaël and transformed the tragedy into positive change.

Sylvie Bernier, Guilaine Denis

Société de sauvetage, Montréal, Canada

Raphael's death was her source of inspiration to change things in Quebec.

After the accident, the coroner made 33 recommendations, among them:

- All outdoor organizations are accredited and trained
- Risk management guide is required.

Quebec Adventure Outdoor (QAO) established an accreditation program for organizations based on the existing outdoor responder competency standard.

The government, via Tourisme Québec, made this accreditation mandatory to qualify for financial assistance. Sylvie has always taken water safety seriously, given Quebec's history of childhood drownings, leading to the Lifesaving Society's Swim to Survive program.

Sylvie Bernier has had an influential political role, while being the Swim to Survive spokesperson.

Thanks to subsidies, the program has enabled over 20,000 children to follow the program yearly.

Creation of the Raphaël Bernier Fund provided the Quebec program support through private companies involvement (companies-\$500K, government-\$1M, donations-\$350K).

Sylvie's role is also important for tourism. Public and political interventions had the outdoor tourism industry change rules to make all activities, including aquatic, safe.

In 2019, a book⁽¹⁾ and documentary⁽²⁾ on her story raised awareness about wearing PFDs in Quebec, given that less than 50% of children know how to swim, demonstrating the importance of implementing the successful programs and standards she championed.

The QAO's accreditation program allows 200 parks and businesses to conduct concrete risk analysis and implement measures to minimize risks.

Swim to Survive has children assess their aquatic abilities, because when asked, "Who can swim?" 90% of 8-year-olds raise their hands, yet after the 3 skills are tested (disoriented fall, treading water for 1 minute and swimming 50 meters), only 50% of them succeed without wearing a PFD. It is therefore important for children and parents to know the difference between "swimming" and "bathing."

Every action counts. Don't assume that people know and follow rules.

By 2023, we expect 70,000 students to have participated in the program, representing – 7.5% of Quebec's 8-year-olds. The yearly goal is to reach 94,000.

Turning tragedy into effective action: A case study of affected families' collaborative efforts to accelerate water safety programming in the State of California, USA.

Karen Cohn^{1,2}, Chris Carlson^{3,2}, Megan Ferraro^{1,2}, Julie Lopiccolo^{4,2}, Rob Williams^{3,2}, Will Koon²

1The ZAC Foundation, Fairfield, USA. 2California Water Safety Coalition, Huntington Beach, USA. 3Ben Carlson Memorial and Scholarship Foundation, Newport Beach, USA. 4Jasper Ray Foundation, Orange, USA

Background

Families who have been affected by drowning are important stakeholders for multisectoral drowning prevention efforts. This case study describes the experience of three family foundations from the United States, outlining their approach and impact on collaborative drowning prevention efforts in the State of California.

Description

Following the drowning deaths of their children, three families separately formed foundations to bring awareness to water safety and drowning prevention.

1. The ZAC Foundation, co-founded by Karen and Brian Cohn following the 2008 pool entrapment drowning death of their 6-year-old son Zachary (1).
2. The Jasper Ray Foundation, co-founded by Julie Lopiccolo and Jonathon St. Claire following the March 19, 2014 pool drowning death of their 21-month-old son Jasper (2).
3. Ben Carlson Foundation, co-founded by Chris and Teri Carlson following the July 6, 2014 death of their 32-year-old son Ben, a professional ocean lifeguard who drowned while making a rescue (3).

While these foundations accomplished much in different spaces and geographies, operating individually limited their impact. In 2021, the three organizations aligned on a collaborative venture, combining experience and resources to form the California Water Safety Coalition, which is now guiding and accelerating drowning prevention strategy and programming in the state.

Lessons Learned

A challenge and feature of drowning as a multisectoral issue is a landscape filled with many well-intentioned organizations and individuals. Sometimes, many efforts can convolute programming with duplicative and even misaligned initiatives. Family and parent advocates who are willing to share their story can serve as a unifying and powerful voice for drowning prevention. Not only can they help others avoid similar tragedy in the wake of the catastrophic loss of a child, but they can generate media attention to raise awareness, harness political power with elected officials, and motivate alignment and collaborative action from various facets of the drowning prevention sector.

Conclusions

Organizations that align for collective action multiply efforts and increase velocity. Such was the case when the ZAC, Jasper Ray, and Ben Carlson Foundations came together to form the California Water Safety Coalition, which is now accelerating drowning prevention efforts in the State of California.

How to Begin and Maintain a Water Safety Journey in Under Resourced Communities through Partnerships, Facilitation, and Creative Funding.

Chezik Tsunoda

No More Under, Seattle, USA

The solution to reducing drowning must be replicable, scalable, and cost-effective. To rely on new facilities or a much-needed influx of lifeguards and swimming instructors would delay community safety. No More Under is utilizing existing community leaders, aquatic facilities, experts, and funding to facilitate the development of life-saving programs.

No More Under has created a unique swim series to teach water competency, reduce drowning, and ensure equitable access to swimming lessons. While they do not themselves give lessons, they connect all players required, find funding from organizations in the communities, run training, and ultimately create the access and awareness to children and families that would normally not have the means to learn these skills.

No More Under takes on the role of the listener to understand aquatic capacity and community demand, and becomes the facilitator, by putting everything together. In its simplest form, it's finding empty unused pool time and coordinating that space to be used by community members who have a desire to learn swimming. Even though each community served is unique, No More Under's blueprint remains the same; hearing from and putting the necessary pieces together to create the picture of youth learning critical life-saving skills. We then work with our partners to pool funding to support the lessons.

No More Under is entering its third year of this program and have more than triple their impact in year two and are on target to triple their current numbers during year 3 yet again. What's most exciting is that this program is replicable, scalable, and cost-effective.

There has been a lot learned during this program, from how to approach partners, data collection, and how to continue the aquatic journey beyond the initial lessons. We continue to improve our methods and know it's important to share our successes as well as our failures.

By the end of this session, participants will....

- Understand what kind of partners to look for to further water safety in their community.
- Understand how to connect and leverage these partnerships.
- Feel confident in ways to offer support beyond just swimming lessons.

Creating a Journalist Network to Prioritize Drowning Prevention Efforts

Jennifer Patterson, Lexi Bullick

Global Health Advocacy Incubator, Washington, DC, USA

Background

Bangladesh has one of the highest drowning rates in the world among children under five. Prior to July 2020, there had been minimal coverage about the issue, and it had not been a priority for the Bangladesh government. There was a need to bring this neglected issue to the forefront to increase demand from the public and bring awareness to policymakers.

Description

In July 2020, the Global Health Advocacy Incubator's (GHA) team found that only 31 stories published on the issue in 2019. GHA focused on building the capacity of the Bangladesh media around the issue. We initiated a campaign to increase the quality of information flow by strengthening the media professionals' capacity to help policymakers make informed decisions and launch sustainable solutions to prevent child drowning deaths.

Through training, workshops and fellowships, we sensitized the media on child drowning, its impact on families and the national economy and evidenced-based solutions. We formed an active network of journalists to discuss potential stories, answer questions and provide guidance on drowning prevention angles through quarterly workshops and a dedicated Facebook group. Workshops included field trips to remote rural sites to meet with community members, local government representatives and family members who had lost loved ones to drowning to better understand the impact on the community.

Lessons learned

Engaging and sensitizing all levels of the media – journalists, news managers and the media gatekeepers is necessary to ensure a commitment to consistent reporting. Offering a way for media to engage with one another, seeing the local impact and by hearing stories from spokespersons can move someone from just covering an issue to a dedicated advocate. This successful model created a global network of journalists committed to raising awareness of drowning prevention efforts and drive change.

Conclusions

GHA transformed 269 journalists into dedicated child drowning prevention advocates to promote the issue and demand policy change. The members produced quality reports to influence community and policymakers to adopt a project to address child drowning – community-based childcare centers. These journalists continues to keep the issue top of mind by publishing regular stories about drowning prevention.

Three ways that Advocacy raises a public awareness of water safety in Ireland

Roger Sweeney

Water Safety Ireland, Galway, Ireland

Background

Water Safety Awareness, a somewhat broad and vague term, is a process which opens opportunities to disseminate information that improves understanding and attitudes necessary to change behaviour around water.

There are limited financial resources available in Ireland to invest in such water safety awareness campaigns that target a wide range of people at risk of drowning. Therefore, Water Safety Ireland (WSI) advocates on three levels to raise the level of public water safety awareness.

Description

Firstly, the approaches and impacts by which WSI advocates the media to highlight water safety issues will be outlined. Methods include awarding members of the public who rescue others from drowning, giving rescuers and rescues a voice in the media to spread messaging that highlights the underlying causes of an accident and the desired alternative behaviour; advocating through those directly affected by drowning tragedies to campaign for greater awareness; and advocating with those who are appointed "Water Safety Ambassadors" as a result of being respected in public life for their celebrity status or exceptional achievements.

Secondly, the approaches and impacts by which WSI advocates Government will be outlined, including the creation of a Strategic Development Plan (2023-2027), supported by Government and delivered at national and community level.

Thirdly, the approaches and impacts by which WSI advocates partners to build a drowning prevention network of decision makers from relevant organisations will be outlined.

Related issue-focused strategic communications initiatives will be outlined.

Lessons Learned

To reach a wide audience, it is important to use simple targeted messages that are age and gender sensitive. Templates of drowning prevention messaging, available in a wide variety of formats but consistent in message, increases the opportunities for others to share and leverage across a wider entire network. Forcing too many messages into a campaign risks distracting from the core message. Including a call to action is crucial.

Conclusions

A well-planned advocacy awareness-raising campaign is arguably one of the most efficient means of communicating water safety issues to specific communities at risk. Using high-profile individuals to convey messages can help establish trust, reach the target audience, and raise difficult sensitive issues.

Aligning to the UN Resolution and commemorating World Drowning Prevention Day – an Irish perspective.

Roger Sweeney

Water Safety Ireland, Galway, Ireland

Background

The UN General Assembly's first resolution on Drowning Prevention was championed and proposed by the governments of Ireland and Bangladesh and with 79 co-sponsoring countries agreed this historic UN effort to save lives. An associated Global Day of Recognition, World Drowning Prevention Day (WDPD), 25 July, is held annually. This global advocacy event served as an opportunity for Ireland to highlight the tragic and profound impact of drowning and to offer life-saving solutions to prevent it. It is an important, memorable day for the drowning prevention community worldwide and in Ireland, it has become a focal point for raising awareness about water safety.

The Author outlines the initiatives that were developed to commemorate WDPD in Ireland, to raise awareness about the resolution and to prompt action by various stakeholders.

Description

The Author outlines the efforts made to accelerate awareness of WDPD and the public awareness initiatives that prompted individuals and agencies to commemorate the day, including a range of safety messages on social media tiles, a campaign welcoming the resolution, securing support from the President of Ireland, and downloadable resources for "I'm Going Blue for WDPD" which included an initiative that began as the face painting in blue of Lifeguards and emergency services personnel, and extended to members of the public, buildings and national heritage sites.

Also outlined are the actions that called on individuals and agencies to "Do One Thing" such as learning one water safety skill or sharing one piece of water safety advice or changing one mind about safety. Campaigns will be outlined that encouraged individuals to be the one who takes responsibility for water safety and how it was emphasized that for someone at risk of drowning, that one thing could mean the world. The development of a National Strategic Development Plan aligned to the Resolution will also be outlined.

Lessons Learned

Knowledge sharing is improved by supplying resources that are easily shared across all forms of social media. Early engagement with stakeholders is essential.

Conclusion

Multi-Agency involvement is required. Appealing to the individual was the greatest strength of the campaigns to date.

How World Drowning Prevention Day 2022 boosted water safety in Portugal

Alexandre Tadeia¹, Claire Ann Alfonso²

1Portuguese Life Saving Federation (FEPONS), Coruche, Portugal. 2Norwegian Lifesaving Federation, Oslo, Norway

Background

World Drowning Prevention Day 2022 (WDPD 2022) managed to boost water safety in Portugal being important to report it as an example.

Description

FEPONS created the strategy for the WDPD 2022:

FEPONS had the idea of creating a free (asynchronous) online course on water safety, disseminated on all Portuguese beaches, the weekend before the WDPD 2022;

Was created an online course program that has the following content: world and Portuguese drowning statistics; the physiology of drowning; the identification of the most dangerous environmental conditions; safety rules for the maritime environment; safety rules for the river environment; pool safety rules; safety rules for tanks and wells; what to do in case of drowning.

After creating the training, started the process of obtaining entities that would institutionally support it; Among several Portuguese entities that supported the idea, the Portuguese Association of Swimming Technicians and the Portuguese Swimming Federation accepted;

Lessons learned

The idea was implemented over the planned weekend, and although it was not possible to place a poster on all Portuguese beaches, there was great digital dissemination and good promotion also by the press and TV;

In a short period of time, approximately 400 people completed the online training;

After some time, FEPONS approached the Portuguese Swimming Federation for the inclusion of aquatic safety in Portuguese swimming schools;

Due to the good relations created by the WDPD 2022, the good image and result that online course had, the Portuguese Swimming Federation accepted an agreement with FEPONS so that all Portuguese swimming schools would not only teach swimming, but also water safety, with the technical coordination of FEPONS, resulting in a national certification;

After the previous agreement, the Portuguese Swimming Federation invited FEPONS to be a partner in the implementation of aquatic survival in 1st cycle public schools in Portugal.

Conclusions

The WDPD 2022 created opportunities that result in a great improvement of the Portuguese water safety.

An association of environments for the implementation of the assumptions of the UN resolution. GoBlue Polska - Polish strategy to commemorate the World Day for the Prevention of Drowning

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1University of Szczecin, Szczecin, Poland. 2WOPR - Water Volunteer Rescue Service, Szczecin, Poland

Background

Drowning is a serious problem, the third most common cause of accidental death in the world. Poland ranks 9th in the European Union in terms of the number of drownings, where the mortality rate is 2.2 per 100,000 people. Unlike other injuries, survival is found almost exclusively at the scene of the incident and depends on two very variable factors: how quickly the person is recovered from the water and how quickly effective resuscitation is performed(1). Increasing public awareness of the causes and effects of risky behavior in water areas is the main measure to prevent drowning.

Description

In Poland, the coordinator on Drowning Prevention Day is the Water Volunteer Rescue Service representing the International Life Saving Federation (ILS) and the World Health Organization (WHO). The working group consisting of Water Safety experts implemented the statutory objectives. The result of the Team's activity was an association of representatives of the water rescue community, sports associations, non-governmental organizations and individuals - ambassadors of safe recreation on water bodies. The main goal was to popularize drowning prevention programs guided by national priorities(2):

Media campaigns (social media, national and local media, interviews, rescue demonstrations, occasional t-shirt) in order to publicize the issue of drowning and increase public awareness of the methods of preventing drowning. Implementation of drowning prevention programs:

Swimming - first version of the program for learning and improving the skills of survival in water (drifting, swimming) and self-rescue. Getting to know the functionality of equipment for belaying during water sports (belay vests, inflatable buoys).

Rescue - educational programs/trainings on: safe behavior near water, first aid, including cardiopulmonary resuscitation and AED defibrillator operation. Implementation of programs at the regional and national level. As a result of community initiatives, a specialist newspaper- Bezpieczna Woda was created.

Conclusions

The risk of life due to drowning in Poland is higher than the average in the EU countries. The most urgent multisectoral interventions aimed at reducing the number of drowning cases in Poland should be creation and implementation of national educational programs: swimming (including water skills) and rescue in all age groups(3).

The first global dawn for World Drowning Prevention Day

Nicola Keen-Biggelaar

Drowning Prevention Auckland, Auckland, New Zealand

Background

As the first country to celebrate the World Health Organisation's World Drowning Prevention Day, Drowning Prevention Auckland (DPA) leveraged the opportunity to raise awareness of the impact of drowning each year within New Zealand. On average for the past five years in New Zealand 81 families are impacted by a drowning every year.

Key campaign goals:

- Increase awareness of drowning as a public health issue and provide water safety guidance
- Drive engagement with Aucklanders for campaign participation to grow knowledge of drowning prevention

Description

The key feature was a dawn event, He Taonga Te Wai, to acknowledge the impact of drowning, hope for the future, and an opportunity to showcase how DPA works to address the issue.

Key messages developed in four languages around behavioural change linked to the national Water Safety Code – Go Together, Stay Close. Content was shared through 13 referral channels and DPA advocates including Aquablacks, NZ Olympian and a Paralympian. Educational resources and promotional content was developed for use within school settings resulting in high engagement within schools. Workplaces were supported to “Go Blue” for World Drowning Prevention Day. The national landmark, the Sky Tower, was lit in Blue and White for World Drowning Prevention as the sun rose during the dawn event, and through the night of 25 July 2022.

Lessons learned

This campaign and its connection to the grief felt due to the loss to drowning resonated strongly within many communities. This day will always coincide with winter in the Southern Hemisphere, therefore the approach we took resonated well as an awareness campaign rather than an active ‘engage safely in the water day’. In 2022, the day coincided with school holidays therefore engagement with schools was more difficult. For the 2023 event we have engaged earlier with schools to enable educational activity occurring in the lead up to the day. Lighting the icon of the Sky Tower, as the first landmark globally was powerful.

Conclusions

This was a meaningful event enabling us to grow important and meaningful connections, advocacy and drive education on drowning prevention across community, education and workplace settings.

How the UK National Water Safety Forum (UK NWSF) agreed to ‘Do One Thing’ on World Drowning Prevention Day (WDPD) 2022, and lessons learnt from uniting 50 organisations behind the UK’s largest ever drowning prevention campaign

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1Royal National Lifeboat Institution, Poole, United Kingdom. 2UK National Water Safety Forum, Poole, United Kingdom. 3Royal Society for the Prevention of Accidents, Birmingham, United Kingdom. 4UK National Water Safety Forum, Scotland, United Kingdom. 5Canal & River Trust, London, United Kingdom. 6National Fire Chiefs Council, Hove, United Kingdom

Background

The UK NWSF[1] responded to the World Health Organisation’s (WHO) call to ‘do one thing’ - by launching ‘Respect the Water’, a new national drowning prevention campaign on July 25th 2022, to help lead the UK conversation and commemorate WDPD [2]. The NWSF is a UK-focused, voluntary network, established in 2004 following a government review. It published the UK Drowning Prevention Strategy in 2016 and works together to reduce water-related deaths.

Description

The NWSF’s WDPD strategy was to leverage the day to help maximise public interest and awareness of drowning prevention messaging at the most relevant time of year for the UK setting, underpinned by the UK NWSF strategy[3] objective to “increase awareness of everyday risks in on and around water”. The approach resulted in the largest ever coordinated UK Water Safety campaign. Activity & inventions included;

- Collaborative PR - 50 organisations supported one media release focused on drowning statistics, expert spokespeople, local events and case studies about drowning survivors and bereaved families
- A paid, owned & earned multichannel campaign educating about bystander rescue including who to call and how to help safely (Call, Tell, Throw)[4]
- A coordinated effort to ‘go blue’ and illuminate high profile buildings and monuments to commemorate WDPD

Lessons learned

- Many voices sharing a consistent message helped break the echo chamber and reach those at risk
 1. 394 media outlets covered the story, including 33 TV stations in 48hrs
 2. 12 different organisations spokespeople & 10 case studies
- Timely drowning statistics increase relevance & media coverage
 1. “277 people accidentally drowned in 2021 in UK, with 47% of these deaths in the 3 summer months; July worst month”
- Collaboration can be difficult, but focusing on a common objective helps navigate challenges like competing priorities and limited resources
- Independent research demonstrated the campaign had positive impact of increasing safer behaviours

Conclusions

World Drowning Prevention Day is an amazing opportunity to bring together multisectoral partners with relevant and focused strategies for our respective settings. The “UK’s multisectoral approach to drowning prevention and strong cross organisational collaboration via NWSF” has been recognised as positive[5].

Formation of a Drowning prevention steering committee in Uganda: Conclusions from the first World Drowning Prevention Day celebration

Moses Kalanzi¹, Claire Biribawa², Maria Nkalubo³

1Swim Safe Uganda, Kampala, Uganda. 2Makerere University School of Public Health, Kampala, Uganda. 3Ministry of Health, Kampala, Uganda

Introduction

Drowning is a major public health issue in Uganda and has one of the world's highest drowning death rate of 502 per 100,000 cases¹, which is approximately over 50 times higher than the estimate on the African continent. In order to address this issue, there is a need for increased government support, community awareness and education programs, and investment in drowning prevention and rescue infrastructure. Drowning prevention requires a multi-sectoral approach that benefits from collaboration with various stakeholders that will understand the burden and reduce drowning risks, however all efforts from various stakeholders need to be well coordinated to have a harmonized approach. This paper shares experiences and lessons learnt in developing a steering committee for Drowning prevention in Uganda.

Descriptions

A coalition of organizations involved in hosting the event, including the Ministry of Health, Ministry of Works and Transport, Uganda Police – Marines, Swim Safe Uganda, Uganda Swimming Federation, Uganda Lifesaving Federation, Ray United FC, and the University of Southern California, agreed to form a new Uganda Drowning Prevention Steering Committee. The committee is mandated to meet on a weekly basis to strategize and plan activities to advance drowning prevention research, policy and programming throughout the country. The national steering committee had representation from the Government, private sector, NGOs, Academia and International NGOs.

Lessons learnt

The National steering committee coalition priorities for the next year include: Finalization and adoption of a national drowning prevention strategy. Additional community assessments and data collection of drowning risks and awareness in lakeside communities throughout Uganda. There is also need for continued training of school-age children in swimming and water safety skills and training of bystanders in rescue and resuscitation through community outreach and youth ambassador programs. Additionally, there is need for increased community sensitization to drowning risks through the mass media.

Conclusion

The formation of a national steering committee to facilitate coordination is crucial for moving forward in a harmonized way. A key challenge in this process is however engaging representation achieving government engagement and maintaining the interest in Drowning prevention.

Examining the impact of New Zealand's Swim Reaper campaign on water safety attitudes and fatal and non-fatal drowning among males 15-34 years

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Background

Young males are at high-risk of drowning due to a propensity for unsafe behaviours around water such as diving headfirst into water of unknown depth and swimming outside patrolled areas at surf beaches (1), consuming alcohol around water (2), jumping into water (3-4) and not wearing lifejackets (5). The presentation will report on the evaluation of the Swim Reaper campaign (a social media campaign using a 'grim reaper' character to highlight the risk of injury or death associated with unsafe aquatic activities (6)), on water safety attitudes and drowning rates among males 15-34 years in Aotearoa, New Zealand.

Methods

Online surveys pre (December-2018) and post (February-March-2019) a dedicated Swim Reaper water safety campaign collected demographic data, unprompted and prompted recall of the Swim Reaper and campaign impacts on attitudes regarding risky aquatic behaviours. Interrupted time series (ITS) analysis using Poisson regression controlling for season examined trends in fatal and non-fatal drowning rates for males 15-34 years before and after the campaign using coronial, hospital and Accident Compensation Corporation data.

Results

A total of 518 males were surveyed (51% post [n=262]; 51% aged 15-24 years; 51.9% NZ Euro). Sixty-eight percent had previously gotten into trouble in the water. Half (50.6%) of the post-campaign cohort had heard of Swim Reaper. There were significant improvements (post vs pre-campaign) in self-reported water safety awareness. ITS analysis showed a reduction in drowning-related hospital admissions post, relative to pre, program.

Conclusions

Initial evaluation of the Swim Reaper campaign shows some improvement in water safety awareness for select behaviours among males 15-34 years post campaign. Further research is needed to identify age-group specific messages that will be effective in improving water safety attitudes and to explore the link between improved attitudes and behaviours.

The No Push Movement™ – The development of an Ambassador program that helps to create a culture of safety and awareness in and around water by encouraging individuals to never push others into water.

Eric Shendelman

Shendy's Swim School Inc., Toronto, Canada

The idea of a simple push into water and the consequences that may result can be devastating in some cases. Thus, the need for an actionable and creative way to stop the pushing and horseplay around water often found between individuals and groups. The No Push Movement™ was born out of a need to educate children, youth and young adults on the importance of safety and the consequences of pushing others into water. The Canadian Drowning Prevention plan includes the No Push Movement as part of its latest edition. This initiative was recognized, in April of 2022, as the recipient of the Barb McLintock Memorial Communication Award ('For its simple and clear message to inform the public about the dangers of pushing others into water').

- The Presenter will share the results coming out of Canada and other parts of the world and how the culture in various aquatic settings has changed for the better
- Specific stories will be shared of how The No Push Movement has 'taken off' in many instances and the impact it has had on various populations, communities and programs
- This is a 'living' movement that can be shared, spread across communities, developed to include every language and culture that enjoys swimming and aquatic activities.
- This initiative can be adopted by camps, outdoor education centres, public and private aquatic facilities and by any organization that plans to be in or around water
- There are opportunities for individuals to create signage, flyers, public service announcements, social media campaigns around the No Push Movement
- This is more than a local message and needs to be recognized on a global level
- By educating those involved in drowning prevention programs such as Lifesaving, Lifeguarding, Instructor, Learn-to-swim programs, active aquatic professionals and management, we can collectively change the behavior and culture of safety in and around water in a more positive way. We must all become Ambassadors of this global initiative. Take the Oath at www.nopushmovement.com and join the Movement.

The Go for 2&5 Regional and Remote Aboriginal Communities Swimming Program (Swim for Fruit)

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Swim for Fruit – encouraging healthy lifestyles through swimming Background: Aboriginal Australians have a higher disease rate and are 3.6 times more likely to drown than non-Aboriginal Australians. Risk factors such as poor nutrition, limited access to fresh fruit and vegetables, high rates of school truancy, low levels of physical activity and lower swimming skills contribute significantly to this health disparity.

The Swim for Fruit program was developed in 2009 in response to the growing health disparities within regional and remote communities in Western Australia (WA).

Description

The Swim for Fruit Program helps to promote healthy lifestyles and physical activity in high-risk communities throughout WA. The program encourages children in regional communities to swim laps at their local pool and rewards them for their swimming efforts with a healthy afternoon tea of fresh fruit following each session. The program is run after school and/or on the weekend to ensure all children in the community can access the program.

Lessons Learned

Evaluation of the program shows that it has been successful in engaging children, particularly Aboriginal children in swimming and aquatic recreation, as well as increasing fruit consumption. Since 2009, 27 436 children have participated in the program across 22 regional and remote communities. Swim for Fruit has resulted in improved swimming and water safety skills, increased confidence, social engagement and community cohesion within the communities. The program has also enabled pool managers and other aquatic staff employed at the swimming pool to build stronger and more meaningful relationships with community members.

Conclusion

The Swim For Fruit program is a great example of the broader impacts swimming pools can have in regional and remote communities to contribute to drowning prevention and broader health and wellbeing outcomes.

Remote Swim, Survive and Strive: How strong community relationships in remote Indigenous communities can prevent drowning.

Annette (Floss) Roberts

Royal Life Saving NT, Northern Territory, Australia

The Remote, Swim, Survive and Strive Program is an investment in drowning prevention, skill development, increased employment and positive health outcomes for remote Indigenous communities across the Northern Territory (NT).

The Remote Swim, Survive and Strive Program is a community development program that aims to improve quality of life for Indigenous people living in remote communities across the NT, the most represented groups in both drowning and poor health statistics.

For over 15 years, Royal Life Saving NT has built strong relationships with these communities, by delivering quality swimming and water safety education programs, empowering local people, and providing safe spaces for people to socialise and recreate.

The 19 remote community pools are a very special community asset that require leadership, commitment and good management to keep them functioning. They offer a range of benefits for the local community and wider economy. This includes: employment, increased health and well-being outcomes and improved school attendance.

The Remote Swim Survive and Strive program has transformed from a service delivery model to a comprehensive community development model. This program is contributing to meaningful change within remote communities that are generally marginalised in the drowning and health statistics.

The program is unique as it is inter-sectoral in nature, addressing all five areas of the Indigenous Advancement Strategy and has produced tangible results across whole of community that will provide benefits well into the future.

A 10 year evaluation report was completed in 2019 detailing achievements, challenges and what success looks like. The program is conducted across 19 remote pools, some rivers and waterholes and provides access to water safety education for up to 35 remote aboriginal communities.

The program is only sustainable through a funding source and that, in itself, is a challenge. Where to from here, and what does sustainability look like?

“Water Skills for Life: A Global Approach to Water Safety Education”

Esther Hone

Water Safety New Zealand, Wellington, New Zealand

Drowning is a leading cause of death worldwide, particularly among children and young adults. It is a preventable tragedy, and education is the key to reducing its incidence. The purpose of this presentation is to introduce “Water Skills for Life”, a comprehensive program designed to empower individuals to be safe and confident in the water. The Water Skills for Life program takes a global approach to water safety education, incorporating elements of survival skills, swimming techniques, and water safety awareness. The program is designed to be accessible and inclusive, suitable for individuals of all ages and abilities, from beginners to experienced swimmers.

In this presentation, we will showcase the key components of the Water Skills for Life program and highlight its impact on reducing the incidence of drowning and increasing water competency. We will also discuss the program’s potential for scaling globally and its ability to make a significant impact in reducing the number of drowning incidents and saving lives.

Additionally, we will share case studies where the program has been implemented, highlighting its impact on communities and individuals and demonstrating its effectiveness in promoting water safety education and awareness.

This presentation is an opportunity for international delegates to learn about a innovative and comprehensive approach to water safety education. Whether you’re a swim instructor, water safety advocate, or simply someone who values water safety, this presentation is not to be missed. Join us as we explore the world of Water Skills for Life and its potential to make a global impact on reducing drowning incidents.

Implementation of the community raising awareness campaigns during Covid-19: an emergency response approach for drowning prevention

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1Center for Injury prevention and Research Bangladesh (CIPRB), Dhaka, Bangladesh.

2International Drowning Prevention and Research Division, Dhaka, Bangladesh

Background

The global health pandemic has had a disproportionate impact on children worldwide, including an increased risk of drowning due to the closure of child drowning intervention programs known as Anchal child care and supervision services. Under a comprehensive drowning prevention project, an emergency response awareness-raising campaign intervened to mitigate the risks of child drowning during Covid-19 between March 2020 to April 2022 in the three intervention sites (Kalapara, Taltoli, and Betagi Upazilaa) of the coastal region of Bangladesh.

Description:

The project implemented multiple awareness-raising campaigns to target different communities in the project sites. To raise awareness among different religious communities, religious leaders conducted campaigns at religious gatherings by maintaining Covid-19 self-distancing measures. Loudspeaker campaigns were conducted to reach every community, while SMS campaigns utilized a mobile platform to target the parents. Cable network campaigns and community radio shows were executed to reach mass communities.

Lessons learned

The religious leader campaign's target reach was almost doubled, with 112,575 people reached. The community radio campaign reached 250,000 people, while the TV cable network campaign reached double its target with 54,000 populations. The loudspeaker campaign also exceeded its target, reaching 804,024 people. However, the SMS campaign's beneficiary reach was lower than projected, with 6,635 beneficiaries. The campaigns were successful in reaching and informing the intended beneficiaries and extending their reach beyond the project implementation sites, despite the challenges posed by the pandemic. Extreme weather conditions, road transport issues, power cuts, and weak phone signals were reported as key implementation challenges. Some strategies, such as altering schedules, utilizing alternative transportation, and engaging community volunteers were utilized.

Conclusions

The strategies developed for multi-sectoral awareness-raising campaigns, and challenge-mitigating actions can be adopted in order to raise awareness among different communities facing similar emergency situations in the future. Based on the success of the campaigns in Bangladesh in mitigating the risks of COVID-19 infections and child drowning, these strategies can be adapted and used by other communities to help reduce the risks of child drowning and increase awareness. The tested campaigns can be an effective approach to addressing emergency situations worldwide.



EMERGENCY RESPONSE

Climate, Flooding & Heat: Lab to Policy

Adrian Mayhew

Surf Life Saving GB, Exeter, United Kingdom

Climate change is a growing concern. Impact is now globally reaching a total of a trillion dollars of cost and will increase more. With flood disaster one of those impacts that is increasing what is research doing to help. This small presentation looks at "Lab to Policy", how research is helping countries with flood rescue teams to operate safely in both warm and cold climates. Joint work with Portsmouth University Extreme Environmental Laboratory and Surf Life Saving GB have looked at ways to both research and create outcomes for flood rescue teams around the world.

The findings should significant concerns on those rescue responders along with the need to how to mitigate those areas identified as increased risk on the body.

The initial research in 2019 on the thermal demands of flood rescue responders showed a need to inform stakeholders and emergency managers on how to ensure those rescuers are looked after when operating in flood disaster areas. This world first paper on flood rescue response also gave way for new national policy in the UK to ensure the safety of those people in 2019. In 2022 the same evidence was provided for Surf Life Saving Tasmania, the first Surf Life Saving Australian team to be fully trained in flood response. Their CEO identified the findings and produced those outcomes for their state flood deployment policy to ensure that their lifesavers would be safe.

This presentation introduces the findings of the research, the outcomes and the influence on policy change for both UK and Australia

Drowning and climate change, the results from a project by the International Drowning Researcher's Alliance

Justin Sempsrott, Joost Bierens, Jonathon Webber, Ana Queiroga, David Szpilman, Roberto Barcala-Furelos, Mike Tipton

IDRA, Kuna, USA

The relationships between climate changes, aquatic environment and drowning are not clear. Experts believe that drowning risks increase in traditional and new water recreation areas, due to migration and during floods and drought.

Description

Key information regarding drowning and climate change was collected during an IDRA conference in Waterford, Ireland on June 2nd, 2022 and supplemented with background research. A draft opinion paper was distributed for comments to conference participants, IDRA members, and climate change experts. The "drowning timeline"¹ was used to structure the information.

Lessons learned

There are many examples where climate change has already resulted in the timing, locations, circumstances, and populations at risk for drowning. These include: more severe and extreme weather conditions and aquatic conditions; greater numbers of people at risk; disproportionate threats in communities living below predicted high tide levels of seas and oceans; relocation of people to new environments where they are unfamiliar with the dangers of the water; and complex interactions that cause unpredicted drowning.

Water rescue organizations should understand the complex and variable impact of climate change at a local level so that problems can be anticipated and appropriately targeted. They should develop strategic programs to reduce carbon emission. More research is needed to improve understanding, preparation, and encourage engagement. The research should: obtain information regarding changing patterns in people-at-risk, locations, and water conditions; evaluate prevention measures, rescue interventions and rescuer safety related to floods; developing triage methods for groups in danger of drowning.

Conclusion

IDRA recognizes that climate change increases fatal and non-fatal drowning worldwide and encourages and supports research in climate-change related areas.

Among many other stakeholders, aquatic rescue organisations are a specific target audience that need to become prepared and sustainable.

A study to assess the public knowledge on climate change which linked to drowning in Malaysia.

Cheow Mei Geh

Life Saving Society Malaysia, Penang, Georgetown, Malaysia

According to World Health Organization (WHO) in 2021, drowning ranked third worldwide in unintentional injury death (7%). Although drowning are listed in World Health Organization (WHO) reports, however the estimation excluded important details on factors drowning occur (Franklin et al., 2020).

Reports from Water Activity Safety Council (WASC) in Malaysia have shown that about 700 people drown annually, in which children and teenagers have the highest recorded cases (Farizan et al., 2021). Based on the report by Department of Statistics Malaysia in 2019, accidental drowning and submersion ranked top three out of the five principal causes of death for population aged between 0 to 14 years. Although there have been articles written on newspaper regarding drowning, however the drowning accidents and cause of drowning in Malaysia are rarely reported and documented (Mohammed Isa et al., 2021).

Thus, the cause of drowning whether due to flood or other factors are not well documented for both worldwide and Malaysia (Franklin et al., 2020). Therefore, the assessment on Malaysian citizen in term of requirements to keep themselves and other people safe during flood and/or near water is crucial to prevent drowning and reduce drowning cases. This study will able to provide assessment on the knowledge and awareness of Malaysian citizen on climate change which linked to drowning cases in Malaysia.

Questionnaire will be prepared where questions related to climate change, drowning cases related to climate change, action to be taken to prevent drowning and how to assist a drowning victim will be included. The prepared questionnaire will be shared out through social media to obtain participants to answer. Data collection will be performed through cross-sectional survey from March 2023 to April 2023. Respondents will be obtained through convenient sampling (Mohammed Isa et al., 2021).

Development of a community based search and rescue service in a low-resource setting: a case study from Zanzibar

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Background

Zanzibar is a semi-autonomous archipelago with a population of approximately 1.3 million people, 25% live below the poverty line (1). Fishing is a primary source of employment, and transportation on the water is part of daily activities for commerce, communication and maintaining family networks. Fishing boats are predominantly traditional sailing dhows, and ferries are often overloaded, poorly maintained and lacking safety equipment. Two high-profile passenger ferry disasters in Zanzibar between 2011 and 2012 resulted in over 1,500 deaths. The vessels were reportedly overloaded, and the initial emergency response was almost entirely conducted by local artisanal fishers.

Recent research suggests there are over 2,700 drowning deaths per year in Tanzania (2). Hospital data from Pemba Island in Zanzibar showed that 20.8% of all hospital deaths in young people aged 15–24 years were due to drowning (3). The aim of this project was to understand whether a community based first response mechanism for search and rescue is feasible in a low-resource setting.

Methods

Since 2015 the Panje Project, a Zanzibar NGO, has coordinated the development of drowning prevention committees across the islands of Unguja and Pemba. Recognising the lack of government resources to respond to maritime emergency situations encountered by the fishing communities, two of these committees have since developed Search and Rescue capacity, with initial training provided by the by Tanzania Sea Rescue based in Dar es Salaam with technical support from the RNLI.

A review of these community-based response models was conducted in 2022. Qualitative methods, including focus group discussions with members of the drowning prevention committees, and key informant interviews with key stakeholders were used to explore opportunities and challenges to implementation.

Results

Challenges have included lack of rescue equipment, on-going maintenance challenges, and difficulty in recruiting and maintaining volunteers. Despite these challenges many successful rescues have been completed, and the community-based model has been sustained since the last training provided in 2019. There are many opportunities to learn from this community-based maritime emergency response model and a need to further explore how it could be sustainably replicated in low resource settings and communities facing similar challenges.

A call for joint action to prevent drowning in emergencies and disasters: strengthening collaboration between disaster risk management, drowning prevention, and climate and hydrometeorological communities

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Background

Drowning is strongly linked to the human health effects of extreme weather, a changing climate and other sources of risk (1). Drowning is a leading cause of death in communities and higher risk occupational groups, such as fishers, affected by floods (2), storm surge, tsunami and storms, yet drowning in such events is not routinely counted in most estimates of drowning mortality and morbidity (3). There are scant references on drowning risk or water safety measures in international and Australian guidelines, awareness materials and other resources on emergency preparedness, emergency risk assessment, community readiness and flood risk management (4-8).

Description

Among the six interventions to prevent drowning identified by WHO is to 'build resilience and manage flood risks and other hazards locally and nationally' (9). The Sendai Framework for Disaster Risk Reduction 2015-2030 and the accompanying Sendai Framework Monitoring system make no specific provisions for Member State action or reporting on drowning against its 7 targets and 38 indicators (10, 11). Similarly, the drowning prevention community needs to better align with efforts to reduce risks and impacts of events in line with local and national disaster risk management (DRM) agenda, as well as with early warning systems (in addition to the reactive approach to rescue in responding to an event).

Lessons learned

This presentation will explore opportunities for better, strategic linkages between the drowning prevention, DRM and hydrometeorological and climate service communities. Drawing on research into the cross-referencing to drowning prevention and DRM in relevant guidance offered by these communities we argue that increasing the levels of collaboration and coordination is vital to prevent further loss of life and other health impacts in aquatic events. Overlaying a lens of climate change will also be vital as emerging impacts of climate change are seen on drowning risk (12,13).

Conclusions

Given existing risks of extreme events and expected increases associated with climate change, there is a clear need for the drowning prevention, disaster risk management and hydrometeorological and communities to strengthen advocacy and collaboration to reduce the risks and incidence of drowning in aquatic events of all scales including disasters.

A community resilience project to ensure disaster preparedness along Australia's coastline

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Background

Coastal zones are experiencing significant impacts as a result of changing climates. In Australia, many surf lifesaving services that safeguard the beachgoing community are conducted out of Surf Life Saving Clubs (SLSCs). Most SLSCs in Australia provide high amenity and support recreational use and are located at the forefront of the coastal zone.

Description

A risk analysis across all SLSCs is being conducted to develop a robust understanding of natural hazards and the risks, consequences and opportunities posed to SLS operational capacity and functioning. The project leverages of existing datasets, including historic coastline change, coastal inundation, sea level rise, bushfire, heatwave/ extreme temperatures, storms, cyclones and floods. The project will provide information that will assist SLS entities in understanding the risk and vulnerability to impacts of natural hazards, changing environmental impacts and how this may impact on service delivery and response capacity.

Lessons learned

Changing hazard and risk profiles impacting patrolled beaches and coastlines will be identified, with potential impacts, and relevant mitigation (prevention), preparedness, response and recovery strategies that will support clubs and states to manage the impacts and risks of likely natural hazards. Preliminary data for establishing identification of changing coastal environments profiles and real-time coastal monitoring to reduce the impact of natural hazards on Australian communities will be presented. Outcomes will expose coastal risks to enable greater community resilience and preparedness for service delivery of emergency response under multiple predicted scenarios.

Conclusions

Project outcomes will underpin our understanding of future coastal impact scenarios for both everyday and emergency response during natural disasters and ensure alignment with the National Disaster Risk Reduction Framework approach to risk management and follow the PPRR disaster resilience approach. This project will allow SLS to plan future response capacity to coastal disasters, geographic rescue asset re-enforcement commensurate with coastal change risk and impact on facilities, particularly those identified as community evacuation centres.

Examining the risk relationship between drowning and heatwave

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Drowning is an injury mechanism linked to environmental conditions, including increases in extreme weather due to climate change (1). Aquatic visitation and thus exposure to drowning risk is linked to season, ambient temperature, and humidity, with the highest number of drowning deaths occurring during the summer months (2-3). Although the impact of heatwaves has been explored for health system utilisation and all-cause mortality (4-5), the link between heatwaves and drowning has not been explored in previous research.

Methods

Cause of death data from the Australian Bureau of Statistics and data on heatwaves (defined using the Excess Heat Factor) from the Bureau of Meteorology were matched at the Statistical Area (SA2) to identify heatwave days and non-heatwave days in the Australian state of Queensland from 2010-2019. Drowning deaths were identified using international classification of diseases (ICD)-10 codes. An incidence rate ratio (IRR) with 95% confidence interval (CI) was used to calculate drowning risk for heatwave vs non-heatwave days by type of drowning, sex, age group and by heatwave severity.

Results

Overall drowning was 1.17 times more likely to occur on a heatwave day compared to a non-heatwave day (IRR=1.17 [95%CI: 0.85-1.61]). Drowning risk was greater on heatwave days than non-heatwave days for both sexes, although greater for males (IRR=1.22 for males compared to IRR= 1.05 for females). The drowning rate was higher on a heatwave day than a non-heatwave day for all age groups, with the highest IRR being recorded among 65+ year olds (IRR=1.36 [95% CI: 0.83, 2.24]) followed by 0-19 year olds (IRR=1.24 [95% CI: 0.77-1.99]). Rates of drowning was greater on a heatwave day for unintentional drowning (IRR=1.28) and lower for deaths due to intentional drowning (IRR=0.98) and water transport (IRR=0.73). Rates were highest during severe heatwaves (IRR=1.26) but lower during extreme heatwaves (1.09).

Conclusions

The frequency, duration and intensity of heatwaves are expected to increase. Enabling everyone to safely enjoy aquatic venues and locations to cool down during heatwaves is imperative. This has implications for enhancing heatwave-related aquatic risk communication and planning requires well-timed and tailored messaging and resourcing of lifeguards at supervised aquatic locations.

Assessing the drowning risks in the flood affected areas in east-north part of Bangladesh

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Background

Bangladesh, located in a low-lying delta region, has experienced a variety of natural disasters over the years, including floods, tropical cyclones, storms, riverbank erosion, drought, and earthquakes (1). Flood events occurred mostly among the calamities across the riverine lowlands and coastal regions. Floods have a long-lasting effect on the population's shelter, communication, socioeconomic situation, and health, including drowning when an area is submerged (2, 3). Studies showed that in recent years the prevalence of non-infectious diseases has increased more compared to the communicable diseases whereas flood-related events are found more prevalent to the drowning-associated (4). In total, 19,500 drowning deaths are counted each year in Bangladesh for all ages. Data on drowning and its effects related to the flood disaster in Bangladesh are very limited (5). This research has explored the underlying causes of drowning events in the flood-affected areas of Bangladesh.

Methods

A qualitative study was employed to capture data. In total, 28 In-depth interviews with inhabitants of the flood affected area, 4 Focus Group Discussions with health care providers, and 9 Expert Interviews with local and national level managers were conducted. Transcribed data were reviewed thoroughly to generate categories and codes that incorporated both deductive (pre-determined) and inductive (developed) thematic analysis.

Results

Participants identified that drowning incidents were frequent during each flood event since their neighborhood was frequently inundated by heavy rains, floated by strong streams, and even overflowed where they lived. Vulnerable groups (female, children, and the elderly) in the community were exposed to drowning due to searching for safe refuge, evacuation, moving for medical treatment, and falling in a water stream on a broken road. According to preliminary findings, even drowned people were swept away in the stream water. The vehicle was insufficient for maintaining safe movement in flooded areas. The health system in flood-affected areas totally collapsed, especially for pregnant women.

Conclusions

Drowning and its consequences are one of the sectors flood is affecting. Information from this study could support development of a multi-sectoral drowning prevention plan that is aligned with the existing disaster preparedness efforts and ensures post-disaster healthcare services.

The Evolution of Flood Rescue Training in Thailand

Gridsana Pimpanon

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Background

Flooding is a common problem in many countries, including Thailand, and is increasing in frequency and intensity, causing damage to people and property. Turbulent currents during floods can be especially dangerous, destroying homes and endangering people who are unable to evacuate in time. Early rescuers, including Forest Service officers, were instinctively helpful, but lacked the proper training and equipment to assess the dangers and provide adequate support.

Description

A small group of officers recognized the importance of saving lives during floods and travelled to the United States to study Swiftwater rescue. Upon returning to Thailand, they shared their knowledge, and the Division of Underwater Medicine and Aviation, Naval Medical Department, in cooperation with the National Institute of Emergency Medicine, supported the budget for training. This marked the beginning of Flood rescue in Thailand. Over time, many training courses have been organized for those interested in rescue operations. However, the lack of available and affordable equipment limited the skills that could be taught. It wasn't until Rescue 3 began organizing Swiftwater rescue courses in Thailand in 2016 that many Thai people began to develop their skills and become teachers themselves. This led to the rapid development of life-saving work during floods, as access to standardized equipment became easier, though still at a high cost, creating challenges for some rescue groups with limited capital.

Lessons learned

The development of Flood rescue training courses in Thailand has led to a reduction in the loss of life during flash floods. Volunteer rescue teams, often motivated by the cultural value of helping others, can quickly and efficiently evacuate people along waterways. However, there are still casualties due to the strong currents during floods.

Conclusions

The evolution of flood rescue training in Thailand highlights the importance of proper training and standardized equipment to save lives during floods. The progress made in training and equipment accessibility has led to a reduction in loss of life during floods, but challenges remain. Future implications include the continued need for access to affordable and standardized equipment, ongoing training, and collaboration among rescue groups to enhance overall disaster response efforts.

Floodwater response, evacuation and rescue: An Australian perspective

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Background

As climates change and environments are increasingly modified, the unpredictability of severe storms with unexpected and intense rain events are likely to influence flood regimes. Over 2021/22 repeated flood events devastated communities on the eastern border of Australia, causing mass displacement, property damage, and the loss of 43 lives. Surf Life Saving was a vital part of the national crisis response.

Description

While primarily seen as a coastal safety service, the Surf Life Saving movement has extended the service delivery, now encompassing inland and floodwater response and rescue capabilities. With almost 600 members trained in flood response, this represents a significant emergency response capacity, with members rescue-ready to assist other emergency service personnel when required. Surf Life Saving also has the capacity to activate necessary equipment and provide supportive resources in emergencies, having water and air response equipment available, distributed, and accessible across the country.

Lessons learned

During 2021/22, a total of 685 Surf Life Saving members worked to support the flood emergency effort. Over this period, Surf Life Saving personnel volunteered over 17,000 hours, and responded to 846 callouts. There were also 198 IRB activations and 35 UAVs used in the response effort. In total, Surf Life Saving personnel aided in the rescue and evacuation of nearly 1,600 people. SLST lead our floodwater response and rescue capacity and will present specific lessons learned regarding best practice, systems and techniques that were implemented during this time.

Conclusions

As extreme weather events, including floods, are predicted to increase in frequency and intensity in the coming years, a strong, integrated national emergency response capacity is vital to ensure public safety and minimise impacts on individuals and communities. Surf Life Saving is an integral part of this national emergency response infrastructure, with our collaborative attitude and skilled workforce, confirming the benefits to the greater community since our expansion into this emergency response domain.

The Flooding in Germany Summer 2021 – a retrospective evaluation

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Deutsche Lebens-Rettungs-Gesellschaft (DLRG), Bad Nenndorf, Germany

In Summer 2021, heavy rain led to an unimaginable flooding in several parts of Germany. Being used to rivers raising by several meters over some days, this particular flood raised by several meters in less than two hours only due to heavy rain and geographical reasons. The overall destruction and structural damage was never experienced like this.

This presentation depicts the development during the situation, where special swift water rescue units and disaster units of DLRG and other organizations worked together to rescue as many lives as possible in the first night and beyond. Due to the severe damage done by the flooding, the longer part was to remove debris and re-establish infrastructure. Beside volunteer and professional members of different organizations, many private people helped in the days and weeks after the flood and all over Germany, funds and donations were raised to support the people affected.

After this introduction, this presentation will give a short view of the existing structures and possibilities for swift water rescue and disaster prevention within the DLRG – ranging from setup and training to equipment and legal requirements. This situation clearly showed strengths but also risks.

In addition, greater logistics were required to support the teams on duty with new equipment, as many things were damaged or getting useless during operation under heavy-duty conditions. The lessons learned led to a new approach in how to prepare disaster prevention units on a national level and how to address these things with the population in the endangered environments. DLRG has taken steps towards being prepared for this new kind of disaster. Finally, a short introduction to a new program for transnational disaster prevention, the EU module, established by the European Union, will be presented.

Can planning curtail people's willingness to drive into urban flash flooding?

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Background

Research has shown that behavioural action is more likely when individuals make plans to enact a target behaviour. Planning involves specifying the situational context in which one will enact to ensure behavioural performance is achieved. For example, the context ("If I approach a section of road that is flooded") provides the cue that is proposed to trigger the behaviour ("Then I will pull off to the side and turn on my hazard lights"). Research supports the use of plans in encouraging desired behaviour. However, current Australian campaigns promote the use of alternate plans (e.g., "If its flooded forget it" – Make a plan) and do not provide drivers with the tools to create specific, empirically-based plans. This suggests that it might be useful to teach people how to create 'if-then' plans, also known as implementation intentions. This study investigated the potential effects of a brief 'If-then' planning approach on drivers' willingness to drive into urban floodwater in Newcastle, Australia.

Methods

Participants (N = 217, 57.1% women) were Australian adults with a driver's license (open or provisional) living in the Newcastle LGA and surrounding areas. A quasi-experimental design was used to test the effects of a planning intervention on drivers' willingness to drive into floodwater in three scenarios based on prior research. Results: Paired samples t-tests revealed participants' willingness to drive into floodwater did not change significantly after forming a plan for what to do if they approach a flooded section of road in their vehicle (Scenario 1), $t(216) = 1.86$, $p = .064$. However, participants' willingness to stay put and not drive if alerted to potential urban flash flooding (Scenario 2) was significantly higher after the planning intervention compared to before, $t(216) = -3.37$, $p < .001$. Similarly, participants' willingness to drive into floodwater if they feel pressured by other cars on the road (Scenario 3) was significantly lower after the planning intervention compared to before, $t(216) = -3.37$, $p < .001$.

Conclusion

These findings can inform intervention targets and development of prevention strategies for effective behaviour change, saving lives otherwise lost to urban flash floods.

Beliefs and attitudes of Australian learner drivers toward driving and avoid driving into floodwater

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Background

Driving into floodwater is a significant cause of flood-related injury and mortality, yet opportunities exist to embed safe driving messages regarding floodwaters to novice drivers in graduated driver licensing schemes. To inform future educational efforts, we investigated the beliefs and attitudes of Australian learner drivers about driving into floodwater and avoiding driving into floodwater.

Methods

The study adopted a cross-sectional correlational design with measures drawn from the theory of planned behaviour and administered within an online survey. Phase 1 (N = 44 learner drivers) aimed to identify the core beliefs associated with driving into floodwater. Phase 2 (N = 250 learner drivers) tested these beliefs on willingness to drive into floodwater as well as the social psychological factors that impact learner drivers' willingness to drive into floodwater and avoid driving into floodwater using a pre-tested scenario. Analyses comprised descriptive statistics, linear regression, and structural equation models.

Results

Ten key beliefs were identified as predicting willingness to drive into floodwater. These included perceived advantages and disadvantages, perceived social approval from important others, and perceived facilitators and barriers regarding driving into floodwater in the presented scenario. Structural equation models of social cognition constructs from the theory of planned behaviour revealed attitude, subjective norm, and perceived behavioural control predicted both willingness to drive into floodwater and avoid driving into floodwater. Past experience as a passenger also predicted these social cognition constructs, although this differed across models.

Conclusion

The current study provides insight into the key beliefs and attitudes of learner drivers regarding driving behaviour during flood events. The study further identified the specific beliefs associated with willingness to drive into floodwater and willingness to avoid driving into floodwater. Also, having experienced driving into floodwater as a passenger and perceived social pressure to drive into floodwater were most strongly positively associated with learner drivers' willingness to drive into floodwater and negatively associated with avoiding driving into floodwater. This highlights the importance of focusing on the modelling behaviour and social influences of significant others in intervention programs seeking to promote safe driving behaviour among novice drivers in times of flood.

The position of lifeguards in the updated 2023 drowning resuscitation guidelines

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Background

It is increasingly recognized by the global resuscitation community that drowned persons in cardiac arrest are distinct from most other primary cardiac arrest persons due to a primarily hypoxic process.

Methods

To further improve the evidence of the best resuscitation methods of drowned persons, and amongst other reasons to inform aquatic rescue organisations, the International Liaison Commission On Resuscitation (ILCOR) has initiated in 2021 a systematic review process on the existing evidence from drowning resuscitation research. Seven relevant issues related to drowning resuscitation have been identified: in-water ventilation, on-board resuscitation, the order of resuscitation (ventilation first, compression first, compression only), the use of the Automated External Defibrillator (AED), oxygen and ventilation equipment, and the role of Public Access Defibrillator (PAD) programs for drowning. Several Medical Committee members of the International Lifesaving Federation (ILS) were invited to participate in the systematic review.

Results

Only three publications of sufficient scientific rigor were identified, as well as the gaps in knowledge. At the same time, it has been recognised that a significant portion of drowned persons is resuscitated by lay-persons with a duty to respond, such as lifeguards. Important issues regarding the required training for drowning resuscitation techniques have been identified.

Conclusion

The 2023 drowning resuscitation guidelines, based on the results of the systematic review, the insights shared by the expert group and the suggestions to reduce the gaps in knowledge, will be available at the time of the World Congress on Drowning Prevention 2023.

Manual versus mechanical chest compressions on a lifeboat in different wave heights

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Background

Provision of adequate chest compressions during the resuscitation of a drowning victim onboard a lifeboat can be challenging. During bad weather with large waves, boat movements might negatively influence chest compression performance. In such circumstances a mechanical chest compression device (MCD) could be considered, but to our knowledge this has not been investigated in bad weather circumstances.

Methods

We compared manual chest compressions on a resuscitation-mannequin performed by lifeboat-crewmembers of the Royal Netherlands Sea Rescue Institution (KNRM), with mechanical chest compressions by a MCD performed simultaneously on another resuscitation-mannequin on the same lifeboat.(1) During two different weather conditions, manual and mechanical chest compressions were performed inside a 15-meter lifeboat at sea. During a subsequent third set of conditions mechanical compressions were evaluated, but manual chest compressions were precluded by COVID-19 regulations. During each weather circumstance, we planned to perform measurements during 2 periods consisting of 5 epochs (with 6 minutes of continuous measurements per epoch).

Results

Six KNRM lifeboat-crewmembers (mean age 35 years) performed manual chest compressions at sea with wave heights of approximately 100-150 cm in the first condition and wave heights of approximately 200 cm in the second condition. Manual chest compressions were too shallow, too fast, and crewmembers leaned too much on the chest. Crewmembers could only perform CPR for a limited time-period due to the sea-conditions which caused seasickness. Chest compressions by the MCD were according to resuscitation-guidelines. In the third weather condition with wave heights of approximately 300-400 cm the MCD again operated according to guidelines except for three epochs because of displacement of the device. We made an ad hoc decision to perform additional measurements during two extra 6-minute epochs. In both extra epochs there was no displacement of the MCD and mechanical compressions were within the prespecified targets.

Conclusions

The KNRM-crewmembers were able to perform chest compressions for a limited timespan during bad-weather conditions in our study. The MCD provided better-quality chest compressions for a longer timespan during these conditions. To determine effects on outcome, more research about MCD-use in real-life circumstances and on more types of lifeboats is needed.

An exploration of first aid provided to beachgoers on Australian beaches

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Introduction

Surf lifesaving personnel are volunteer first responders who safeguard the beachgoing community at peak periods along the coast of Australia. They respond to all incidents when on patrol, performing almost 10,000 rescues, over 1.9 million preventative actions, and providing over 40,000 first aid treatments last year [1]. Research showed that these actions prevent 1,363 coastal deaths and 818 critical injuries each year, at an estimated value of \$91.6 billion to society in present value terms, or an average of \$6.1 billion each year [2]. For each fatal drowning recorded within Australia, it is estimated a further three are hospitalised due to non-fatal drowning [3]. This means in addition to the 125 coastal drowning deaths recorded in 2022/23, there were an estimated 375 non-fatal coastal drowning-related hospitalisations. Understanding what leads to patient hospitalisations around the coast will guide training and resource allocation to surf lifesavers, who are the main first responders to coastal incidents.

Methods

A retrospective analysis from Surf Life Saving Australia's Incident Report Database reviewed 14,638 ambulance calls recorded between January 2004 – June 2020 to determine the types of injuries requiring an ambulance occurring on Australian beaches.

Results

The data showed that around half the incidents occurred between November and January, however around a third occurred in the cooler March to October months. Most incidents occurred between 10am and 4pm in the afternoon, although there was a spike observed around midnight. Males in the 10–24-year-old age range comprise most patients. Orthopaedic (22%) and suspected spinal injuries (20%) resulted in most ambulance calls to beaches, followed by respiratory (12%) and head injuries (12%). Around a third of ambulance calls were responded to within 10 minutes, with just over half responded to within 20 minutes.

Conclusions

These results demonstrate that surf lifesaving is a 12-month commitment and that injuries occur outside regular patrol hours. Most ambulance calls being traumatic injury-based highlight a need for appropriate trauma training for Australian surf lifesavers.

Positioning the conscious drowning victim

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Background

This work aims to create a policy for the positioning of conscious drowning victims.

Description

In Portugal, the government decided to adopt the classification and treatment of drowning victims created by Dr. David Szpilman[i] [ii], via the Lifeguard Technical Manual. Regarding the positioning of the conscious drowning victim, the manual is silent and therefore it is necessary to create an action policy for these situations.

Lessons learned

Analysing the classification[iii], grade 2 is seen as pulmonary edema, grade 3 is acute pulmonary edema without hypotension and shock, and grade 4 is acute pulmonary edema with hypotension or shock. The indication for cases in which the victim is breathing, unconscious and without signs of trauma is the lateral recovery position, making it necessary to clarify which position to take for victims of these degrees of drowning who are conscious, generally in grade 2 or 3 drowning.

Thus, after consulting the Portuguese EMS (INEM) medical emergency manual[iv], it is concluded that the best position for conscious victims of acute pulmonary edema is "Sitting the patient with the legs dangling, in a comfortable position, minimizing efforts".

Conclusions

It is concluded that if victims of grade 2 or 3 are conscious, the best position will be to sit them down, with their legs dangling, in a comfortable position, minimizing efforts.

A new method for identification of drowning-related out-of-hospital cardiac arrest (Danish Drowning Formula): A retrospective Danish cohort study with 30-day follow-up

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Background

Despite having observed a slight reduction in the incidence of drowning globally, drowning continues to be a preventable major cause of mortality in otherwise healthy persons. Proper educative and targeted preventive measures can avoid a large proportion of drowning events. However, evidence on drowning-related out-of-hospital cardiac arrest (OHCA) is lacking, and underreporting contributes significantly to a misunderstanding of the underlying process. A potential for improvement exists, which requires standardised identification of drowning accidents to ensure accurate, reliable, and sufficient data. The aim was to assess the 30-day survival of out-of-hospital cardiac arrest (OHCA) in relation to drowning accidents in Denmark identified by a text-search algorithm (Danish Drowning Formula) in the Danish Cardiac Arrest Registry (DCAR).

Methods

This nationwide, cohort, registry-based study with 30-day follow-up used the Danish Drowning Formula to identify drowning-related OHCA with a resuscitation attempt from the DCAR from January 1st, 2016, through December 31st, 2021. The primary outcome was 30-day survival from OHCA. Data were analysed using multiple logistic regression.

Results

In total, 30,215 OHCA were registered in the DCAR. The Danish Drowning Formula identified 707 potential drowning-related OHCA. Of these, 374 were non-drowning, and 16 were excluded because of irreversible death. We identified 317 (1.0%) patients with drowning-related OHCA and 29,882 patients with OHCA following other aetiologies. The 30-day survival for patients with drowning-related OHCA and other aetiologies was 33.3% vs 13.9% ($p < 0.001$). Adjusted OR for 30-day survival for drowning-related OHCA versus other aetiologies of OHCA was 2.29 [1.65-3.18], $p < 0.001$.

Conclusions

We found higher 30-day survival among drowning-related OHCA compared to other causes. This study proposed a text-search algorithm (Danish Drowning Formula) that could explore unstructured text fields to identify drowning accidents. This method may present a low-resource solution to the future identification of fatal and non-fatal drowning accidents.

Enhancing Emergency Medical Preparedness for Flood-Related Disasters in Thailand: Lessons Learned from the Flood Medical Operations Training (FMOT) Program

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Background

The Flood Medical Operations Training (FMOT) program was developed to improve emergency medical preparedness for flood-related disasters in Thailand. As medical operations are crucial during such emergencies, ensuring the safety and survival of emergency medical teams is essential.

Description

The FMOT program consists of 40 hours of theoretical and practical training, including initial and late-phase emergency responses to flood and water-related disasters. Drawing from lessons learned from past flood responses and predicting potential flood scenarios, the program covers risk assessment for emergency medical teams, medical integration with Swiftwater or flood technical rescue interfaces, survival practices both in Swiftwater and on land, practical wilderness medicine, and prolonged patient care during the disruption of normal medical continuity in disasters.

Lessons learned

The FMOT program has been evaluated as an effective training program that covers essential skills and provides an introduction to the knowledge necessary for dealing with flood-related scenarios. Key lessons learned include the importance of risk assessment for emergency medical teams, the need for medical integration with technical rescue interfaces, and the significance of survival practices in Swiftwater and on land.

Conclusions

The FMOT program represents a critical step towards enhancing emergency medical preparedness for flood-related disasters in Thailand. By equipping emergency medical teams with the necessary knowledge and skills, the program aims to improve response times, reduce fatalities and injuries, and enhance overall disaster response efforts. Future implications include the need for continued funding and expansion of the program to reach a broader audience of emergency responders and medical professionals.

Snorkelling and breath-hold diving fatalities in Australia – a review of 297 deaths over 20 years.

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Background

Snorkelling is a reasonably popular activity in Australia, particularly amongst tourists to the Great Barrier Reef. Participants include 'surface snorkellers', who are generally less experienced and engaged in sightseeing, as well as 'breath-hold divers' ('freedivers'), who are usually more experienced and hunting or harvesting seafood, playing competitive underwater sport, or practicing breath-hold in the ocean or pools. Given the nature of the environment and the variation in health, experience and activities, deaths occur. This study investigates snorkelling and breath-hold diving fatalities in Australia from 2000 to 2019 to identify underlying causes and appropriate countermeasures.

Methods

The Australasian Diving Safety Foundation database and the National Coronial Information System were searched to identify snorkelling/breath-hold diving deaths from 2000 to 2019. Data extracted from police and witness reports, medical histories and autopsies were recorded and analysed.

Results

There were 297 fatalities, including 99 breath-hold divers. The median age was 50 years, 88% were males and two-thirds were overweight or obese. Half of the victims were overseas tourists, mostly in Queensland. Almost half had health conditions, including ischaemic heart disease (IHD) and left ventricular hypertrophy (LVH) which predisposed them to an arrhythmia-related snorkelling incident. Snorkelling alone and/or in adverse conditions, inexperience and supervision shortcomings were implicated in many incidents. At least 43% of deaths were from primary drowning, one quarter of these following breath-holding blackout (apnoeic hypoxia). At least one-third of victims were likely disabled by cardiac arrhythmias, sometimes leading to secondary drowning.

Conclusions

Pre-existing health conditions, particularly cardiac disease, predispose to many snorkelling deaths in older participants and may be somewhat mitigated by targeted health screening. Drownings from apnoeic hypoxia persist in younger breath-hold divers who should avoid pushing their limits without close monitoring by a ready and capable rescuer.

Public Rescue Tube Deployment in Hawaii: Protective Association with Rescuer Drownings

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Objective

To describe the association between public rescue tube (PRT) floatation devices and fatal rescuer drownings in Kauai, Hawaii.

Methods

We reviewed Hawaii death certificate data from 1993-2017, sometimes supplemented with autopsy and emergency medical service reports, to identify fatal rescuer drownings. Incidents were analyzed in relation to the initial 2008 deployment of PRT.

Result

Over the 25-year period, only 13% (228) of the 1,750 identified drownings occurred on Kauai, but nearly half (46%, or 13) of the 28 rescuer deaths occurred there. However, only 1 of the 13 rescuer deaths on Kauai occurred after the 2008 deployment of PRT. The statewide proportion of rescuer deaths on Kauai decreased significantly from 60% (12 of 20) from 1993 to 2007 to 13% (1 of 8) from 2008 to 2017. There were no apparent changes in the proportions of rescuer drownings in the other 3 counties of the state, where PRT were essentially nonexistent.

Conclusion

Despite valid concerns, we found no fatal rescuer drownings related to PRT use after their 2008 introduction in the County of Kauai. Instead, we observed a reduction in the number of rescuer drownings, and in their proportion of total drownings in association with the deployment of PRT. The findings of this study have the potential to directly impact ocean and other open water environment-related fatal drowning prevention policy and practice.

Standardising Public Rescue Equipment for Bystanders in New Zealand

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Background

Public rescue equipment (PRE) is installed in aquatic environments enabling bystanders to assist people in the water. However, rescuing others can be dangerous, especially for untrained bystanders and emergency service personnel[1][2][3][4]. In the past ten years (2013-2022) 37 people in New Zealand have drowned rescuing others[5] (WSNZ, 2023). This collaborative project is funded by NZSAR, led by Surf Life Saving NZ with research expertise from Drowning Prevention Auckland.

Introduction of PRE around New Zealand occurs on an ad-hoc basis, often resulting from a drowning, but with little evidence of best type of PRE and suitability for bystander rescue. The project will produce a national guide to help coastal managers make better-informed decisions about their PRE requirements.

Description

The project team obtained formal support, funding, and concrete methods of engagement within the aquatic and emergency management sectors. International PRE[6] and evaluations have been sourced and tested for ease and accuracy of use. Bystanders were tested on their accuracy to throw various PRE. Once in-water use of PRE was supported by the sector, bystander rescue using various PRE has been tested.

Lessons learned

Throwing PRE by bystanders to victims in the water more than 10 m away is unlikely to reach them. There is little difference in preference between various PRE when used in-water by bystanders.

Conclusion

Research investigating types and use of PRE will be presented. Knowledge gained has determined the best suited PRE type and method for the various New Zealand aquatic environments. National PRE guidelines have been drafted.

PTSD following a nonfatal drowning in a professional rescuer

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Context

Psychiatric sequelae, including Post-Traumatic Stress Disorder (PTSD), have been described for survivors of traumatic, life-threatening events, including out of hospital cardiac of various inciting etiologies. Nonfatal drowning outcomes are typically measured based on functional and cognitive abilities with scales such as the cerebral performance category. However, the available literature regarding drowning survivors has largely overlooked the psychiatric sequelae that may occur in this population.

Case Presentation

An American, middle-aged, white male career firefighter with extensive aquatics rescue training drowned during a routine ice diving training exercise. He was revived on scene and a subsequent medical evaluation determined that he suffered no neurologic morbidity and he was discharged home from the emergency department the same day. He did however experience a variety of psychiatric symptoms beginning on the evening of his drowning and culminating in a presumptive diagnosis of PTSD years after this event.

Discussion

There is a gap in the current drowning literature regarding the impact of psychiatric sequelae in nonfatal drowning survivors. Medical post-drowning assessments and intellectual frameworks currently fail to account for this type of morbidity, typically measuring neurological outcome using the cerebral performance category scale. This case¹ adds to the emerging evidence on the psychiatric morbidity associated with survivors of drowning and highlights the need for early mental health intervention and psychiatric follow-up even if medical issues have been resolved.

Conclusion

Researchers, academicians, and practitioners would be wise to include psychiatric symptomatology as well as mental health first aid when addressing sequelae of nonfatal drowning events immediately post-event and subsequently at regular intervals. To this end, further research is needed to identify and characterize the incidence, response and prevalence of psychiatric morbidity in this population. Likewise, medical evaluations and long-term care should include a psychiatric component after nonfatal drowning.

Drowning in the United States: Patient and Scene Characteristics using the Eight Novel CARES Drowning Variables and the Importance of Bystander CPR

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Introduction

Drowning results in more than 360,000 deaths annually, making it the 3rd leading cause of unintentional injury death worldwide. Prior studies examining drowning internationally have reviewed factors surrounding drowning however in the U.S. limited data exists. This study evaluated the eight novel drowning elements collected in the Cardiac Arrest Registry to Enhance Survival (CARES) during the first 2 years of data collection answering a call to action from the U.N. for national data collection.

Methods

A retrospective analysis of the CARES database identified cases of drowning etiology for the two years 2020 and 2021. Demographics and incident characteristics were collected. Characteristics included items such as body of water, precipitating event, and who extracted patients. Survival to hospital discharge and neurological outcomes were compared between groups based on who initiated CPR using Pearson's Chi-Squared tests.

Results

Among 1,767 drowning cases, 69.7% were male, 47.1% white and 11.9% survived to hospital discharge. Body of water was often natural body (36.2%) or swimming pool (25.9%) and bystanders removed the patient in 42.7% of incidents. Swimming was the most common activity at time of submersion (18.6%) however in 50.2% of cases, activity was unknown or missing. When compared to EMS/First Responder initiating CPR, odds of neurologically favorable survival were significantly higher in the Bystander initiated CPR group (OR=2.85, 95% confidence interval [CI] 2.02-4.01).

Conclusion

In this national cohort of drowning patients in cardiac arrest, the novel CARES drowning elements provide additional detail of epidemiological factors. Bystander CPR was associated with improved neurological outcomes. Future studies utilizing additional years of data collection with the drowning elements can identify modifiable factors and inform injury prevention strategies.

Evaluation of a critical incident management system on mental health in lifeguard organisations: A retrospective study

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Background

Lifeguards may face many life-threatening situations during their careers and may be at increased risk of post-traumatic stress disorder (PTSD) [1-5]. Even though PTSD is not inevitable and post-traumatic growth may occur, the apparent onset and early symptoms provide opportunities for early recognition and prevention [6-7]. If the lifeguard organisation does not have an operational system for critical incident management, recognition of PTSD may be delayed. Although only a minority of rescue workers will develop PTSD or major depression in the years following a critical incident,[8] delayed treatment may result in lifelong psychological consequences for those in need. However, there is minimal evidence concerning mental health and critical incident management systems in lifeguard organisations.

Objectives

To develop, implement and evaluate an operational system for critical incident management in lifeguard organisations.

Methods

This retrospective study included data on occupational injury reports from 2013 to 2022 in TrygFonden Surf Lifesaving Denmark. All active lifeguards were invited to evaluate the system and the individual steps using an online questionnaire with three questions rated on a 5-point Likert scale. The primary outcome was a change in the frequency of psychological injury reports after system implementation in 2020. The secondary outcome was the lifeguards' satisfaction with the system.

Results

After implementation, the average annual number of psychological injury reports increased 6.5- fold from 2 (2013–2019) to 13 (2020–2022), without changes to the number of critical incidents attended by the lifeguards. Sixty-six (33.8%) active lifeguards answered the questionnaire and agreed that follow-up after critical incidents was essential (mean score 4.7/5). Satisfaction with steps 1–2 and 3 of critical incident management among involved lifeguards was high (mean score 4.4/5 and 4.6/5, respectively). The system included an operational workflow diagram and incident report template presented in this study.

Conclusions

The operational system for critical incident management may improve early recognition of symptoms to prevent PTSD. Other lifeguard organisations worldwide may use this system, workflow diagram and incident report template as a screening and decision tool for referral to a mental health professional.

Ethical Issues and the Saving of Life

John Pearn

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All who work, teach and serve in the domain of lifesaving are involved in the highest forms of human endeavour — the preservation of life, the protection of the vulnerable and helpless, and the reduction of injury and distress. The underlying core value which underpins all of life saving — that of service-beyond-self — in turn involves ethical issues consequent upon concepts of duty, the role of legal contract, the integrity of training, courage and altruism. There are seven ethical principles which impinge on the way individuals act when confronted with the need for decision-making in a drowning scenario.

These are autonomy, beneficence, non-maleficence, justice, the context in which individual acts (or their omission) are undertaken, responsibility, and the systems of governance in which an individual has obligations. In contrast to the contractual obligation which may involve a lifeguard to effect a rescue or attempted resuscitation, an individual suddenly confronted with the inescapable impost to act in a drowning scenario has freedom of choice to act, or not. Lifesaving and other first-aid organisations which teach members of the general public the drills and skills of lifesaving, make no policy impost on how an individual should act in the face of sudden emergency; but rather empower the future bystander with the skills to make an informed choice in the context of risk or benefit. This paper discusses the issues of empowerment, moral indifference, moral requirement and acts of supererogation.

These ethical themes have practical consequences in tragedies such as those where a bystander attempts a rescue (particularly of a family member or loved pet who is drowning) and where the rescuer drowns; or in circumstances where a bystander rescuer suffers from long-term guilt because of a failed rescue or failed resuscitation.

Non-fatal Drowning Clarification, Categorization and User Guide: Working Group Recommendations – Launch Time

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Background

Improved and more comprehensive reporting is a priority in understanding the drowning problem and developing effective interventions. Since adoption in 2002 and publication in the Bulletin of the World Health Organization, the definition of drowning has provided clarity for researchers, database administrators, and medical and public health professionals. However, the lack of a uniform understanding and consistent use of the term “non-fatal drowning” results in a lack of precision in data collection hindering research efforts and masking a full understanding of this global public health problem.

A working group was established in 2017 to improve the definition and create a categorization for terminology, reporting, and communication of non-fatal drowning. The working group created a clarification statement, a categorization framework, and a user guide: The Non-fatal Drowning Categorization Framework (NDCF). The draft NDCF was shared online for comment and feedback was solicited through a workshop at WCDDP 2019. In 2022, the working group reviewed the experiences of researchers who used some or all of the NDCF in their work. This feedback on clarity and functionality resulted in revisions that improved the usefulness of the NDCF. It is now ready for broader use by researchers, database administrators, and medical and public health professionals.

Description

This presentation will share the final NDCF and recommendations for its use. The Clarification and Categorization of Non-fatal Drowning is a document that describes the essential items. The User Guide document assists implementation. Teaching tools being generated to complement the written documents.

Lessons Learned: This has been a comprehensive review process with working group participants and drowning prevention partners. The complex issue of reporting on non-fatal drowning has been clarified and a categorization framework has been created. Incorporating feedback from reviewers and framework users was critical to developing a useful NDCF.

Conclusion

There is a new clarification and categorization of non-fatal drowning. This will provide uniform understanding and consistent use of the term “non-fatal drowning” within the drowning prevention community. It is now time to launch this clarification and categorization of non-fatal drowning for widespread use by researchers, database administrators, and medical and public health professionals.

Who are the survivors? Twenty-one years of hospitalisation and emergency department non-fatal drowning data in Victoria, Australia

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Background

Information about fatal drowning incidence in Victoria, Australia has been widely recorded; however, there is little long-term understanding of non-fatal drowning in this state.¹ Estimations indicate for every fatal drowning in Australia, approximately three non-fatal incidents occur. For children aged 0-4 years, this ratio increases to eight non-fatal incidents for every fatality.² Ascertaining risk-factors and groups overrepresented in Victorian non-fatal drowning statistics, will help direct prevention efforts to address the full drowning burden at individual, community, and national levels.

Methods

Data on hospital admissions and emergency department (ED) presentations resulting from non-fatal drowning and immersion incidents were provided by the Victorian Injury Surveillance Unit (data custodians: Victorian Department of Health). The data spanned over 20 financial years, between 2000-01 to 2020-21, and included key factors associated with non-fatal drowning presentations.

Results

Between 2000-01 and 2020-21, 1,831 hospitalisations and 1,772 ED presentations resulted from a non-fatal drowning incident in Victoria, an average combined crude rate of 3.04 cases per 100,000 population. There was an average 10% increase in cases year-on-year. Children aged 0-4 years were consistently the leading cohort hospitalised (27% of all cases) or presenting to EDs (47% of all cases). Key known locations were swimming pools, including outdoor spas, Jacuzzis, and hot tubs. Males were overrepresented, equating to 70% of hospitalisations and 64% of ED presentations. The sex disparity was most prominent among people aged 15 years and above and peaked among 25-44-year-olds, where males were 4.5 times more likely to be hospitalised than females. Drowning in natural waterways resulted in longer hospital stays (eight days or more). Fishing, including agriculture and forestry; swimming, paddling, wading; or watercraft use comprised 65% of hospitalisations.

Conclusions

Identifying the factors associated with non-fatal drowning hospitalisations and ED presentations in Victoria enables preventative actions to be tailored to groups most at-risk. While parents/guardians of young children remain a high priority for non-fatal drowning communication, preventative efforts focusing on males aged 25-44 years would do well to incorporate reminders of non-fatal drowning and the potential lifelong impacts on health, family and friends from such incidents.

Complexities and challenges to address of Non-fatal drowning in LMICs: the issue needs to be discoursesd.

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Background

Nonfatal drowning has a serious impact on the increment of fatal drowning as well as a big impact on the efforts to prevent fatal drowning. Compared to high-income nations, nonfatal drowning in LMICs involves more conceptual difficulties. The important complexities are:

Definitional problem: The inconsistent ways that various organizations and researchers define and classify nonfatal drowning incidents which results definitional dilemma. The key aspects of definitional problem are inconsistent criteria, duration of submersion, and clinical outcomes.

Measurement issues: Accurately determining the frequency, prevalence, and severity of nonfatal drowning occurrences is difficult and has limitations. The key measurement issues in nonfatal drowning in LMICs are underreporting and incomplete data, variation in data collection methods, bias and misclassification.

Socio-cultural factors: Nonfatal drowning is not a concern in most of the societies of LMICs, if not causes serious consequences. Even the traditional first response in nonfatal drowning is unscientific which causes adverse consequences.

Management difficulties: Access to prompt, high-quality emergency medical services is sometimes lacking in LMICs, especially in rural areas. In situations of nonfatal drowning, prompt medical care is essential to reducing sequelae and enhancing outcomes. The health issues related to nonfatal drowning can, however, be made worse by delayed or insufficient access to emergency care. There is no concern of rehabilitation of severely affected nonfatal drowning in many LMI countries.

Implications

The better understanding and high level concern of nonfatal drowning will minimize the number of fatal drownings by proper management of nonfatal drowning, will help to design an appropriate interventions, will initiate the improvement of hospital services and hence reduce the fatal drowning as well as reduce the adverse consequences of nonfatal drowning.

Conclusions

Nonfatal drowning in LMICs is a complex phenomena interns of concept, measurement and management. It needs to be discoursesd. Consorted efforts needs to be in place for better understanding of nonfatal drowning in LMICs involving researchers, practitioners and policy makers. By addressing the complexities of nonfatal drowning and implementing effective measures, it would be possible to reduce overall magnitude of fatal drowning incidents and serious consequences of nonfatal drowning in LMICs.

Describing non-fatal drowning based on emergency department and hospitalization data in Ontario, Canada

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Background

Nonfatal drowning can lead to long-term health problems and permanent disability. However, the burden and characteristics of non-fatal drowning in Canada are largely unknown. The Drowning Prevention Research Centre Canada (DPRC) began publishing the Ontario non-fatal drowning report in 2021 and recently expanded the scope of the project to enable reporting on location of drowning as well as non-fatal drowning across Canada.

Method

The DPRC partnered with Public Health Ontario to analyze data from the Canadian Institute for Health Information (CIHI) to describe non-fatal drowning related emergency department (ED) visits and hospitalizations by year, age, sex, and location. To expand the project to report on non-fatal drowning Canada-wide, the DPRC submitted a data request to CIHI for ED and hospitalization data for all provinces and territories.

Results

During 2012-2021 there were 5,684 ED visits due to non-fatal drowning in Ontario. The rate of visits increased to 4.3 per 100,000 population in 2021 (641 visits), compared to 4.0 per 100,000 in 2020 (568 visits). During 2012-2021, 996 patients were hospitalized after being transferred from an emergency department due to non-fatal drowning. Children and youth (<20 years) had the highest number and rate of non-fatal drownings. Approximately 6 out of 10 non-fatal drownings occurred among males. ED visits due to non-fatal drowning were most frequently related to boating. Hospitalizations due to non-fatal drowning were most frequently associated with pools. The Ontario report provides an overview of non-fatal drowning in Ontario, but more work is needed to describe non-fatal drowning in Canada, and to understand how non-fatal drowning differs from fatal drowning.

Conclusion

There are far more non-fatal drownings serious enough to require an ED visit than fatal drownings in Ontario each year. Further research is needed to estimate and better describe the full burden of non-fatal drowning.

Developing a national survey to understand mental health in Surf Life Saving

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Background

Surf lifesavers are a predominantly unpaid workforce that provides education, preventative, and rescue services to the Australian community. In this first responder role, surf lifesavers are inadvertently exposed to high-risk and traumatic experiences, which can negatively impact mental wellbeing. To date, however, there has been limited research into the mental health of surf lifesavers, and no studies at all on the mental health of adolescent surf lifesavers. Surf Life Saving Australia collaborated with CQUniversity, Flinders University, and Massey University to develop and implement an anonymous, online pilot survey that measures exposure to stressful and traumatic events, perceptions of mental health conditions, and mental health literacy within Surf Life Saving.

Methods

Here we discuss the development, strategies, challenges, and barriers of conducting a national survey within an organisation that operates under a federated structure that is comprised largely of volunteers, the creation of two surveys: adolescents (13-17 years old) and adults (18 years and above), as well as the multisectoral collaboration of research with industry and academia.

Results

The collaboration process with industry (SLSA) and research (universities) led to the success of the following research being undertaken with SLSA: a pilot survey (N=57 (19 adolescents; 38 adults; age range 13-59)), adolescent survey (n=118; age range 13-17 years old), adult survey (n=575; age range 18-75 years old), qualitative interviews (N=24; n=12 adults, n=12 adolescents).

Conclusions

This research is the first to explore the mental health of Australian surf lifesavers and the first globally to address adolescent surf lifesavers. Continued exposure to traumatic or catastrophic rescue and first aid incidents during their time as members and first responders, has the potential to negatively affect their mental health. Additionally, with volunteers commencing their patrolling career as young as the age of 13, understanding their exposure levels to trauma, and their mental health understanding and awareness is important.

Does on scene oxygen therapy prior to the arrival of Emergency Medical Services improve outcomes from resuscitation of drowning? A case match analysis of 216 patients.

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Introduction

Oxygen use by lifeguards is supported by the International Life Saving Federation (MPS-089) in drowning patients who are in cardiac arrest or are hypoxic. Recent reviews have found little evidence supporting this position. The aim of this paper is to explore the outcomes of drowned patients who received lifeguard oxygen therapy prior to the arrival of Emergency Medical Services (EMS).

Methods

Retrospective analysis of consecutive drowning cases presenting to Sunshine Coast Hospital and Health Service from January 1st, 2015, to December 31st 2022. Ethics approval was obtained from Metro North (49754) and James Cook University (H8014) Human Research Ethics Committees. Cases that received oxygen therapy by a lifeguard prior to arrival of EMS were matched for age, sex and severity of drowning with cases that did not have oxygen administered by a lifeguard. Primary outcome was survival to hospital discharge. Secondary outcomes included the need for positive pressure ventilation (PPV), oxygen therapy, and Emergency Department (ED) disposition.

Results

There were 108 patients in each group. Median age (IQR) was 22 (15-43) in the oxygen group and 23 (15-44) in the non-oxygen group. There were 45 females in the oxygen group and 41 females in the non-oxygen group. Sixteen patients had suffered cardiac arrest and three respiratory arrest on scene in each group. There were 5 deaths in both the oxygen and non-oxygen groups. Patients in the oxygen group had slightly longer duration of drowning (2.4 vs 1.6 min), drowned more frequently in salt water (93 vs 70), and more received PPV with EMS (19 vs 11, $p < 0.001$), in the ED (32 vs 20, $p < 0.001$) and inpatient unit (32 vs 20, $p < 0.001$). More patients in the oxygen group required EMS oxygen (56 vs 34, $p < 0.001$) and ED oxygen (19 vs 15, $p < 0.001$). More patients in the oxygen group were admitted to the Intensive Care Unit (26 vs 15, $p < 0.001$).

Conclusion

On scene treatment with oxygen prior to the arrival of EMS did not improve outcomes in drowning patients. Differences in secondary outcomes require further investigation.

The neglected domain of mental health in adolescent surf lifesavers

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Background

Surf Life Saving Australia (SLSA) provides surf lifesaving services to the beachgoing community in Australia, attracting members across different life stages, including adolescents who are potentially exposed to traumatic incidents. As a duty of care, SLSA needs to continually improve their understanding of member welfare, particularly for adolescent members, to enable better provision of support and education. Therefore, this research is essential to understand adolescent members' experience of potentially traumatic events (PTEs), post-traumatic stress symptoms (PTSS), and shame to provide supportive and caring environments that reduce their vulnerability to mental health conditions.

Methods

The study examined the relationship between exposure to PTEs and PTSS in adolescent surf lifesavers through an online, anonymous survey. The study also explored whether shame, both external and internal, was associated with levels of PTSS in this group. A total of 118 adolescents completed the survey, with over half the sample identified as female, and the mean age was 15.4 years.

Results

A strong relationship between exposure to PTEs and PTSS within this adolescent sample was highlighted. Additionally, shame was found to be associated with PTSS across the different kinds of traumatic events (global, direct, or within SLS), and it moderated the relationship between PTEs and PTSS in adolescent surf lifesavers.

Conclusion

These findings have important implications for SLSA and other emergency services in understanding the experiences of adolescent members and providing appropriate support and education. The results suggest that reducing exposure to PTEs and addressing shame may be key to reducing the risk of PTSS in this group. The study highlights the importance of considering psychological factors such as shame when providing support to adolescent surf lifesavers who may be exposed to traumatic events.

How the method of immersion into cold water affects cerebral blood velocity.

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Background

Cold-water immersion (CWI) is increasingly popular amongst water users. In water <15°C the sympathetic response driven by rapid skin cooling, the cold shock response (CSR), is maximised[1]. The effects of CSR include a strong initial gasp followed by hyperventilation, increased heart rate and constriction of blood vessels, which in turn drives blood pressure upward. The effects on cerebral blood velocity (CBV) are variable and are dependent on the level of vasoconstriction to and within the cerebral circulation. Specifically, CBV has been shown to have a marked and sustained decrease with slow passive immersion[2,3], and have an initial brief decrease followed by rapid recovery and increase above baseline with rapid immersion followed by treading water[4].

These mixed findings are likely due to differences in the way that people were immersed and whether exercise was utilised during the respective studies. The aim of this study was to investigate whether the method of immersion and exercise while immersed altered the CBV response.

Methods

12 cold-shock adapted participants (6M, 6F) undertook two 3-min CWIs in 14°C water (depth controlled to shoulder level via a winch and harness) on consecutive days: (i) a slow immersion, whereby they were lowered into the water over 20 s and remained still; and (ii) a fast immersion where participants were dropped within 5 sec and were asked to tread water.

During the immersions, heart rate and ventilation were measured. Cerebral blood velocity was measured utilising transcranial Doppler ultrasound of the left middle cerebral artery velocity (MCAv).

Results

We expect to present MCAv profiles across immersion duration at the conference following completion of analysis. CWI is shorter in duration during the fast immersion compared to the slow immersion. We also anticipate seeing MCAv increase above baseline after the initial drop in the fast immersion condition.

Conclusions

Understanding the effects of CWI on CBV may inform safety advice to open water swimmers. Those needing to make decisions immediately after CWI may also benefit from these findings.

Exploring drowning-related health system interaction and patient outcomes in New South Wales, Australia: A data linkage study

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Background

Compared to fatal drowning, significantly less is known about non-fatal drowning, in particular pathways of care and patient outcomes. Most previous studies use only one source of data (i.e., hospital admission or ambulance) to explore non-fatal drowning (1-3) or focus on a particular age group (4). Using data linkage this study will explore non-fatal drowning cases from a variety of sources to track patients from pre-hospital assessment, to hospital treatment and mortality.

Methods

Data comprises all-age drowning cases in New South Wales (NSW), the most populous state in Australia, between January 2010 and June 2022. Data from NSW Ambulance, emergency department (ED) presentations, hospital admissions and mortality data (NSW Register of Births, Deaths and Marriages and Cause of Death Unit Record Files) were linked by the Centre for Health Record Linkage (5). Acute care cases with a range of International Classification of Diseases (ICD) drowning-related codes were used to define the study cohort. Ambulance cases coded as 'scuba accident', 'diving accident susp neck injury', and 'E2 diving' were excluded due to unknown involvement of drowning.

Results

4,638 drowning cases were identified (64% male; 25% aged 0-5 years). Records indicate the most common pathway of care was via ambulance attendance and ED presentation but no hospital admittance (n=1,717). A further 1,686 cases entered the system via ED presentation and were admitted to hospital, without ambulance attendance. In 894 cases, the pathway of care spanned ambulance attendance, ED presentation and admission to hospital. A small number of cases (n=66) were admitted directly into the hospital without ambulance attendance or ED presentation. Among cases that die within 30 days of incidence (n = 184), 80 cases (44.5%) were dead on ED arrival or died in ED.

Conclusions

Drowning represents a preventable cause of mortality and morbidity. Linked data helps to quantify a more complete picture of drowning-related morbidity, while also highlighting the health system burden associated with non-fatal drowning. Utility of this data for quantifying non-fatal drowning would be enhanced with the inclusion of rescue data.

Training on the Integration of Lifeguards into the Rescue Patient Care Continuum Through Simulated Scenarios

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We identified a disconnect between lifeguards, first responders, flight and ground response ALS, and other persons in the patient care continuum. While individual training and unit response were excellent, a lack of collaborative, inter-agency training resulted in inefficient emergency responses and posed an obstacle to providing quality patient care. The challenge was to create a cost-effective, multi-agency training focusing on streamlining the response to aquatic emergencies beyond the initial rescue phase to improve patient outcomes.

We organized an integrated training, which partnered with lifeguards with first responders, EMS personnel, and in-hospital providers to identify and overcome the challenges that responders face as a patient transitions from lifeguard care in the field to definitive care at the hospital. The initial training scenario confirmed that lifeguards understand their role in the initial recognition and response phase of an emergency however lacked the practical experience of transitioning care to other responders and a knowledge of the abilities and limitations of other providers which resulted in inefficient patient management.

In resource-limited settings, a training program was established to focus on a dynamic team approach to aquatic emergencies and provide lifeguards with opportunities to employ leadership techniques, critical thinking and decision-making strategies, and on-scene resource management skills.

The close association and direct interaction with other pre-hospital and hospital resources during a simulated emergency is vital to the continuity of care in a real-life situation that favors more positive patient outcomes. As a result, the lifeguards and lifeguard supervisors have become more confident in their ability to manage resources and communicate with other professionals in emergency situations. Other consequences include an increase in the number of lifeguards pursuing professional medical careers as EMTs, nurses, physician's assistants, and physicians. This model has proven to be cost-effective, reproducible, and scalable for use in various settings and has been in place now for six years with improvements and incremental adaptations every year. Hundreds of participants have been trained in the scenarios. We are currently planning pre and post-assessment of the next round of training to address future opportunities and areas of weakness. This data will be available for presentation.

Responding outside of the Red and Yellow Flags. A new Emergency Service has emerged.

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Surf Life Saving NSW (SLSNSW) is one of the largest volunteer organisations in NSW with a membership of 76000 members and 129 surf lifesaving clubs across the NSW coastline. Since 1907 it has been regarded, and operated, as a traditional lifesaving service managing water safety and responding to emergency incidents between its red and yellow flags.

Only on adhoc instances would it be engaged in emergency response support outside of its primary coastal aquatic role. SLSNSW was a large, complex, skilled and trained latent resource ready to be thrust into the NSW emergency service sector.

SLSNSW recognized to ensure future relevance and sustainability, be the attractive option to compete for, and retain our volunteers, it needed to attain maximum position, profile and presence. SLSNSW needed to formalize what it had informally been doing for over 100 years, that was, being an emergency service.

In 2018 SLSNSW was formally gazetted under the NSW State Emergency and Rescue Management Act 1989 to be the newest emergency service within NSW resulting in its emergency management capability and roles expanding exponentially.

SLSNSW is the only surf lifesaving organisation to be formally gazetted as an emergency service. It has been a major support agency to the NSW Rural Fire Service in the catastrophic 2020 bushfires, utilising its surf clubs to shelter and protect thousands of isolated residents and tourists, and assisting in the evacuation by water of hundreds of trapped residents.

In the 2022 catastrophic NSW floods, it deployed over 1400 lifesavers into flood affected areas, both coastal and far west inland NSW, conducting hundreds of flood rescues and evacuations. It was the largest aquatic emergency service deployed in these floods.

SLSNSW now has the largest UAV emergency response capability and capacity being injected into multiple aquatics and non-aquatic emergencies and incidents.

SLSNSW is the only aquatic emergency service committee member of the Australasian Fire and Emergency Services Authorities Council (AFAC).

This presentation details how SLSNSW became the newest emergency service in NSW and showcases enormous benefits derived to both community, volunteers and fellow emergency services in NSW and importantly coastal aquatic safety.

The role of accidental hypothermia in drowning-related out-of-hospital cardiac arrest: A Danish six-year observational cohort study

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Background

The incidence of accidental hypothermia in patients with out-of-hospital cardiac arrest (OHCA) due to drowning is prevalent [1-3]. Accidental hypothermia has been recognised for its potential neuroprotective role on the brain due to its ability to slow the metabolic rate, decrease oxygen consumption, and postpone hypoxic brain damage following drowning related OHCA [3,4]. Many cases reports present extraordinary instances of patients with drowning-related OHCA and accidental hypothermia surviving with a good neurological outcome despite prolonged submersion times [5]. However, accidental hypothermia may also be a result of prolonged submersion times, which is shown to increase drowning mortality and morbidity [3,6]. A larger, observational study is warranted to accurately investigate the role of accidental hypothermia in patients with drowning-related OHCA to support evidence-based guidelines and improve clinical decision-making [7].

Aim

This study aims to report mortality and poor neurological outcome at 180 days after the drowning incident in patients with accidental hypothermia (<35C) vs normothermia (≥35C) following drowning related OHCA in Denmark from 2016-2021.

Methods

This study is a nationwide, observational cohort study. 317 patients have been identified in the Danish Cardiac Arrest Registry (DCAR) by the Danish Drowning Formula and manually validated (Breindahl et al.) [8]. This study will link prehospital data from the DCAR to in-hospital data through the patients' unique civil registration number and present data in the "Utstein Style" [9,10]. The primary outcome is a composite of mortality or poor neurological outcome (modified Rankin Scale score from four to five) at 180 days after the drowning incident. Secondary outcomes include hospital length of stay, intensive care unit admission and length of stay, need for ECLS and duration, need for mechanical ventilation and duration, survival to hospital discharge, and 30-day mortality.

Results

Data collection and analyses are currently in progress. All data and results will be analyzed and concluded before the World Conference on Drowning Prevention, 2023.

Conclusions

We expect to provide evidence on the role of hypothermia in drowning-related OHCA based on a high-quality prehospital database with linkage to in-hospital medical reports. Our results may be used to support evidence-based guidelines and improve clinical decision-making in the future.

Understanding the factors, and influences of SLSQ resuscitations within a 23-year period: a 7-year snapshot.

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Background

This research is a retrospective, replication study of a foundation research study conducted by Fenner et al. in 1995 (1). Within the original work by Fenner et al. data from Surf Life Saving Australia reports on resuscitations that occurred between 1972 and 1993 across the 54 patrolled Queensland beaches were analysed. Similar to this previous study, the aim of this research is to provide an updated analysis that provides descriptive statistics for, and identifies factors associated with, effective resuscitations in Queensland from 2001 into recent years, 2023.

Methods

As data is still being compiled from Surf Life Saving Queensland (SLSQ) Incident reports across the 58 established surf lifesaving clubs from 2001 to 2023, a snapshot of findings collated between 2016-2023 will be presented. In replicating the work of Fenner et al. descriptive data concerning the resuscitations performed, effectiveness of resuscitations, and factors underpinning effective resuscitations were determined.

Results

Contemporary insight concerning the scope and effectiveness of resuscitations performed by SLSQ members will be provided alongside key demographic and contextual factors inclusive of trends, causal relationships of factors, influences and commonalities.

Findings

Resuscitations are no longer confined to aquatic environments with SLSQ members frequently being required to perform resuscitations for Out- of- Hospital Cardiac Arrests (OHCA) occurring outside of patrolled areas. The vital services and capabilities of SLSQ are further highlighted as 'swimming between the flags' and within patrolled hours is proven to provide the highest level of safety. Key findings associated with effective resuscitations that are identified may inform the development of future preventative strategies by SLSQ.

An Infographic for Mitigating the Impact of Glare on Swimmer Surveillance and Long-Term Eye Health of Lifeguards

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Glare from the Sun is a common problem for surf lifeguards all around the world, making it difficult to see swimmers and causing long term degradation of lifeguard eye health. Even with polarised sunglasses, glare from the water surface may not always be filtered out. Fortunately, the timing of glare from the Sun is predictable based on location, field of view and time of day. Glare chart infographics were created to address this problem. These charts were derived from a globally verified glare estimation algorithm and allow lifeguards to check what times there will be glare from the Sun, given their location and field of view (1). Based on the glare chart in an infographic, lifeguards can make decisions to mitigate the effects of glare by changing observation position or wearing polarised and UV protected sunglasses, depending on the strength of the glare. Glare chart infographics at 3 different locations with different fields of view were trialled over a 3-month period at Gold Coast lifeguard towers. The infographic was reported to be useful for lifeguards at locations affected significantly by glare. The glare chart infographics can be generated for any lifeguard observation point in the world and have the potential to improve swimmer surveillance and long-term eye health for lifeguards.



LEISURE

Automated Detection of Person Suspected of Drowning or Behaving Dangerously at Swimming Pool using AI

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Background

A sufficient monitoring and rescue system is required to prevent drowning accidents in swimming pools. However, when swimming pools are opened in elementary schools and junior high schools in summer, guardians without monitoring experience are in charge of safety management in many cases. In order to prevent drowning accidents, enhancement of "Keep Watch" is required. Therefore, we applied image recognition by AI and tried to develop a system to prevent drowning accidents in the pool in this study.

Methods

In the developed system, AI analyzes image data which is taken by web cameras at the poolside in real time. At the time of detection of a person suspected of drowning or behaving dangerously in a high-risk situation that could lead to a drowning accident, the system informs a smartwatch. The person suspected of drowning was set at a total of four cases: beating the water surface, head bobbing up and down, climbing the ladder movement, and submerged without moving limbs. In addition, the high-risk situation was set at a total of five cases: moving underwater while jumping up and down, collision of swimmers, diving under a platform on the bottom of the pool, capsize of pool float, and a person hiding under the pool float. To create the AI model, we collected a total of 32,867 image data taken in the pool, and used them for training and verification data. Also, the yolo V5 for the image recognition algorithm was used (1). In addition, the developed system was actually tested in a swimming pool for 79 days.

Results

At the development stage of AI, it was able to detect hazards with a high accuracy which were at a precision of 96 % and a recall of 95.7 %. As a result of the operation, the results of detection of users suspected of drowning and behaving dangerously were generally reasonable. Also, it was confirmed that inexperienced pool staff can determine the high-risk situation that requires attention by the system information.

Conclusion

It was thought that this system would strengthen "Keep Watch" in pools and create a safer swimming environment.

An expert-novice comparison of lifeguard-specific vigilance performance

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Lifeguards must maintain alertness and monitor an aquatic space across extended periods. However, research has yet to investigate a lifeguard's ability to maintain detection performance over time and whether this is influenced by experience or the detection difficulty of a drowning incident. The aim of this study was to examine whether lifeguard experience, drowning duration, bather number, and time on task influences drowning detection performance. A total of 30 participants took part. 10 were considered experienced, 10 were considered novice, and the remainder had no lifeguarding experience ($n = 10$). They all watched nine 60-minute lifeguard-specific videos consisting of animated swimmers in water and each video included eleven drowning events, occurring at five-minute intervals. Each task had manipulated conditions that acted as the independent variables, including bather number (16, 32, and 48), and drowning duration (10, 30, and 90 seconds). They then filled out the NASA TLX to measure perceived workload. The experienced group detected a greater number of drowning events per task, compared to novice and naïve groups. Performance was greater when there were 16, compared to 32 and 48 bather conditions. Performance was greater when drown durations lasted 90, compared to 30, and 10 seconds. The experienced group reported less mental demand than the other groups. Mental demand was lower when drowning duration lasted 90 seconds, compared to 30 and 10 seconds, and was lower in the 16-bather condition compared to 32 and 48-bather conditions. There was a significant main effect of performance across time points. On average, performance began to deteriorate as time progressed for all groups. In addition, those with greater experience maintained their performance for longer periods of time. In conclusion, time, bather number, and drowning duration influence lifeguard-specific drowning detection performance. The findings highlight that even experienced lifeguards have an inability to detect drowning scenarios, particularly after 30 minutes, when viewing complex scenarios. The current findings present numerous directions for vigilance research, including the assessment and training of lifeguard drowning detection during extended monitoring periods.

Implementation, in France, of a new standard for the prevention of drowning in public swimming pools – « public swimming pools – safety supervision standards in paid access bathing areas – organization and implementation »

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Background

There are 5000 paid access swimming pools in France which must be constantly supervised by trained personnel. Recent studies have highlighted severe dysfunctions in the consistency of the safety supervision of French swimming pools (Lebihain, Vignac, WCDDP, Penang 2015). Since then, other studies have shown that the French swimming pool safety supervision system dysfunctions in several areas, most notably in the training of personnel (absence of formalized training content, insufficient time dedicated to training, no examination assessing that training goals have been reached).

In 2019, the French ministry of sports asked the French Standards Agency (AFNOR, affiliated to ISO) to publish a standard which would be representative of the complexity of the « safety supervision » function. After a 4 year long process, that standard will be published and available for free, as of March 2023, to the 5000 French swimming pools.

Description

The published standard, about 40 pages long, will describe precisely the notion of risk management in public swimming pools, the role of safety supervision in security procedures, training and recertification of lifeguards, or pool supervision techniques. Anyone playing a role in the safety of public swimming pools, from the inside or the outside, will be involved.

Results

The standard is designed to have an impact on lifeguards, pools managers and training organizations. The results which we plan to present in Perth in December 2023 will be based on the change in the way those actors work following the implementation of this standard, a crucial change for these professionals that we plan to meet in a dozen swimming-pools for semi-directive interviews, focusing on the application of the standard and the first steps taken in accordance with it.

Conclusions

This standard, demanded by numerous swimming pool managers, dreaded by some, which implementation will remain voluntary, might prove to be a true revolution in the development and the harmonization of safe practices.

Lay rescuer equipment preferences and efficacy during a simulated drowning event

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Background

Drowning remains a global public health priority recognized by the World Health Organization and United Nations with many aquatic incidents take place without a lifeguard present. What can be done to provide viable options for people to intervene while keeping safe. This study examined types of common rescue equipment preferred by lay rescuers to help in an aquatic emergency.

Methods

50 adult subjects participated in the study which included an initial screening to identify those with no prior aquatic rescue training. The experiment was conducted in a pool setting and included use of a live person simulating an active drowning response. Scenarios were set at either a near (6ft) or far (20ft) distance from the pool edge. Available equipment included: (a) ring buoy/life ring with attached rope (RB/LR), (b) shepherd's crooks (2), (c) throw bag, (d) rescue tube, and (e) reaching pole. A survey was used to collect data on subject equipment choices and aspects for decision-making. Results: Most frequently selected equipment for near attempts was ring buoy/life ring (n=12, 44%), followed by rescue tube (n=8, 30%). For far attempts RB/LR, (n=19, 83%) was chosen, followed by shepherd's crook (rounded, n=3, 13%). Appropriate equipment selection and first equipment choice reached the victim 70% (n=16) of the time at far distances, and 89% (n=24) for near distances. Judging the distance pool side to the victim and selecting appropriate equipment was identified from survey data as a challenge by participants.

Conclusions

Results show that providing a RB/LR, type rescue device would be the most beneficial when wanting to support lay rescuers. Lay rescuers have an overall preference for using a ring buoy/life ring (with attached rope) when encountering a conscious person, and survey data points to this being from past familiarity with the equipment through prior visual recognition in popular media such as movies. Several subjects also identified ease of use as a positive attribute of the RB/LR. In addition, when confronted with the scenario, subjects were able to discern the best choice related to the distance of the simulated rescue.

Interventions performed by lifeguards on when on duty at poolside

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Pool lifeguards are positioned to improve the general public's water safety knowledge, to help patrons avoid drowning risks and to intervene when necessary to improve the outcome of a drowning event (1). Much of the work that lifeguards undertake situates around the ability to engage in constant surveillance of an assigned zone in the water, and although an occasional rescue may be warranted, surveillance is still the primary component of their day-to-day work (2). The surveillance process can be described as observing, recording and assessing the water area that is being surveyed (3). For phase 1, we sent out a survey to lifeguards, lifeguard supervisors and members of the general public. Examples of questions included, what is the purpose of a pool lifeguard (all), What specific actions do lifeguards perform (all), what are the most frequent poolside rules that require enforcing (lifeguards and lifeguard supervisors), and what are the most frequent poolside accidents / incidents (lifeguards and lifeguard supervisors). We analysed data from lifeguards (n = 50), lifeguards' supervisors (n = 55), and members of the general public (n = 102) to develop a Lifeguard Intervention Record that includes sections on pool context as well as timings and frequency of interventions. The Lifeguard Intervention Record is now being used to assist in the observation of pool lifeguards (~N = 96) to that we can quantify what lifeguards do and the frequency with which they intervene. We are also recording perceived workload, accuracy of intervention recall, and perceived intervention effectiveness. We will present the full data set at the conference.

Watch Around Water- The safety campaign that saved a generation

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The summer of 2004 changed the face of aquatic safety in Western Australia forever, following three tragic drowning deaths of young children in public swimming pools. Following these tragedies the peak body for aquatics, LIWA and its members pledged "Never Again" and set to work developing the Watch Around Water (WAW) education and awareness program in partnership with Royal Life Saving WA (RLSSWA).

The program has been developed for the industry by the industry and aims to reduce drowning and aquatic injuries amongst children through improved parental supervision.

As a nineteen year old lifeguard who had only been in the industry for six months at the time of the drowning tragedies in 2004 I have had the unique experience of not only embracing and implementing the WAW program on the frontline throughout my career. But now as a senior manager having the opportunity to review the impact that WAW has had in the twenty years since its introduction.

The Watch Around Water program was developed in response to comments from the West Australian coroner and a growing industry need for consistent safe supervision policies.

Following a review of existing industry programs and extensive industry consultation, WAW was developed to reduce drowning and aquatic injury in children under 10 years of age through establishing state-wide parental supervision standards and practices at public swimming pools to improve parental supervision.

Lessons Learned

- It's taken a full generation of children/families being exposed to the program, for it to be embraced as the cultural norm.
- A consistent approach from industry is key to the program success
- Having an aquatic industry active and engaged in driving the program creates a sense of ownership, ensuring ongoing support and success.
- Every centre is different, so the ability to customise the program to suit local community needs is vital.

There are currently more than 350 WAW pools throughout Australia. Since the program's introduction in 2004, there have been no drowning deaths involving young children in public swimming pool facilities in WA, pool managers are reporting increased levels of parental supervision as a result of the program.

Promoting Environmental Sustainability in Facility Design: Importance, Benefits, and Funding Options

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Background

The sports and Recreation industry has a history of building community facilities that are inefficient in both energy use and business potential. Historically community facilities have been run by local governments with highly subsidised government owned energy. Energy costs and community expectation is driving the need for better energy performance through efficient building design and operational efficiency.

Description

This abstract discusses the key features of sustainable facility design, focusing on incorporating energy-efficient lighting, high-efficiency HVAC systems, renewable energy sources, water-efficient filtration and fixtures, and heat recovery. It emphasizes the importance of considering these elements during facilities' planning and construction stages, highlighting their positive impact on energy consumption, resource utilization, and waste management. The target population involves professionals in facility design, construction, administration, and organizations seeking to adopt sustainable practices.

Lessons learned

Through extensive research and evaluation, it has been found that sustainable facility design significantly reduces energy costs, conserves natural resources, and minimizes ecological footprints. The abstract presents evaluation outcomes and real-life case studies showcasing the effectiveness of integrating sustainable elements into facility design. It also addresses the challenges encountered during implementation and provides strategies for overcoming them.

Conclusions

The abstract concludes that sustainable facility design can significantly mitigate climate change and preserve natural resources by reducing energy consumption, conserving water, and promoting environmentally friendly practices. The long-term benefits of sustainable facility design, including reduced energy costs and a positive environmental impact, further emphasize its adoption's importance.

Moreover, the abstract highlights various funding options for sustainable facility design, including grants, tax credits, rebates, and partnerships with organizations promoting sustainable building practices. It emphasizes the need for collaboration between stakeholders, government agencies, and sustainable building advocates to maximize funding opportunities and drive the widespread adoption of sustainable design practices.

In conclusion, these abstract stresses the significance of environmental sustainability in facility design and highlights the need to utilize available funding options to support this vital initiative. By integrating energy-efficient technologies, renewable energy sources, and sustainable practices, facilities can minimize environmental impact and contribute to a more sustainable future.

Addressing the swim teacher shortage in Victoria, Australia

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Background

Swimming teachers are critical to reducing drowning risk. However, the COVID-19 pandemic exacerbated the shortage of swim teachers in Victoria, Australia: research[1] showed an additional 1,833 teachers were required to meet swimming lesson demand, and approximately 15,000 participants on lesson wait lists[2]. Suggestions for addressing this shortage encompassed: obtaining and maintaining qualifications; retention; recruitment; and employment pathways.

Description

The acquisition and retention of swim teachers became a critical focus for Life Saving Victoria (LSV), and this was addressed using a multicomponent approach. Firstly, advocacy urged swim teacher training to be added to the government's funded course list to remove the barrier of cost for new teachers: this advocacy was successful. Additionally, government funded workforce initiatives commenced to train at least 730 new swim teachers. Despite improving acquisition of swim teachers, the industry's challenge also became retention. Subsequently LSV, in collaboration with aquatic industry representatives and learn-to-swim operators, developed a swim teacher career pathway and retention framework. The framework provides operators with a tool to support teacher retention through five phases from recruitment and onboarding to becoming an embedded employee. It also includes program-related and wait-list related strategies for consideration such as class times and ratios, and traineeships.

Lessons Learned

The retention framework is expected to have a positive impact on reducing the swim teacher shortage. Key learnings include the importance of focusing on both acquisition and retention of teachers, to ensure continuity of employment and uptake of this role as a career. Likewise, a one-size fits all approach is not a suitable solution, as learn-to-swim operators experience varying degrees of staff shortages, caused by different factors.

Conclusion

Addressing the shortage of swim teachers in Victoria is a long-term process, however the actions outlined indicate the level in which advocacy and action is needed to overcome this issue. Involving the aquatic industry in this process and considering the perspectives of learn-to-swim operators, alongside government capabilities, facilitated a multicomponent and holistic approach. This example showcases the possibility to other nations of how to combat the shortage of swim teachers to ensure everyone has access to swimming lessons.

The State of Aquatic Facility Infrastructure in Australia

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Background

The following are the objectives that RLSSA set out to achieve through the development of this report:

- To clearly understand the state and profile of aquatic infrastructure within Australia, including historical and current contexts of aquatic infrastructure.
- To understand the key challenges and opportunities confronting the sector with respect to aquatic infrastructure.
- To effectively engage with the sector to ensure information obtained is up to date and reflective of the current environment.
- To advocate the need to address aquatic infrastructure needs across Australia, so that no child or person misses out on swimming for fun, fitness or education

Methods

Desktop research and telephone interviews with pool owners, operators, designers, builders and consultants. In addition, modelling was provided by PricewaterhouseCoopers, Royal Life Saving Society - Australia and leading pool builders and aquatics consultants. This modelling was then used to estimate a conservative total figure needed to replace the 40 per cent of aquatic facilities which have reached or are nearing the end of their functional lifespan. Additional case study analysis was also conducted to support conclusions.

Results

In the next 10 years, up to 40 per cent of public aquatic facilities that local governments own will need to be replaced at a cost of over \$8 billion. Regional and remote councils seem the most exposed, often providing multiple aquatic facilities across a large area. It has increasingly been these rural communities, but not exclusively, that have been presented with the prospect of pool closures and who have actively resisted. It is also clear from additional Royal Life Saving research that regional and remote communities are at higher risk of drowning in inland waterways and most benefit from access to swimming and water safety programs, made possible by local public swimming pools in most cases.

Conclusions

The report reaffirmed the widely shared anecdotal views of the sector: that up to 40 per cent of Australia's aquatic facilities are nearing their end of life. The replacement of these facilities is likely to exceed \$8 billion and is an issue that requires further review and significant and coordinated action.

The Remote Pools Project: A community led project designed to keep pools open to reduce higher than average drowning rates and inequities for remote Aboriginal communities.

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The Remote Pools Project is a community led not-for-profit initiative established in 2022. This project aims to keep swimming pools open in remote Aboriginal communities to ensure water safety and learn to swim programs are accessible to community. The RPP partners with local councils who have or are struggling to keep their pools open due to a number of reasons which will be discussed. Research and firsthand knowledge shows pools are imperative to drowning prevention, community health and vitality.

Royal Life Saving Australia concludes First Nations children (aged 5-14 years) are 2.9 times more likely to drown than non-Indigenous children and reports they are at greater risk of drowning due to lower levels swimming skills and water safety knowledge, combined with living in a remote location near waterways. It was reported that 40.6% of drowning fatalities of Aboriginal and Torres Strait Islander peoples occur in locations classified as remote and very remote. The RPP is helping to reduce these statistics by living and working alongside locals in community full-time to codesign community led water safety and learn to swim programs.

The RPP also aims to prevent frequent swimming pool closures in remote communities; ensuring consistent drowning prevention programs built upon a strong foundation of locally run culturally sensitive workplaces. In addition to drowning prevention there are many significant community benefits resulting from active swimming pools in remote Aboriginal Communities including the addressing of inequities and health inequalities.

Life in the WA Outback – Managing swimming pools in remote Aboriginal communities

Lauren Nimmo, Graeme Pollett

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Background

Western Australia (WA) is home to the world's oldest living culture with Aboriginal culture dating back almost 50,000 years. There are around 12,000 Aboriginal people living in more than 200 remote communities throughout WA, mostly located in the north-west of the State. The north-west region of WA combines harsh terrain and conditions with Australian bushland, wild rivers, deep gorges and extensive coastlines that flood the landscape. Aboriginal Australians are twice as likely to drown than non-Aboriginal Australians and often lack access to swimming pools and culturally appropriate swimming and water safety programs.

Description

The Remote Aboriginal Swimming Pool Project established in 1999 is managed and run by the Royal Life Saving Society WA and operates in eight remote Aboriginal communities in the north-west region of WA. As part of this program, swimming pool facilities have been built within remote communities to provide access to water safety programs, aimed at building foundation swimming skills and preventing drowning.

Pool managers live and work in the communities to deliver swimming, water safety and lifesaving programs and work with the community to achieve broader health, education and employment outcomes. Living and working in a remote community is a unique experience. It is a tough but rewarding job with pool managers experiencing extreme weather conditions including hot temperatures and severe tropical storms causing flooding which can isolate the community from nearby towns. However, it also provides opportunities for managers to experience traditional Aboriginal culture firsthand, explore surrounding regional landscapes and develop close relationships with local community members. This presentation will be delivered by a remote pool manager currently living and working in outback WA and highlight their personal experiences and learnings.

Lessons Learned

The pools have helped improve swimming and water safety skills, boost school attendance, improve health outcomes, reduce anti-social behaviour and proven to be an important hub for the community. The program empowers local communities through stronger connections to family, community and culture as well as improved health and wellbeing.

Conclusions

The Program provides sustainable health and well-being outcomes for local communities and unique and enriching experiences for pool management staff.

Short and Long-Term Impacts of COVID-19 on the Aquatic Industry: Adaptation and Innovation in the Face of Crisis

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Background

The COVID-19 pandemic has caused significant disruptions in the aquatic industry, leading to the closure of facilities, financial losses, and employee layoffs. This abstract explores the pandemic's impact on the industry and the strategies implemented to navigate these challenges.

Description

The pandemic has forced aquatic facilities to temporarily close or operate with limited capacity, resulting in decreased revenue and downsizing. However, facilities have responded by implementing stringent safety measures, such as enhanced cleaning protocols and improved ventilation systems, to ensure the well-being of employees and customers. Moreover, facilities have embraced online platforms to offer virtual swimming lessons and fitness classes, maintaining engagement with their clientele.

Lessons learned

The pandemic has underscored the importance of diversifying revenue streams and adapting to shifting consumer habits in the aquatic industry. Facilities have invested in technology and marketing to attract customers more inclined towards online ease to manage enrolments at a click of the finger. Additionally, the crisis has emphasized the need for continuous and comprehensive recruitment, employee training and development, enabling facilities to respond to future crises effectively not to mention the influx of our communities needing Aquatic Education.

Conclusions

The COVID-19 pandemic has brought about significant changes in the aquatic industry, impacting it both in the short and long term. While the challenges have been daunting, they have also spurred innovation and adaptation within the industry. These experiences have demonstrated the industry's resilience and capacity to evolve, laying the groundwork for future growth and sustainability.

Recreational Boating Injury Study in Canada – Lessons Learned in 3 Recreational Boating Communities

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Drowning Prevention Research Centre Canada, Lifesaving Society Ontario, Toronto, Canada

Background

Boating contributes to 21% of unintentional drowning mortality in Canada. Describing fatal and non-fatal boating injuries would be helpful to better understand boating risk activities and prevention strategies. The Government of Canada, Ministry of Transport invested in a better understanding of recreational boating injury in Canada.

Methods

This study sought to apply the community knowledge approach to collect robust information on recreational boating injuries in three communities in Canada: Saint-Donat, Quebec; Kenora, Ontario; and Ahousaht Nation, British Columbia. Community working groups were developed with the goal of directing the project and collecting data. An electronic questionnaire was developed and tablets were provided to community data collectors to document boating injury characteristics and impacts.

Results

The three communities selected for this study are geographically and demographically diverse. One of the communities is 100% First Nations peoples, is ocean-based and rural. The other two communities are lake/river based and one is a French-speaking community. The community knowledge approach was successful in improving the understanding of recreational boating injuries and improving community engagement in recreational boating safety in one of the three communities. This presentation will report boating injury data from Kenora, Ontario and challenges and lessons learned in Saint-Donat, Quebec and Ahousaht Nation, British Columbia.

Conclusions

Community relationships are central to the success of the community knowledge approach. Two years were invested in the building of community relationships to empower community members to lead data collection and identify recreational boating safety strategies for their community. Data were successfully collected in one community and will inform prevention strategies as well as the creation of a drowning prevention coalition.

Aligning Data Sets and Standardisation in the New Zealand Recreational Boating Safety Sector

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Background

The New Zealand Water Safety Sector Strategy 2025, launched in March 2021, is a collective approach by the water safety sector to ensure New Zealanders enjoy the water safely. Goals under the Data, Research and Insights pillar of the strategy are to establish agreed definitions and protocols around data capture and use. The New Zealand Safer Boating Forum is a formal network representing a cross-section of national and regional government agencies, local body groups, organisations, and the marine industry involved in promoting recreational boating safety in New Zealand.

Description

In 2021, an action of the Safer Boating Forum Data SubGroup (SBFDSG) was to work toward standardising collation and terminology of data collection and analysis. The SBFDSG formed a Data Definitions Working Group (DDWG), co-opted from professionals experienced in data collection, analysis, and research from several organisations. The group's aim was to provide agencies in the recreational boating sector with a consistent set of defined data fields. The DDWG met approximately every two months from September 2021 to Dec 2022 and had three in-person workshops in early 2023. Outside expertise was regularly consulted including from Māori data consultants, Statistics NZ and MetService. The DDWG agreed to approximately 30 data fields that all organisations in the recreational boating sector should collect.

Lessons Learned

It was important to assess the new data standard against current practice. At the same time, best practice inside and outside the sector informed minimum requirements for each data field. This allowed the working group to indicate requirements needed to implement best practice in their organisation. Some recommendations require a sector-wide approach and the implications of this will be discussed in the presentation.

Conclusions

It is expected the recommendations made for standardising data and research collection in the recreational boating sector can be expanded to the wider water safety sector. Additionally, recommendations will be provided to organisations that collect primary big data sets such as NZ Statistics or Accident Compensation Corporation (ACC) for their use in the collection of drowning data.

Boating safety education in partnership with schools - a practical outcome.

Ian Ross

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Marine and Safety Tasmania (MAST) is the government authority tasked with overseeing recreational boating in the smallest state in Australia. Tasmania's geographical position within the Roaring 40's makes it a unique place for boating in Australia.

MAST identified an opportunity to deliver boating safety messages through schools in the early 2000's. The MAST boating safety program has grown over this time and includes the use of small dinghies, within a pool environment, to help promote safe boating behaviours.

The integration of this program within the Tasmanian Education Department's Swimming and Water Safety Program (SWSP) has given MAST the opportunity to disseminate boating safety information to grade 3 to 6 children as part of their curriculum outcomes. MAST has a Letter of Agreement with the Department to deliver the program. This equates to a minimum of 18,000 students, every year, having exposure to MAST boating safety messages.

The success of this program has led to the development of a complimentary high school presentation to reinforce the learnings from primary school. All MAST school programs have identified links to the Australian Curriculum with complimentary resources, such as Activity Books aimed at the relevant age groups, as well as an Early Childhood Reader. These resources are provided free of charge to all children attending the MAST Boating Safety Program. The use of the dinghies within the SWSP gives all children the opportunity to experience an overloaded boat.

These education programs are integral to the MAST goal of "Making Boating Better" and are the foundation on which the boating safety messages are based for the future safety of the Tasmanian recreational boating public. Integration with the Tasmanian Department for Education, Children and Young People (DECYP) within their SWSP has been fundamental to the success of this program and helped to normalise boating safety behaviour within the Tasmanian community.

Boating safety education, when combined with an Education Department's program, ensures access to the next generation of recreational boaters. This program, which is unique within Australia and perhaps globally, has helped reduce the drowning rate within Tasmania and should ensure safe boating practices into the future.

Changing Awareness, Attitudes and Behaviours in an Evidence-Informed Social Marketing Campaign to Reduce Recreational Boating Injuries in British Columbia, Canada

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Recreational boating-related injuries are a preventable cause of morbidity and mortality resulting from outdoor aquatic recreation. Alcohol consumption and low personal floatation device (PFD) use are established risk factors for recreational boating-related injuries, yet many boaters/passengers do not fully perceive the risks involved (1).

In 2018, Preventable, a non-profit organization focused on raising injury prevention awareness, received funding from Transport Canada to undertake a three-year project to research and implement a social marketing campaign aimed at changing attitudes and behaviours around boating-related injuries. Outcomes from this project included an epidemiological report and a mixed media campaign delivering TV, social media, digital, and out-of-home messaging. Campaign partners included the BC Injury Research and Prevention Unit as the research partner, and the Royal Canadian Marine Search and Rescue as the on-water liaison. Messages addressed four themes: drowning doesn't "just happen", drinking and boating are not a good mix, lifejackets are not just for children, and, have the required equipment before heading out.

The campaign generated more than 40-million impressions and discussion online. A baseline survey of recreational boaters' awareness, attitudes and behaviours related to preventable injuries and safe boating practices was completed in April 2018. While boaters were aware of the regulations around alcohol and lifejackets/PFDs, they admitted their compliance was inconsistent. A post-campaign survey found that 1 in 4 recalled the project campaign advertisements unprompted. The advertisements were highly rated as enjoyable, informative, relatable, and prompted self-reflection. There was a significant increase in the level of concern among respondents about boating safety post-campaign, most notably among ad-recallers, suggesting the campaign made a positive impact. From 2001-2021 in British Columbia, there has been a downward trend in drowning-related deaths and hospitalizations in Preventable's target audience (25-54-year-olds) and their children.

The campaign received recognition from the Canadian Drowning Prevention Coalition for its contribution to drowning research, and from the Canadian Safe Boating Council as best boating safety media in 2021. Results from this project may help inform future boating safety campaigns through better understanding of audience attitudes and behaviours, and the value of social marketing in reaching at-risk populations.

Evidence-base and feasibility of using Do-it-yourself (DIY) manikins to teach resuscitation skills

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Background

Bystander CPR is an important skill with the potential to save millions of lives (1), including in drowning incidents. However, commercial CPR courses often require expensive or hard-to-maintain manikins (2). Do-it-yourself (DIY) manikins (i.e., handmade with materials easily available) may be a suitable tool to increase access to CPR training worldwide at very low costs. However, only limited evidence or guidelines exist on this topic (3).

Description

A multi-sector project initiated by the SLRG, entitled "DIY Manikins for teaching CPR", investigated the state-of-the-art and feasibility of DIY manikins and developed a concept for the worldwide diffusion of the DIY manikin idea. This was achieved by a literature review, a collection of pilot studies, panel discussions with researchers and experts from around the world, concept development and the set-up of a platform.

Lessons learned

Not enough evidence exists to determine whether DIY manikins are an effective tool to teach all aspects of first aid education. The potential use of DIY manikins expands the range of outcome goals beyond technically correct compressions, e.g., it may assist in developing basic skills in school children (4,5), empower remote or low-income regions to self-educate, or allow representation of cultural and physical characteristics not available in commercial manikins. It may also stimulate deeper learning processes (6). For these goals, different criteria may be relevant (e.g., psychological fidelity, humanlike appearance, representing and catering to diversity of culture, ability, and more). We developed a pragmatic concept for worldwide diffusion of BLS education, which begins on a platform on which researchers, stakeholders and educators collaborate to establish best practices and evidence (7,8).

Outlook

The project continues on two parallel tracks: a research network will focus on establishing an evidence-base for the use of DIY CPR manikins for laypeople, including cultural, societal, psychological, educational and medical aspects. In parallel, an outreach track will continue implementing the plans for a world-wide diffusion.

Conclusions

DIY manikins might make it possible to extend access to basic CPR training beyond those currently served, to increase health literacy and equity.

Gone Fishing: A comprehensive, multi-faceted and collaborative approach to empowering our rock fishing community to keep themselves safe.

Julia Kiss

Surf Life Saving NSW, Sydney, Australia

BACKGROUND:

Hill 60 at Port Kembla is a notoriously dangerous place to go rock fishing. It is hard to get to, it is very exposed and the water straight off the rocks is deep. In January of 2021, four men were washed into the ocean at Hill 60, three of them drowned. A mere three weeks later, two cousins, drowned off the same spot.

Following the increase in rock fishing deaths, a strategy was formed through community, organization, and council consultations, aimed to address key concerns including:

1. Increasing numbers of rock fishing drownings and incidents.
2. An observable lack of lifejacket usage on the coast.
3. A lack of awareness of lifejackets, their usage and maintenance.
4. The inability of at-risk communities to access and obtain adequate and correct safety equipment and information.

DESCRIPTION:

A core intention in the development of this strategy was to maintain a comprehensive, collaborative, and multi-faceted approach, allowing for multiple touch points and the greatest possibility of engagement.

1. 1,000 lifejackets into community.
2. 10 full day community education sessions on the coast.
3. Adult classroom education sessions
4. Early childhood education sessions
5. Safe community rock fishing sessions
6. New multicultural community targeted media
7. New high-risk site-specific educational and multilingual resources
8. In-language targeted social media campaign.

Key target demographics were focused on those not living on the coastline and those identified as new migrants, refugees or first or second-generation Australians.

LESSONS LEARNED:

While the program is still currently being delivered (with full data analysis, lesson evaluation and reporting to be completed in July 2023), we have learnt many lessons along the way. Key findings and insights to date show us that:

1. Many new migrants fail to recognize the inherent dangers in the local coastline.
2. Communities do have a significant interest in being safer while rock fishing, but many do not have the skills or the networks to know how.

CONCLUSION

Our key findings to date, show us that we need to make a greater effort to make rock fishing safety information more accessible and responsive to our communities.

Rock Fishing, Lives on the Line

Shane Daw, Sean Kelly, Jaz Lawes

Surf Life Saving Australia, Sydney, Australia

Background

Rock fishing is a popular coastal activity dubbed the most dangerous sport with a high risk of injury and drowning. Ranked as the third highest cause of coastal drowning deaths (2013-2023) and is a significant focus for coastal safety initiatives in Australia.

Description

Since 2013, 119 rock fishing drowning deaths have been recorded nationally, averaging 12 deaths each year and a mortality rate of 1.04 per 100,000 rock fishers. Rock fishing decedents are predominantly male (n=109, 92%) with two age groups at greater risk than others – 45-54 year olds (n=25, 21%) and 60-69 year olds (n=23, 19%). Two-thirds (n=81, 68%) occurred in NSW followed by Western Australia (n=19, 16%) and Victoria (n=13, 11%). Rocky coastlines combined with frequent hazardous surf conditions, create high-risk environments for fishers. Waves and slippery surfaces are prevalent causal factors in rock fishing drowning deaths, yet previous research has shown that 80% of drowning decedents were not wearing lifejackets at the time of the incident. Research exposed freak waves as a myth and identified a strong understanding of wave periods is necessary to reduce risks of rock fishing incidents.

Lessons learned

In response to the high numbers of drowning deaths a coronial inquest (2015) recommended mandatory and enforced lifejacket usage. Compulsory lifejacket usage has been trialled within high-risk local government areas in NSW and WA and provides an excellent example of multisectoral collaboration between government and emergency service providers at the state level. In NSW, the Rock Fishing Safety Act 2016 was passed to support this recommendation and legislates it compulsory for anyone participating in rock fishing within a declared area, including children, to wear an appropriate lifejacket.

Conclusion

These preventative measures were looking effective, with slight decreases in rock fishing drowning deaths observed nationally since 2016, although recent spikes in rock fishing death show that more work is needed to reach the target audience.

Perceived determinants of lifejacket wear among occupational boaters on Lake Albert, Uganda. A qualitative study

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Introduction

Drowning is a major cause of unintentional injury death worldwide. The toll is greatest in low- and middle-income countries. Over 95% of people who drowned while boating in Uganda were not wearing a lifejacket.

Objective

To explore the determinants of lifejacket use among boaters on Lake Albert, Uganda.

Methods

We conducted a qualitative enquiry with a hermeneutic phenomenological undertone leaning on relativism ontology and emic subjectivism epistemology. Focus group discussions (FGDs) and in-depth interviews (IDIs) were held with boaters at ten landing sites. We explored experiences and perspectives on lifejacket use. We used thematic analysis technique to analyse data and report results according to the Consolidated Criteria for Reporting Qualitative Research.

Results

We recruited 88 boaters in ten FGDs, and 11 boaters to take part in the IDIs. We identified three themes: motivators and opportunities for lifejacket use, barriers and threats to lifejacket use, and strategies to improve lifejacket use. Many boaters attributed their lifejacket use to prior experience or witness of a drowning. Perceived high costs of lifejackets, limited knowledge, reluctance to use lifejackets because of distrust in their effectiveness, and the belief that it is women who should wear lifejackets were among the barriers and threats. Participants mentioned the need for mandatory enforcement alongside community sensitizations to improve lifejacket use.

Conclusion

Determinants of lifejacket use among boaters include experience or witness of drowning, limited knowledge about lifejackets, and distrust in the effectiveness of the available lifejackets. Mandatory lifejacket wearing alongside educational interventions might improve lifejacket use.

Lifejackets: An exploration of use and associated barriers in four popular coastal activities

Chris Jacobson, Belinda Cooper, Shane Daw, Jaz Lawes

Surf Life Saving Australia, Bondi, Australia

Introduction

The Australian coast provides many opportunities to explore our environment, with coastal locations identified as the most attractive destinations. Tragically, being in and around water can increase drowning risk. Correct and appropriate lifejacket use can significantly improve the outcome of coastal incidents, especially with respect to survival.

Methods

Boating, PWC, rock fishing and watercraft are recreational activities for which lifejacket use is recommended and here we explore associated behaviours, perceptions and fatalities from data collected in SLSA's national coastal safety survey (NCSS) and fatality database.

Results

2019/20 recorded an increase in fatalities in boating, PWC and rock fishing activities, which all strongly recommend lifejacket use. Results showed that most boaters and PWC users own a lifejacket and a significant proportion always wear it. While not all activity participants always wear their lifejacket, this number appears to be increasing, except for PWC users. Frequent watercraft and rock fishers are more safety-conscious with much higher proportions wearing lifejackets, highlighting occasional users as a high-risk user group. The majority of fatal rock fishing (80%) and watercraft (87%) incidents were not wearing a lifejacket, while half of all PWC-related deaths (50%) were.

Discussion

Low wear-rates recorded in mortality statistics suggest that lifejackets may have been incorrectly fitted, sized or poorly maintained, but could also indicate the influence of other factors such as alcohol or drugs, or other dangerous behaviours e.g. craft operation at high speeds. Potential barriers to wearing lifejackets will be discussed. These results emphasise the importance of wearing lifejackets while participating in these activities and confirm the need for continued research into this focus area.

Lessons learnt - policy approach to regulatory requirements for lifejacket wear on domestic commercial vessels in Australia.

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Between 2013 – 2022 44 people drowned on domestic commercial vessels in Australia. In 2020 alone, there were four drowning fatalities, all involving a crew member going overboard. In all these fatalities none of the people were wearing a lifejacket. With drowning incidents still occurring on domestic commercial vessels, the Australian Maritime Safety Authority (AMSA) felt that an education-only approach to lifejacket wear was not enough. Coronial recommendations, survivability rates associated with lifejacket wear and increased available safety data all suggested that an alternative approach was needed.

Based on research and analyses into survivability rates associated with lifejacket wear AMSA decided to investigate the feasibility of mandating lifejacket wear on domestic commercial vessels. In late 2021 a three-month period of consultation was conducted to seek input on AMSA's proposal to mandate lifejacket wear requirements on domestic commercial vessels outlining three approaches to mandating lifejacket wear.

AMSA received a significant level of stakeholder submissions with a total of 1375 with feedback indicating a clear preference to address lifejacket wear through the vessel's risk assessment and safety management system. As a result of this feedback AMSA effected a regulatory amendment for all domestic commercial vessels to have a documented risk assessment and written procedure on lifejacket wear in their safety management system which will commence in August 2023. The presentation will provide an overview of the process undertaken to arrive to a policy decision on lifejacket wear in the domestic commercial vessel industry in Australia.

Lifejacket wear and associated factors among occupational boaters on Lake Albert, Uganda: A cross-sectional survey

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Background

Drowning death rates in lakeside fishing communities in Uganda are the highest recorded globally. Over 95% of the people who drowned from a boating-related activity in Uganda were not wearing lifejackets. This study describes the prevalence of lifejacket wear and associated factors among boaters involved in occupational boating activities on Lake Albert, Uganda.

Methods

We conducted a cross-sectional survey, grounded on etic epistemology and a positivist ontological paradigm. We interviewed 1343 boaters across 18 landing sites on Lake Albert, Uganda. Lifejacket wear was assessed through observation as boaters disembarked from their boats and self-reported wear for those who 'always wore a life jacket while on the lake'. We used a mixed-effects multilevel Poisson regression, with landing site-specific random intercepts to elicit associations with lifejacket wear. We report adjusted prevalence ratios (PRs) at 95% confidence intervals.

Results

The majority of respondents were male, 99.6% (1338/1343), and the largest proportion, 38.4% (516/1343) was aged 20–29 years. Observed lifejacket wear was 0.7% (10/1343). However, self-reported wear was 31.9% (428/1343). Tertiary-level education (adjusted PR 1.57, 95% CI 1.29- 1.91), boat occupancy of at least four people (adjusted PR 2.12, 95% CI 1.28 - 3.52), big boat size (adjusted PR 1.55, 95% CI 1.13 - 2.12) and attending a lifejacket-use training session (adjusted PR 1.25, 95% CI 1.01 - 1.56) were associated with higher prevalence of self-reported lifejacket wear. Self-reported wear was lower among the 30 – 39-year-olds compared to those who were aged less than 20 years (adjusted PR 0.66, 95% CI 0.45 - 0.99).

Conclusion

Lifejacket wear was low. Training on lifejacket use may improve wear among boaters involved in occupational boating activities on Lake Albert.

Do Life Jackets save lives?

Peter Hopkins

Marine and Safety Tasmania, Hobart, Australia

In the 1990's Tasmania, the southern and least populated state of Australia experienced far too many boating fatalities.

In 2000 the Government announced that Marine and Safety Tasmania (MAST) were making life jackets compulsory. This decision meant that Tasmania was the first jurisdiction anywhere in the world to make life jacket wear compulsory.

This decision followed the year 1999 when 12 people lost their lives, five of these in one incident. The media and the public were concerned that nothing was being done by the Government to prevent fatalities whilst people were recreationally boating, enjoying themselves in their leisure time.

The number of fatalities was leaving families broken. Many people and Industry were concerned that boating may be portrayed as a dangerous past time as opposed to a time when families could enjoy time together on the fishing, skiing or just being on the water relaxing.

Compulsory wearing was introduced by MAST on January 1st, 2001. This followed 22 years (only statistics available) when the average fatality rate in boating incidents was 6.3 per annum with a registered fleet of less than 13,000 boats. Based on averages over this time, the State's fleet was most likely less than 10,000 boats.

Education was essential to ensure the recreational boating public were aware of the new legislation. The media, who had been pushing for something to happen to reduce the numbers were publishing articles favoring the Governments regulatory stance. The boating public also embraced the change, and the take-up of wearing was more than expected almost immediately when the legislation was introduced.

Legislation has now been in place for over 23 years. Compliance and wear rate sits at 94%. Registration of boats has increased more than any other state in the Country and Tasmania now has the highest rate of boat ownership per capita in the Country.

Issues are now being experienced with inflatable life jackets because they are more comfortable to wear. The fatality rate is now 1.1 per annum per 10,000 boats as opposed to 6.3 prior to compulsory wearing. (1)
Life Jackets do save lives.

The influence of vigilance performance on lifeguard gaze behaviour

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A lifeguard's expertise in processing visual information is fundamental to maintaining bather safety, including monitoring swimmer behaviours, anticipating potential hazards, and immediately responding in the occurrence of a drowning scenario. Expertise research has demonstrated varying systematic differences in gaze behaviour amongst lifeguards of varying abilities (1, 2). Other research has indicated the eye movements of lifeguards may not discriminate the performance differences associated with expertise (3, 4, 5). This study aimed to investigate the gaze behaviour of lifeguards with varying levels of experience during a drowning detection task. A total of 108 participants took part. 20 were considered experienced, 47 intermediate, and 41 novices. Whilst wearing a Tobii Pro 2.0 eye tracker, they all watched the same 60-minute lifeguard-specific video consisting of 32 animated swimmers in water. The video included eleven drowning events, occurring at five-minute intervals. The experienced group performed 26.6% better than intermediate and 43.8% better than the novice group. Intermediate lifeguards had a 17% detection performance advantage over the novice group. Results also indicated a decline in detection performance over time, regardless of experience level. The experienced group produced fewer fixations than the novice group but was not different to the intermediate group. The intermediate group demonstrated significantly fewer fixations than the novice group. There was a significant reduction in the number of fixations across time as time progressed. The experienced group produced shorter fixation durations compared to the novice group but was similar to the intermediate group. Further, intermediate lifeguards demonstrated shorter fixation durations compared to the novice group. There was a significant increase in fixation duration across time points as time progressed. Results suggest that lifeguards with more experience maintained a higher detection performance and fixation number for longer while retaining stable fixation durations throughout the task, compared to their less experienced counterparts. These findings provide preliminary evidence that lifeguards with more experience may have an attentional advantage during vigilance tasks.

A Research-based Approach to Advancing Lifeguard Supervision Skills

Shaun Jackson

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Background:

The Australian Water Safety Strategy 2030 (p.28) lists the following key activities for the aquatic industry workforce:

- 'Extend professional development opportunities provided for the aquatic industry workforce.
- Strengthen lifeguard training, including scanning, positioning and response techniques.' [i]

There is a growing body of research into Lifeguard supervision techniques and the science underpinning visual cognition as applied to tasks that involve scanning complex scenes and discriminating from a range of cues and behaviours.

The objectives of this project were to:

- use research to guide development of an engaging online learning experience that elevates lifeguards supervision and scanning skills.
- help lifeguards better understand the visual cognitive, attentional and physical challenges they face, and equip them to overcome these challenges on two levels. Firstly, in being able to recognise and evaluate these phenomena as they occur. Secondly, in providing a range of strategies to address each of the phenomena, connected to best practice Lifeguarding.

Description:

The project was conceptualised within the annual planning cycle of the Royal Life Saving Society – Australia (RLS) national office. While the purpose and objectives were clear, the method and approach were quite organic. Initial steps involved forming a working group to analyse the literature and determine the best path forward. Various approaches were explored before agreement on developing an online module. Subsequently, a project plan and method typical of learning resource design projects was initiated.

In terms of instructional design and technical content writing, the expertise of the RLS network of Lifeguards and trainers was critical. The module features a highly visual design and includes animated and image-based video presentations and activities designed to engage learners and breakdown technical content into manageable learning chunks.

Lessons Learned

- Form a project team with which you can have open and difficult conversations.
- Consult and research widely, listen carefully, be flexible.
- Keep sight of the end-goal; driven by the objectives and the principles that underpin them.

Conclusions

At time of writing the module has been available for 2 weeks. There has been positive interest and feedback within Australia and internationally. By December 2023 reporting on uptake and impact will be possible.

Establishment of a Miniature Danish Lifeguard Tower for Public Lifesaving Training with relevant Equipment, Training and Instructional Materials at Public Pools

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Background

Surf Lifesaving Denmark has since 2020 been undertaking a project to create a miniature version of the famous Danish lifeguard tower equipped with a wide range of essential equipment and instructional materials for comprehensive lifesaving training. The objective of this project is to provide individuals with a safe and controlled environment to learn and practice lifesaving techniques in water.

Description

The miniature lifeguard tower is equipped with an array of lifesaving equipment, including rescue torpedoes, lifejackets, rescue boards, lifebuoys, and rescue manikins. In addition, instructions on how to use the equipment with several exercises are available to guide individuals through the lifesaving training process.

This initiative is aimed at promoting water safety and reducing the number of drowning incidents by raising awareness about the importance of learning lifesaving techniques. The comprehensive equipment in the miniature lifeguard tower will be accessible to the public, enabling individuals of all ages to learn and practice lifesaving skills.

Lesson learned

As a result of the initiative, Surf Lifesaving Denmark has set up 50 towers across the country which represents nearly 20 percent of the overall swimming facilities. The towers are accessible to over 10 million yearly visits, spread across users in clubs, schools, and the general public. The miniature lifeguard tower is not staffed, but Surf Lifesaving Denmark are providing training and guidance to those involved in the project on the use of the equipment and instructional materials.

Conclusion

In conclusion, the establishment of a miniature Danish lifeguard tower for public lifesaving training with comprehensive equipment and instructional materials is a significant initiative that has promoted water safety to people of all ages. The project has gained significant approval for its innovative approach to promoting water safety and providing a safe and controlled environment for individuals to learn and practice lifesaving techniques. The miniature lifeguard tower is a valuable resource for anyone looking to increase their knowledge and skills in water rescue techniques.

Cross-Border Recognition of Lifeguard Certifications: RLSS Lifeguard Reciprocity Project

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The RLSS Lifeguard Reciprocity Project aims to establish a seamless system for recognizing lifeguard certifications between participating Commonwealth countries, facilitating mobility for pool lifeguards seeking employment opportunities in other countries. The project aligns with RLSS's values, mission, and strategic action plan to foster exchanges and sharing between RLSS Member and Companion Organisations.

Following the successful completion of Phase 1 in January 2022, the project is now focused on devising a gap training system that can best facilitate reciprocity through skills recognition, enabling recognition of previous learning and experience. The current pandemic has disrupted the movement of lifeguards and increased the strain on staffing in aquatic facilities, making this project timely.

The project was completed in a series of steps, including creating a unified competency and curriculum item list, establishing levels of competency, and creating a Master Comparison Chart. The project identified barriers, including differences in models of governance, legislation, and regulatory frameworks, and differences in first aid training requirements, which forced the project team to remove first aid items from the project.

The project outcome includes increased communication and clarity around reciprocity, as well as a repository of information for the similarities and differences between Commonwealth Branch lifeguard certification programs. The identified barriers and lessons learned led to the creation of appropriate and effective resources to target competency gaps.

The proposed reciprocity structure consists of a four-part process: (1) candidate applies to the destination country, (2) candidate completes an online learning module, (3) candidate attends a practical training session(s), and (4) candidate is assessed by a certified assessor in the destination country. The Lifeguard Reciprocity Project is designed to be simple and consistent regardless of the country a candidate comes from or is seeking reciprocity for. The successful implementation of this program will benefit lifeguards seeking employment opportunities in other RLSS member countries. The next steps for the project include having each contributing country create an online learning module and practical training session(s) to meet identified competency gaps and determining a consistent and simple pathway to onboard countries to the Lifeguard Reciprocity Programme.

A Qualitative Investigation of Job Demands and Resources in Australian Pool Lifeguards

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Background

Pool lifeguards have a critical role in ensuring public safety around water. The role is highly demanding due to lifeguards' responsibility for preventing incidents, the requirement for constant vigilance, and challenging interactions with community members. The job-demands resources model suggests that the balance of demands and resources is an important determinant of stress and wellbeing at work. To date, no research has examined job demands and resources in pool lifeguards, and therefore little is known regarding how to support them in their critical roles. The current study aimed to develop a rich understanding of job demands, the impact of job demands, and resources among pool lifeguards in Australia.

Methods

Lifeguards (N = 18) working at recreational swimming pools across Australia participated in semi-structured interviews of approximately 1 hour in duration via telephone. Thematic analysis was used to analyse the data.

Results

Lifeguards described experiencing substantive demands in their roles, including managing inadequate parental supervision of children; requirement to multitask which diverts attention from pool supervision; difficult interactions with community members; performing rescues; management and staffing issues; and physical and attentional demands. Lifeguards described varying resources which supported them in their roles, including collegial and managerial support; psychological recovery practices, self-management techniques; and engagement in intrinsically rewarding work. The lifeguards described a range of impacts of the demand-resource environment, including stress and anxiety symptoms; work-to-home spillover; and turnover intentions.

Conclusions

The research has identified a range of areas for supporting lifeguards in their challenging but critically important roles. This includes designing tasks with recognition of the impact of dividing attention and multitasking, training lifeguards in how to deal with difficult interactions with community members, and aiming to foster consistent collegial and managerial support. Future research should seek to test the ability of the identified demands and resources to prospectively predict lifeguard wellbeing and performance.

The effectiveness of the 10:20 Protection Rule for drowning detection using a video-based task

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A lifeguard's job is to engage in constant surveillance of an assigned zone in the water, and although an occasional rescue may be warranted, surveillance is still the primary component of their day-to-day work experience (1). The current RLSS UK National Pool Lifeguard Qualification states that 'Scanning is the skill required to supervise a particular zone using a sweeping action. The internationally recognised practice known as the 10:20 system requires lifeguards to be able to scan their supervision zone in 10 seconds and to be close enough to get to an incident within 20 seconds'. However, the evidence that underpins this guidance is limited. The aim of the study is to explore the differences between the 10:20 protection strategy and natural scanning strategies on hazard detection, hazard recall accuracy, perceived workload, and gaze behaviour (total fixation and fixation duration). Moreover, the study will explore the main effect of experience level on hazard detection, hazard recall accuracy, and gaze behaviour; and the potential interaction effect of different scanning system and the experience levels on the outcome variables. Participants will be active lifeguards (N= 64). 32 will be novice (in their first 3 months) and 32 will be experienced (greater than 3 months of experience). Each participant will be wearing a Tobii pro 2 eye tracking system so a post-hoc analysis of their scanning pattern can be determined in two conditions. Condition 1 will involve lifeguards watching one of the 30-minute video using a natural scan pattern. Condition 2 will be lifeguards watching the second 30-minute video using the RLSS UK recommend 10:20 protection system. The experimental conditions will be counterbalanced to control for any practice effects. And the two 30-minute swimming pool videos will be watched by all lifeguards in a counterbalanced design. The number of detections, recall accuracy, perceived workload and fixations (time taken to fixate on 16 grid squares, number of fixations, fixation duration) will be analysed using two-way repeated measures ANOVA. We will present the full data set at the conference.



POLICY

Canada's drowning prevention coalition and drowning prevention plan – The first 6 six years

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Background

The Canadian Drowning Prevention Coalition formed in 2016 to provide a multi-sectoral public health approach to the drowning burden. Our public health approach aspires to understand and reduce the burden and inequities of drowning. The burden of drowning includes fatal and non-fatal drowning and its health, social, and economic impacts. There are many inequities in the drowning burden in Canada. The principle outcome of the coalition is to engage multi-sectoral partners and deliver the Canadian Drowning Prevention Plan.

Description

Canada's drowning prevention coalition has multi-sectoral steering committee and targeted working groups. Multi-sectoral participants including researchers, NGO's, government, civil society, industry, media, policing, medical care, marine safety and insurance representative. The key focus working group are: children 1-4, new Canadians, northern/rural/cold areas, alcohol and substance use, Indigenous peoples, drownings in supervised settings, recreational boating and PFD wear.

Cross-cutting working groups for community drowning prevention coalition development and costing drowning are active currently. We continue to work diligently to facilitate Government engagement.

Canada's national coalition has engagement from 9 working groups and the 44 multi-sectoral partners. There are 14 academics from 8 universities engaged. There are 9 government representatives from national, provincial, regional and community levels. There is a shared leadership model with an emphasis on learning and mutual respect building. Public health grant funding is engaged in 2 current projects resourcing Canada's national coalition comes from the Drowning Prevention Research Centre Canada and Lifesaving Society Ontario. Public health grant funding is engaged in 2 current projects.

Lessons learned

Multi-sectoral groups of skilled partners are addressing the drowning burden in Canada. The Canadian Drowning Prevention Plan has a large distribution through partner distribution. Government engagement remains a work in progress.

Conclusions

Canada's drowning prevention coalition will continue its shared leadership model for multi-sectoral engagement. The number of skilled partners engaged will continue to increase in number and effectiveness with learning and mutual respect building. The coalition will continue to improve the positioning of the drowning prevention effort. The coalition is an asset to the Canadian Drowning Prevention Research Centre Canada, the Lifesaving Society Canada and Canadian communities.

Strengthening the inter-ministerial approach to child drowning prevention program: sustainable model for child and social sector priorities in Viet Nam

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Background

Drowning is Vietnam's leading cause of death for children under the age of 15. The Government recognizes and addressed this challenge by implementing a national program informed by country specific needs, global best practices.

Description

In 2021, the Government passed a 10 Year National Program on Child Injury Prevention, laying a solid foundation for inter-ministerial partnership and joint actions for alarming issue. They were mandated to work together, required concerted advocacy efforts, marks a new commitment across government through their specific indicators, roles, stated assignments. The National Program set goals for 10% reduction of child drowning deaths by 2025 and 20% by 2030. 50% of children ages 6-16 will be trained in survival swim by 2025 and 60% by 2030.

The Ministry of Labor- Invalids and Social Affairs (MOLISA) is the lead agency for child affairs and its specific program. The National Program includes the digitization of a national database system on injury records launched by the Ministry of Health, highlights the collaboration between MOLISA and Ministry of Education and Training to build safe school, safe home models, deployment of a water safety curriculum in all school settings. Unprecedentedly, the Vietnam Disaster Management Authority of Ministry of Agriculture and Rural Development joined the task force to lead for natural disaster management. The Ministry of Public Security leads in supervising enforcement for children safety in water transportation. The Youth Union and Women Union supported for local initiatives, jointly advocates for long -term investment.

Lessons learned

Strengthening the capacity of lead ministry, other stakeholders to scale and sustain the program at all levels is crucial. The establishment of key taskforces, flexible mechanisms for collaboration, actions at community level, reporting, value shares, evidence-based advocacy and long-term policy development are needed. It requires bringing on new partners from public and private sector, international partners to broaden the base, fill in identified capacity gaps. Cultivating policy champions, putting child drowning on the top of Government policy agendas for the children's rights.

Conclusions

Viet Nam's ministerial taskforce is critical for program investment, sustainability with highlights in their pro-active leadership, joint actions, cross -cutting program evaluation.

A Multi-Disciplinary Approach Towards Water Safety In Singapore

Delphine Fong

Sport Singapore, Singapore, Singapore

Singapore is situated near the equator and has a tropical climate, hot and high humid all year round. Hence, swimming is one of the favourite activities for Singaporeans. Singapore with a population of 5.9 million as at Feb 2023 has more than 7 million people patronizing the 25 public swimming pools located all over Singapore. In total, there are more than 1500 swimming pools in Singapore.

Swimming is also a popular sport as we move towards an ageing population. The number of seniors in Singapore is expected to double by 2030 and the government is investing in facilities and programs to support the population. By 2030, one in four in Singapore will be over the age of 65. Singapore is taking a whole-of-nation approach to preparing for active ageing aim to enable its citizenry to age well and increase the years in good health, seize opportunities for continued learning and be actively involved and engaged in the community.

Water safety is fundamental to provide safe sporting experiences for Singaporeans. The multi-disciplinary approach involves engaging key stakeholders to:

- Design for safety
- Develop standards and best practices
- Conduct outreach and education efforts
- Cultivating a safety-mindset in Singaporeans

The key note presentation will include examples of the various drowning prevention initiatives by SportSG.

Establishment of a national umbrella NGO for Drowning Prevention: How major drowning prevention stakeholders gathered to meet the recommendations of the UN Resolution on Global Drowning Prevention and reduce Norwegian drowning figures

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1The Norwegian Sea Rescue Society, Oslo, Norway. 2Flyte, Oslo, Norway. 3The Norwegian University of Science, Oslo, Norway. 4The Norwegian Lifesaving Society, Oslo, Norway. 5The Norwegian Swimming Federation, Oslo, Norway

Although almost as many people die in drowning accidents¹ as in road traffic accidents in Norway, drowning prevention has received far less attention. The Norwegian Parliament's zero vision for traffic fatalities from 2002, was followed up by national action plans and close collaboration across sectors and stakeholders. In 20 years, the number of deaths has decreased from over 300 to under 100 per year. A report² from The Norwegian Society for Sea Rescue concluded that drowning prevention should draw inspiration from road traffic work and recommended the establishment of an independent umbrella organization for drowning prevention stakeholders.

In autumn 2021, The Norwegian Society for Sea Rescue invited Norwegian Lifesaving Society, The Norwegian Swimming Federation, The Norwegian Canoe Federation, The Norwegian Trekking Association and The Norwegian University of Science to form an interim board to establish the umbrella NGO. The organization Flyte³ ('to float') was founded in April 2022.

Flyte's purpose is to prevent drowning. The goals are particularly inspired by the recommendations in the UN Resolution on Global Drowning Prevention:

- Become the national center of expertise for drowning prevention.
- Be a driving force in the development of a national action plan for drowning prevention.
- Be a key voice in the development of drowning prevention measures, legislation, and guidelines.
- Improve national drowning data and contribute to more research on drowning.
- Develop and coordinate drowning prevention campaigns.

In less than 18 months, Flyte has:

- Established a close dialogue with the government and members of parliament, resulting in a national zero vision for drowning, accompanied by an action plan.
- Created an annual meeting place for all stakeholders at Norway's first drowning prevention conference.
- Begun collaboration with academia related to research.
- Started collaboration with local authorities and businesses on water-safe communities.
- Launched a major national campaign targeting the 60+ population.
- Become National Data Focal Point for WHO's Global Report on Drowning Prevention.

The establishment of Flyte demonstrates how stakeholders can collectively influence authorities, implement evidence-based measures and campaigns, and bring more attention to drowning as a preventable public health challenge. Flyte hopes that the lessons learned so far can serve as an inspiration.

Norwegian Lifesaving society and Governmental collaboration in Drowning prevention

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Background

In Norway, improving drowning prevention has been an important issue for decades. The work has been successfully related to boating, fishing, and so forth. The statistics show no significant improvement over time, related to smaller crafts, falling into water from piers, riverbanks, and shores.[1]

Description

In 2007 the Norwegian Lifesaving Society (NLS), the Norwegian Swimming Federation, and some Universities were invited by the Norwegian Directorate for Education, as the executive agency of the Ministry of Education and Research[2] into a process with the aims of designing recommendations for swimming education in the Physical education curriculum of 2006.

Lesson learned

NLS's advocated self-rescue including safe behavior, swimming, risk assessment, and lifesaving, all in the outdoors. The initiating processes in 2008 led to official recommendations for swimming and self-rescue education in the outdoors.[3],[4] In 2015 the curriculum of 2006 expanded to include risk assessment outdoors and self-rescue.[5] The government supplied and facilitated several complementary measures, such as conferences at the universities and the establishment of a new governmental website svommedyktig.no in 2017.[6]

In the Physical education curriculum 2020 self-rescue, risk assessment, and lifesaving were transferred to the outdoors, all to include knowledge, skills, and general competence as a progression in learning outcome.[7] It provided a change from instruction to exploratory learning, demanding a new professional approach. As a follow-up, NLS contributed to a guide for school water safety instruction[8], a description of the progression of competencies 1.st-10th grade, and tools for formative assessments published on svommedyktig.no. [9]

Conclusion

For NLS as a voluntary organization, collaboration with the government is crucial for effective drowning preventive development. The result of this collaboration process is co-creation and establishment of outdoor learning in 2016 published on the governmental website svommedyktig.no in 2017 followed by the curriculum of 2020 that includes everything the professional environment in drowning prevention sees as important. It has expanded to include universities and other volunteer organizations. The challenge now is to develop a proper subject base, adapt to the Physical education curriculum of 2020, and continue to contribute to the implementation.

Challenges and opportunities for institutionalising drowning prevention in Nepal

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Background

Only four countries of the South-East Asia region have stand-alone national strategies, policies, or plans specific to drowning prevention, and Nepal is not among them [1]. Nepal lacks a mechanism that supports the implementation of drowning prevention through increased child supervision, imparting swimming skills, and water safety education along with safe rescue and resuscitation training as recommended in the WHO Guidelines [2, 3]. Nepal is in the process of developing a National Injury Prevention Strategy, and there is an opportunity to include drowning prevention as its component.

Description

Estimated 1,500 fatal drownings occur in Nepal annually [4]. National-level data is not available in the absence of a dedicated source of information for drowning. The civil and vital registration system (CVRS) also does not provide such information. However, Nepal Police has a system to record incidents of unnatural deaths, including drownings, but it is not devised to inform drowning prevention efforts. The central police system only captures around 564 fatal drowning annually, whereas the province-level records documented about 150 to 200 deaths yearly. There are seven provinces in Nepal. Although drowning may not be uniformly distributed across the country, district-level records capture between 20 to 30 fatalities annually, and there are 77 districts in Nepal. Therefore, the lack of reliable data is a major challenge to generate solid evidence on the magnitude of this problem so that it can be used to influence policy making.

Lessons learned

From recent experiences of working with Local Levels (municipalities), it is observed that community-level collaborations may be helpful in dealing with local problems related to drowning. Such partnerships offer efficient opportunities for prioritisation and resource allocation for drowning prevention activities.

Conclusions

Including drowning prevention in the national injury prevention strategy, establishing partnerships with local levels (municipalities), and supporting the activities mutually can contribute to raising the profile of drowning prevention in Nepal.

Community Drowning Prevention Coalitions – Canadian Working Group Experience

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Background

The WHO Global Report on Drowning (2014) makes a recommendation (#3) that “all countries should aim to develop a National Water Safety Plan”. Canada has a national drowning prevention plan. Several communities also have Community Drowning Prevention Coalitions. Community, regional and provincial drowning prevention coalitions engage community stakeholders in drowning prevention data collection and interventions that may have impact.

Prior to the Canadian Drowning Prevention Plan there was one community and one provincial drowning prevention coalition. After the Canadian Drowning Prevention Plan there are now 10 community drowning prevention coalitions and this is likely to continue to grow. The Canadian Drowning Prevention Coalition has a working group focused on the development of Community Drowning Prevention Coalitions and there is a resource guide to support community drowning prevention coalition development.

Description

Community Drowning Prevention Coalitions have multi-sectoral stakeholders who contribute leadership, planning, risk identification, interventions, civic engagement and community actions that are close to home, work and activities that place people at risk. There has been an organizational framework resource guide for community drowning prevention coalition formation and activation. There are now 8 new community drowning prevention coalitions in Canada. The community coalitions service more than 2.5 million Canadians. The resourcing of community coalitions is community based and sourced by the participant organizations.

The community coalitions are started for diverse reasons including, community grief, stakeholder initiative, champion leadership and community engagement. The organizational structure, multi-sectoral participation and focus of activities is specific and different for each community. All coalitions are set up for long term contributions. Implementation research is needed.

Lessons learned:

Facilitating the creation of Community Drowning Prevention Coalitions has had some success.

Community engagement is evident.

Impacts on drowning prevention mortality and burden is yet determined.

Illumination of the good work of community coalitions is inspiring.

The Canadian Drowning Prevention Coalition Resource Guide may be a helpful tool.

Implementation research is needed.

Drowning in the WHO Region of the Americas: results of a scoping exercise on the burden of drowning and drowning prevention efforts in Argentina, Bahamas, Bolivia and Guyana

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1IDRA - International Drowning Researchers Alliance, Kuna, USA. 2PAHO - Pan American Health Organization, Washington DC, USA

Background

The Americas Region encompasses a wide range of socio-geo-demographic and economic settings. The different exposures and interactions with water result in varying age-standardized death rates due to unintentional drowning from 18,5 in Guyana to 0,3 in Jamaica (per 100k population). Understanding the scope of existing drowning prevention efforts and identifying key stakeholders to engage in such work are critical for effective and coordinated action. This study is the first multinational situational assessment on drowning prevention in the Americas region.

Methods

The study followed a three-step approach:

1. analysis of drowning mortality trends using ENLACE-GHE1 evidence from 2000-2019
2. identification of local evidence (peer-reviewed and grey-literature) on the characteristics of the problem and local drowning prevention efforts
3. examination of local perspectives from local key stakeholders (i.e., current and future drowning prevention agenda)

Argentina, Bahamas, Bolivia and Guyana were selected. They represent different sub-regions, income levels, epidemiological profiles and developmental level in drowning prevention response.

Results

Guyana registered 403.5% increase in drowning death rates (DDR). Bahamas, following the sub-region trend, has seen a 15.4% increase. Bolivia and Argentina have since 2000 moved towards lower DDR. Males and people under 20 years-old are at greater risk. The increase in drowning deaths during adulthood has reshaped Guyana's drowning-death-age-pyramid, especially in males. Twelve peer-reviewed studies were considered. None had national coverage or provided DDR or risk factor analysis based on national datasets. Grey-literature exposed uncommon risk factors like migration, disasters, tourism and suicide. Maritime-safety and disaster risk reduction regulations are reasonably well covered; but child safety and water competencies regulations are scarce and have varying degrees of coverage and relevance to drowning prevention. Efforts to take action on drowning prevention aligned with WHO-guidance, included: swimming and resuscitation training, improved information systems and search-and-rescue services.

Conclusions

All participants showed interest in committing to develop a drowning prevention agenda in their countries and are convinced that more needs to be done to halt the significant death toll from drowning. The consultation process has created a momentum for drowning prevention action among key stakeholders in preparation for the Global Drowning Prevention Status Report Project.

Methodology to navigate the complex UK political environment, including the mechanism of an All-Party Parliamentary Group (APPG) on Water Safety

Lee Heard

Royal Life Saving Society UK, Worcester, United Kingdom

Navigating Government is challenging, whilst we in the sector consider water safety a top priority, our greatest challenge is raising the profile with key government decision-makers, and this remains our primary objective in the UK.

The UK's complexity is further enhanced by the devolution of some policy areas to home nation Governments in England, Scotland, Wales, and Northern Ireland.

The greatest identified challenge in the UK, as like many other governments is finding an established place for an issue that spans departments and policies. Water safety reaches across: The Department For Transport; Department of Health and Social Care; Department for Education; Home Office; Ministry of Housing, Communities, and Local Government; and the Department for Environment, Food and Rural Affairs to name just a few.

There has been recorded success in Scotland, securing support from the Community Safety Minister, and in Wales securing the Minister for Climate Change. In Westminster the approach has mainly been spearheaded through the appointment of a political intern in the office of a government peer, achieving cross-party political support to champion water safety and hold the government accountable to lead reform.

In 2022, the APPGs inaugural year, a parliamentary event attracted 54 MPs, including two Government Ministers from the Department of Education and the Department for Digital Culture, Media and Sport.

In June 2023, the APPG will be delivering evidence-based recommendations through the UK's first Government-backed Drowning Report.

This presentation will explain the following strategic features used to improve water safety visibility in the UK parliament:

- The sector in the UK utilizing the government-established system for petitions and submission of a Private Members' Bills
- Appointment of a Political Intern and the role they play infiltrating Westminster
- Progressing an All-Party Approach
- Building relationships with key civil servants

In increasing visibility, we have two overarching goals, progress will be evaluated in the presentation:

1. Seek reform on the policy for curriculum swimming and water safety – addressing the inequalities that exist in low-income and ethnically diverse children
2. Through the National Water Safety Forum secure a Cabinet Office-facilitated departmental round table meeting

Building Political Will at Subnational Level for Survival Swim and Water Safety Education in Viet Nam.

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1Global Health Advocacy Incubator, Washington DC, USA. 2Golden West Humanitarian Foundation, Ha Noi, Vietnam. 3Golden West Humanitarian Foundation, Hanoi, Vietnam

Background

Quang Tri Province is a central poor province of Vietnam with a large river system that annually suffers typhoons and endemic flooding. The beginning of the rainy season is the time children start school and the dry season, is when children like to go swimming which leads to the very high risk of drowning, especially in the countryside or distant rural areas.

Description

Since August 2020, the survival swim and water safety education program for children aged 6-15 was undertaken by leading local authority, "Swim for Life" and "Global Health Advocacy Incubator". The three poor and highest burden districts were selected for intervention and continuously advocate for the whole province adaption. Over the last 3 years, the program recruited and trained for at least 81 local swim instructors who are physical teachers, provided survival swim for at least 1,186 children. Water safety curriculum applied in secondary school, accessed by at least 12,577 children, typically by the specific approach for natural disaster prevention and child survive program. Under solid partnership with social donation groups and community, five portable swimming pools were additionally mobilized for the program. The communication campaign was launched to raise awareness about child drowning prevention to local leaders, children and parents, especially for minority communities.

Lesson learned

Standardized training curriculum and equipment of well- trained swim instructor; Local investment and ownership maintained through their co- investment of portable swimming pool, widen adaption into other districts. Joint partnership of local agencies with trust, active engagement of school and parents; Routine monitoring and quality assurance system maintained to secure the safety of children, collect data for advocacy and provincial wide adaption; Multi sector collaboration among local agencies extremely required for planning, smooth implementation.

Conclusions

Child drowning prevention intervention through survival swim and water safety shall be initiated successfully in the very poor and disadvantages area with a results from strong political commitment and local investment, technical assurance, communication campaigns for raising awareness, promote the active engagement of local communities and parents. Further independent evaluation to determine the program impact and continuous advocacy for budget sustainability, transfer of techniques.

Fundraising to Support Drowning Prevention – A Success Story

Allan Godfrey

Royal Life Saving Society WA, Perth, Australia

Background

Along with enriching your community, fundraising helps non-profits expand their reach within the local community. By raising more money, non-profits can invest in new programs, resources, and people, accept more volunteers, and reach new communities in need of support. Unlike Government grants and external sponsorship, fundraising provides the opportunity to utilise untied funds from public donations which can be directed to priority areas of need at the time. Royal Life Saving WA is an award-winning fundraising organisation and have established ourselves as a leader in both the drowning prevention industry and the broader non-profit space.

Description

Since 2002, Royal Life Saving WA has been utilising several fundraising strategies to raise funds to support our community drowning prevention initiatives. Our fundraising strategy is multi-faceted and ranges from individual giving through to regular giving and larger scale philanthropy and bequests. Using a mix of face-to-face, telemarketing, direct mail and digital fundraising strategies, Royal Life Saving WA can effectively raise money to fund program and service delivery, as well as engage the community to promote water safety and drowning prevention messages.

Lessons Learned

Each year, Royal Life Saving WA raises \$2.5million and engages with over 100,000 community members providing important water safety and drowning prevention information. Funds raised have directly contributed to the development of new programs supporting the community including:

- HELP Grants – offers financial support for families affected by child drowning
- Swim and Survive Fund – offers financial support to increasing access to swimming and water safety programs for disadvantaged children and communities
- Peer Support Services – free counselling for families affected by child drowning

Conclusions

Fundraising is a core part of any non-profit and adds significant value to program and/or service delivery within the community. It has played an integral role in Royal Life Saving WA's work towards reducing its aim of a nation free from drowning, creates and bettering the local community.

Mozambique: challenges to formalize the Drowning Prevention and Lifesaving Association

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1MOZAMBIQUE DROWNING PREVENTION AND PROMOTION OF LIFESAVING ASSOCIATION, Maputo, Mozambique. 2ITRLab- EPIUnit, Instituto de Saúde Pública da Universidade do Porto, Porto, Portugal. 3IDRA - International Drowning Researchers' Alliance, Kuna, ID, USA. 4ILS - International Lifesaving Federation Drowning Prevention Commission, Leuven, Belgium. 5ASNASA Portugal, Angeiras, Matosinhos, Portugal

Background

Mozambique has an estimated total area of about 1,371,380 km², 57% of which is land and 43% water, and a total estimated population of 30 million[1] inhabitants. More than 60% of the population lives in coastal areas, prone to intense storms from the Indian Ocean. Mozambique ranks tenth in the natural disaster risk, due to its location at the mouth of nine international rivers.

Description

Recent flood events in the provinces of Gaza (2000), Sofala and Cabo Delgado (2019) and Maputo (2023), resulted in more than 2500 deaths. Considering this scenario, from 2006 to 2016[2], the Government approved master plans[3], that highlight Disaster Risk Reduction to reduce the vulnerability from extreme events, and none of them included drowning prevention.

Lessons learned

During said events, a group of volunteers made of former swimmers, water polo players, among other backgrounds, participated in the rescue operations using their own means without specific training. The group has since 2000 become more proficient in disaster rescue operations and has tried to formalize its structure. However, the lack of laws and regulations for drowning prevention constitutes a major challenge to this effort.

To overcome this, the group engaged with public entities and the National Service for Civil Protection, for its formalization and the building of a legal framework and drowning prevention and water safety programs. Consequently, the State approved the Law 10/2021[4] in 2021. Despite being a big step towards, the law is still insufficient regarding drowning prevention. The formalization process is still ongoing, awaiting final approval.

Conclusions

Our experience demonstrates that the process of formalizing a volunteer's entity is too bureaucracy but crucial, especially in view of the increased risk exposure to the climate change. Having a dedicated organization for drowning prevention and lifesaving will surely impact the burden of drowning in Mozambique. Contacts were already initiated with international organizations such as LSA, ILS and ASNASA Portugal aiming to establish network alliances for capacity building, and to seek technical and financial assistance to design legal framework, and programs in coordination with disaster management institutions.

Towards a water-loving nation free from drowning: The role of learn to swim

RJ Houston, Penny Larsen

Royal Life Saving Society - Australia, Sydney, Australia

Background

PwC Australia was engaged by Royal Life Saving Society - Australia to map, understand, and assess the learn to swim ecosystem in Australia. Learn to swim refers to the access programs, delivery providers and infrastructure which supports the delivery of swimming and water safety education.

The study sought to examine:

- Who is missing out on learn to swim education? Looking at the evidence of swimming and water safety ability in Australia, with a focus on those from high-risk communities who, according to the evidence, are less likely to meet the National Swimming and Water Safety Benchmarks and therefore more likely to drown.
- What are the programs in place that support delivery of learn to swim programs? Considering supports across government plus the private and for-purpose sectors.
- Opportunities for governments and other stakeholders to maximise their impact on Australia's swimming ability, and further contribute towards a nation free from drowning.

Methods

Extensive literature and policy review. Learn to swim was mapped against several national policy frameworks including: infrastructure, health, sport, drowning prevention and reconciliation / inclusion. Specifically, the principles are based on strategies and objectives published by Royal Life Saving, Infrastructure Australia, Sport Australia, the Department of Education, Skills and Employment (Cth), Department of Home Affairs (Cth), Department of Health (Cth) and the Australian Government's National Agreement on Closing the Gap.

Results

The report frames the delivery of learn to swim as an ecosystem made up of government programs and policies, the aquatic industry (delivery) and consumers (demand). Additionally it mapped the impacts of COVID and highlighted that a generation of children are at risk of missing out on swimming and water safety education entirely if they do not reengage with learn to swim quickly, having down stream impacts for drowning prevention.

16 key findings were presented with 12 recommendations to strengthen the system.

Conclusion

The report proposes principles for effective support of learn to swim by government, industry, and the not-forprofit sector. The opportunities are designed to support an increase in the achievement of the Benchmarks in Australia, with the goal of reducing the rate of drowning across Australia.

WA Health Promotion Strategic Framework - Embedding drowning prevention within a broader health and wellbeing policy agenda

Amy Hunter

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Background

A comprehensive, population-wide approach to prevention is fundamental to achieving the goal of lowering the incidence of chronic disease and injury in WA. Small shifts in behaviour at a population level can lead to large overall reductions in the burden of chronic disease and injury.

The WA Health Promotion Strategic Framework 2022-26 (HPSF) sets out the WA Department of Health's priorities for chronic disease and injury prevention for the next 5 years. It aims to empower and enable Western Australians to lead healthier lives by supporting equitable and sustainable improvements in health behaviours and environments.

Description

The HPSF targets people who are currently well, and those at risk of developing preventable chronic disease or injury due to common behavioural and environmental risk factors. It provides an evidence-based framework for action for the WA health system, its partners, and the programs it funds. Preventing injury and promoting safer communities in WA is one of the policy priorities outlined in the HPSF, including the action area to improve safety in, on and around water.

The Water Safety Program, funded by the WA Department of Health and delivered by RLSSWA, is a population-wide program aiming to reduce the number of drownings in WA through a mix of strategies tailored to specific life stages and at-risk target populations.

Lessons learned

Drowning prevention was established as a priority in the first iteration of the HPSF released in 2007, and it has remained so in subsequent releases. The elevation of drowning prevention as a key policy priority has been key to providing justification for ongoing investment in the Water Safety Program, which has been delivered by RLSSWA since 2004.

As a statewide policy, the HPSF provides guidance to a broad range of stakeholders and partners beyond the WA health system, facilitating a common approach to drowning prevention that is evidence-based and best-practice.

Conclusions

WA's unique approach to embedding drowning prevention within a broader health and wellbeing policy framework has ensured that it has continued to be a key policy priority, and has provided support for sustained, long-term investment in the Water Safety Program.

A comparative study on the policy of water safety in selected countries of the world

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1Master Program of Sport Facility Management and Health Promotion, National Taiwan University, Taipei, Taiwan. 2Taiwan Society For Sport Management, Taipei, Taiwan

Background: Water security is a public health issue that the world does not ignore. "Safety" is the most important issue of our country's most concern, and the promotion of water safety policy has always been an important policy development constructed by the Director of Sports of Ministry of Education of our country. Description: The purpose of this research are understanding the policies for promotion of water policy from various countries, analyzing and comparing the differences between water policy from these countries. According to these water safety policies, this research proposed our country's recommendations for the promotion of student water safety. This research used document analysis and comparative research to analyze and explore the water safety. Lessons learned: The customs and conditions of various countries are different from the geographical environment, and national policies do not conform to the factors of our national conditions and geographical environment. This research found that high-income countries and low- and middle-income countries have a gap in planning water security policies. According to the statistics, drowning accidents are concentrated in the sea and rivers. The main reason is the loss of foot in the water. Although my country plans to swim self-rescue courses, it has not planned swimming survival self-rescue courses for all age groups and has not planned to understand the effectiveness of supervision and patrol prevention. Conclusion: The educational propaganda film is based on the theme of the sea and the river and is designed with water splashing and slipping as the plot design, and continues to collect drowning accident data analysis, and guide the county and city government education bureau to cooperate with local organizations and communities in patrol plans. It also assigns central inspectors to regularly supervise the effectiveness of patrols and prevention. In addition, they follow the example of Europe, America, and Oceania in setting up swimming self-rescue teaching courses, and cross-cultural diversity teaching design.

Drowning Prevention Symposium - cross-sectional efforts and collaboration

Yasuko Nakagawa, Shinichi Aoki, Takayuki Matsumoto, Emi Kono, Toshinori Ishikawa, Ryo Ueno, Masao Kawachi

Japan Lifesaving Association, Tokyo, Japan

Fact in Japan

7,333 death occurred by drowning in 2020. *1

It is 19.2% of all unexpected accidents. The numbers exceeds that of car accidents.

Death from drowning is caused 73.7% domestically and is mainly related to drowning in bath tubs.

However, outdoor water related accidents occur 52% in the Ocean and the act is caused 29% by fishing. *2

Japan is surrounded by the ocean, also having a bath culture. As drowning occurs in many scenes many sectors are involved to take action to prevent drowning.

National Data on drowning are collected by 4 different sectors.

Objectives

In response to the United Nations General Assembly (75th session, Agenda Item 24), Japan Lifesaving Association took the initiative to hold the Drowning Prevention Symposium to increase public awareness on Water Safety by sharing the efforts of drowning prevention of Government sectors, and to promote cross-sectional efforts and strengthen collaboration among public and private organizations involved in drowning prevention.

Description

Symposium Speakers

Ministry of Land, Infrastructure, Transport and Tourism

Japan Coast Guard

Consumer Affairs Agency

Ministry of Education, Culture, Sports, Science and Technology (Sports Agency)

Ministry of Internal Affairs and Communications, Fire and Disaster Management Agency

Japan Lifesaving Association

Lessons learned

It was the first multi-sector assembly for the purpose of drowning prevention. By sharing and introducing initiatives of various activities, we concluded that the most important fact to prevent drowning is education. Each sectors have acknowledged the importance of education and with guidelines and policies in place, private sectors like ourselves can put in drowning prevention action into practice.

We are still in our first step but this symposium should lead to a wider group in the future.

Case study on how drowning prevention could be integrated in a broader policy agenda for children's development in China

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Background

In China, drowning cause nearly 10,000 preventable deaths among children aged 0-17 each year.[1] Child drowning is an important public health and social development issue that needs to be solved urgently.

The Outline for Children's Development in China is a programmatic policy guiding the development of children and children's undertakings in China. It is promulgated by The State Council every ten years. In the third Outline of 2011-2020, "Reducing child injury mortality" was listed as one of the main goals for the first time. Child injury prevention work has been highly valued, and child injury mortality has decreased by 50.6% during this period.[2]

Drawing on this experience, in order to strengthen child drowning prevention in China, with the promotion of departments of health and women & children's affairs, the new Outline of 2021-2030 has successfully included special goal and strategy for child drowning prevention.

Description

Outline for Children's Development in China (2021-2030) covers 70 major targets and 89 strategic measures. Child drowning was included for the first time, with a major target of "... achieve sustained reduction in child drowning mortality", and a strategic measure of "strengthening care to keep children out of dangerous water...".[3] Regarding the implementation of the Outline, the Chinese government has issued a plan on the division of targets for all government departments. Child drowning Prevention target involves five departments. Government takes the lead in monitoring the implementation of the Outline, and issues monitoring reports annually.

Since the implementation of the new Outline, child drowning mortality has decreased of 2.66% from 2020 to 2021 in China.[1]

Lessons learned

The integration of child drowning prevention into overall child development policy has effectively strengthened the attention and input on child drowning prevention. Measurable goals, Clear division of tasks between departments and government takes the lead in monitoring are crucial steps of policy implementation.

Conclusions

This case study document how drowning prevention has been mainstreamed into broader policy agenda and government role on drowning prevention. This example could thereafter be spread to other regions and countries as a good example of mainstreaming implementation of drowning prevention.

Tackling Drowning in Bangladesh through Policy Coherence in the spirit of UNGA Resolution on Global Drowning Prevention

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Drowning in Bangladesh, socially accepted as the curse of nature, is one of the leading factors causing the deaths of children under eighteen years of age [1]. BHIS 2016 evidenced drowning as one of the three leading causes of child death in Bangladesh claiming 40 children per day [2]. In rural Bangladesh, the death of under-five children caused by drowning has been found highly prevalent (9.7%) compared to urban areas (7%), which is just below the rate of deaths of children of the same age group caused by pneumonia [3]. BDHS 2017-2019 evidenced that 58% of the children aged 1-5 years die from drowning.[4] RLSS has ranked Bangladesh as 5th highest among the commonwealth countries concerning drowning [5].

This paper has illustrated the initiatives of the Government of Bangladesh for the adoption of a policy framework through a multi-stakeholder approach to tackling drowning. It is essential because, across communities' awareness of drowning is insignificant, drowning is not adequately recognised by the policy actors, and drowning has not been discussed much in the public domain.

Ensuring effective implementation, the process of developing the national drowning prevention strategy has brought all relevant stakeholders into a common strategic framework, which emphasises greater public and policy attention. The methodology includes a systematic review of relevant government policies including water safety policies of other countries, examining the evidence generated through scientific research, reviewing policies related to Early Childhood Care and Development (ECCD), Child Daycare Care Center Act 2021, and conducting in-depth interviews, Focused Group Discussions, Key Informant Interviews, etc.

The strategy is now awaiting the final approval of the Directorate General of Health Services (DGHS) under the Ministry of Health and Family Welfare (MoHFW). Advocacy initiatives around the passage of the strategy have now been recognised by UNICEF, WHO, government, and non-government agencies, which could be replicated by other countries. Effective policy advocacy is the key to developing policies and mobilising public resources for their implementation where the said strategy has outlined the multi-stakeholder approach with detailed guidance, which includes but is not limited to planning for resource mobilisation and monitoring matrix.

National Plan of Actions on Drowning Prevention and Water Safety for Sri Lanka: Challenges and Recommendations

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Sri Lanka is surrounded by 1,340 kilometres of beach frontage and with an abundance of inland waterways. As recorded, drowning related deaths are the second highest fatal accident in Sri Lanka. It is estimated that over 1,100 drowning deaths occur annually. As stated in the Sri Lanka Drowning Prevention Report (December 2014 and January 2020), the average number of deaths per year has been 755 during the period of 2005 to 2007.

The National Council for Disaster Management (NCDM), chaired by the President of Sri Lanka has been directed to form a National Committee for Drowning Prevention and Water Safety under the provisions of the Sri Lanka Disaster Management Act no. 13 of 2005.

As detailed under the Sendai Framework for Disaster Risk Reduction (SFDRR) Sri Lankan government has a greater responsibility in addressing the aspect of Disaster Risk Reduction. The 1st, 5th, and 6th targets "of the Sendai Framework; specifically focuses on substantially reducing mortality, developing national strategies and enhancing international cooperation respectively.

Disaster Management Centre (DMC) of Sri Lanka established a national steering committee and five working committees with the technical support from local and international lifesaving institutions. These committees include representatives of the public, and private sector, NGOs, and academia who were involved in preparing a National Plan of Action (NAP) on Drowning Prevention and Water Safety for Sri Lanka. Under the NAP seven (7) projects were introduced in order to achieve six (6) strategies.

The NAP is aimed to create economic benefits through tourism, and to provide basic training on swimming for school children including a "Swim for Safety" programme. Other objectives of the NAP were to ensure the safety of water related activities while building the swift water search and rescue capacities of first responders, enhancing employment opportunities and creating risk awareness among the community by providing adequate information through media. Existing regulations have been empowered, and new guidelines were imposed to mitigate drowning deaths.

The aim of this paper is to create a platform to share Sri Lankan experiences and lessons learned in implementing the "National Drowning Prevention and Water Safety Action Plan 2017-2020".

Progress and Pathway towards securing a UN General Assembly Resolution on Global Drowning Prevention: Reflections on the principles and approach underpinning success

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2021 was a historic year for drowning and its prevention. The conclusion of 3 years of high-level political advocacy through tested United Nations (UN) governance mechanisms, by civil society and diplomatic partners, to secure international action and change for a cause of injury and mortality that accounts for over 235,600 deaths annually, and at least 2.5 million lives in the last decade, according to latest WHO estimates (2020).

The adoption of a first UN Resolution on Global Drowning Prevention (A/RES/75/273), via the UN General Assembly, is a demonstration of the utilisation of the international governance ecosystem, for change. Applying tested advocacy approaches, and learning from other sectors, including health, poverty alleviation, sustainable development, conflict and climate change - that have successfully used such mechanisms for change. The adoption of the UNGA Resolution by unanimous consensus, by 193 countries that are members of the UN (and co-sponsored by 82 out of 193 nations), serves as the first collective recognition of the global scale, impact and preventability of drowning, through political (diplomatic), negotiated means, at the UN. Securing a clear, concise, collective narrative and ambition for change, for the issue of drowning and its prevention. A first in 75 years of UN business.

Independent analysis of the process and pathway to secure the Resolution, undertaken to consider what drove success, revealed a set of 6 core principles including:

- Focused purpose
- Deep understanding of how things work (UN/diplomatic system)
- Strategy and opportunities
- A drive for results
- Meaningful relationships
- Tailored, evidence-based data and emotive stories

Alongside the deployment of advocacy and diplomacy skilled SMEs, insider advocacy tactics, leader/follower knowledge in UN politics, “influencer” champions and the 4 P’s (pacey, persistent, professional, purposeful work), throughout.

In the two years since adoption, there are stories of success from HIC and LMIC settings, responding to the voluntary actions set out in the Resolution text. Including first-ever national drowning prevention plans, cross-sector coordination mechanisms, new policies, investments and research, and global observance of World Drowning Prevention Day.

Momentum is growing. To track international response and progress, a more formal monitoring and reporting mechanism will be beneficial.

Identifying strategic priorities for advancing global drowning prevention: a Delphi-method

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Introduction

The burden of drowning is gaining prominence on the global agenda. Two high-level resolutions in three years reflect rising political support, but priorities remain undefined, and the issue lacks a global strategy. We aimed to identify strategic priorities for advancing drowning prevention using modified Delphi method.

Methods

An advisory group was formed, and participants recruited from diverse expertise and backgrounds. We used document review (2), and data extracted from global health partnerships to identify strategic domains and draft priorities for drowning prevention. Participants rated the priorities in two Delphi rounds, guided by relevance, feasibility, and impact on equity, and where consensus was $\geq 70\%$ of participants rating the priority as critical.

Results

We recruited 134 participants from research (40.2%), policy (26.9%), technical (25.4%) and community (7.5%) backgrounds, with 38.1% representing low- and middle-income countries. We drafted 75 priorities. Following two Delphi rounds, our study identifies 50 strategic priorities for global drowning prevention, across the domains of: 1) research and contextualisation of drowning prevention, 2) best practice guidance, 3) capacity building, 4) engagement with other health and sustainable development agendas, 5) high-level political advocacy, 6) multisectoral action, and 7) inclusive global governance with strengthened accountability. Participants scored priorities based on relevance (43.2%), feasibility (29.4%) and impact on equity (29.4%).

Conclusion

Our study identifies global priorities for drowning prevention and provides evidence for advocacy of drowning prevention in all pertinent policies, and in all relevant agendas. The priorities can be applied by funders to guide investment, by researchers to frame study questions, by policy makers to contrast views of the expert groups, and by national coalitions to anchor national drowning prevention plans. We identify agendas including disaster reduction, sustainable development, child and adolescent health, or climate resilience, where drowning prevention might offer co-benefits. Finally, our findings offer a strategic blueprint as the field looks to implement the accelerate action for drowning prevention and develop a global strategy for drowning prevention.

Full paper published here: Scarr J-P, Jagnoor J. Identifying strategic priorities for advancing global drowning prevention: a Delphi method. *BMJ Global Health*. 2023;8(9):e013303.

Developing a global research framework for drowning - STAGE 1 of a proposed model from the International Drowning Researchers Alliance (IDRA): Building a Drowning Evidence Gap Map

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Background

Evidence-based, context-specific, and cost-effective policies and programs are needed to address the global burden of drowning. In 2016, we worked to identify drowning research gaps. We soon realized that filling in these gaps requires worldwide consensus on definitions and terminology and on what data to collect on fatal and non-fatal drowning. Hence, we implemented a long-term consensus building process on drowning-related definitions and terminology that culminated with the publication of the first aquatic injuries and drowning dictionary [1]. Other consensus building meetings have taken place among drowning prevention experts with the focus being the creation of guidelines and extensively advocating for uniform reporting of data from fatal and non-fatal drowning [2-4]. Still, guidance for passionate academics is needed so that research efforts are directed where they are most needed. We aim to build a drowning research gap map as the first step toward developing a global drowning research framework.

Description

To provide a detailed description of evidence gaps along the drowning process, we used the drowning timeline matrix [5] to: identify major topics, assess current knowledge, identify gaps in knowledge, associate research questions, and rank them by relevance/priority for global, national or local drowning prevention. A multi-sectoral, multi-step approach was used. Several years after its initiation, the first global drowning evidence gap map will be launched.

Lessons learned

There are still many drowning-related evidence gaps either due to lack of strength of evidence in existing studies or the absence of studies to address a particular topic. The process was not appealing to stakeholders from other sectors other than academia but their participation is crucial for the success of this project. We will present identified strengths and limitations of the process so far and plans for future stages. Sustainable engagement with other key organizations such as the International Lifesaving Federation and the WHO is decisive for the next stages of this project.

Conclusion

The development of a drowning prevention research agenda focused on collaborative efforts emphasizing implementation and disseminating research is a much-needed tool to improve the quantity and quality of drowning related research.

Gaps in the evidence for interventions in global drowning research

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Background

In the previous decade, drowning has received increased political attention (1). Translating this political commitment to saving lives needs policy supported evidence informed interventions (1). Policy decisions are often made in complex, interlinked systems and contextually relevant evidence to support policy making decisions presents methodological challenges. An evidence and gap map (EGM) framework was developed which aims to facilitate the strategic prioritisation of future research and efficient commissioning of interventions.

Methods

Available evidence was sought by searching four electronic databases using the key terms such as “drowning” and “drowning MESH” from 2005-2023. Peer-reviewed studies which measured the outcome of a drowning prevention intervention were included in the EGM. Classification of interventions was guided by the World Health Organization’s recommendations for drowning prevention interventions and strategies (2). Intervention outcomes were classified into health, social, economic, policy and other supporting outcomes.

Results

Forty-four intervention studies were identified. High-income countries (HIC) Australia (n=8, 21.1%) and the USA (n=8, 21.1%) had the highest number of published intervention studies, despite Low and middle-income countries (LMIC) having a higher burden of drowning. Interventions which used community education and/or training were the most common (n=26, 27.4%), followed by teaching school age children swimming and water safety skills (n=12, 12.6%), policy development and regulations (n=9, 9.5%), strengthen public awareness of drowning through strategic communications (n=9, 9.5%), life-guarding and rescue (n=8, 8.4%), install barriers controlling access to water (n=8, 8.4%) and others combined (n=23, 24.2%). Majority of interventions focused on process outcomes such as knowledge gain (n=39, 41.1%) in comparison to hard outcomes such as incidence of drowning mortality (n=15, 15.8%). No studies reported on managing flood risk.

Conclusions

The evidence gap map identifies the limitations in our knowledge of effectiveness drowning prevention solutions, emphasizing the need for methodological advancements reporting on outcomes measures, implementation research that helps establish co-benefits across drowning prevention solutions, and targeted research among high-risk populations in LMICs.

Northern Territory Water Safety Strategy – 20 Years of Collaboration

Annette Roberts

NT Water Safety Council, NT, Australia

The Northern Territory is home to many unique and spectacular waterways that entice Territorians and visitors alike to explore the great outdoors. Popular recreational activities such as swimming, fishing and a wide range of water-based activities inspire many to experience the great Territory lifestyle; sadly the fascination with our waterways has resulted in the NT recording the highest drowning rate per head of population.

The Northern Territory Government is serious about reducing the number of drowning deaths and continues to support the great work the NT Water Safety Advisory Council (the Council) has achieved to date, through the implementation of the NT Water Safety Strategy.

The Council was established in 2002 as part of the Northern Territory Government's 5 point Water Safety Plan. The initial goal was to develop and implement a Northern Territory Water Safety Plan 2003 -2006 – Heads Up, that focused on water safety education, research and data collection and standards.

The World Health Organisation Global Report on Drowning has a concise 10 point action plan to prevent drowning. The Council ensures drowning prevention efforts with those of other sectors and agendas are recognised and shared and believe the Northern Territory and National Water Safety plans are vital in community development. This supports action items 8 and 10 in the action plan and demonstrates that real community leadership must be nurtured and driven.

Drowning prevention pillars, enablers, strategic goals, guiding principles, twenty years of collaboration and a committed group of people, are the critical ingredients for the strategy to help reduce drowning in the Northern Territory. Lessons learnt include leaders coming together to make water safety an important and valued practice in the lives of everyday people in our community.

The Council released the 6th Strategy in 2023, in line with the Australian Water Safety Strategy 2030.

Local Water Safety Planning lessons from Townsville and South East Queensland Australia and how to convene a multi-sectoral, multi-agency regional local water safety strategic planning, which aligns with best practice frameworks and methodologies for collaborative impact and drowning prevention.

RJ Houston, Brooke Cherfils

Royal Life Saving Society - Australia, Sydney, Australia

Background

One of the key themes identified in the Australian Water Safety Strategy 2030 is for every community to develop a Local Water Safety Plan.

The Townsville and Surrounds region is home to 5 percent of the total drowning deaths in Queensland with 33 fatal drowning deaths in the area over the last 10 years. The South East Queensland region has had 366 people drown over the last 10 years.

Royal Life Saving Society - Australia convened more than 120 delegates from over 45 organisations to develop a collective water safety strategy for the South East Queensland region in May 2023; and in Townsville 17 delegates representing 15 organisations for a joint strategy for the Townsville region.

Description

This presentation will outline the approach taken by Royal Life Saving Society - Australia in collaboration and partnership with over 60 government, community and industry groups to develop a multisectoral local water safety plan. Groups included emergency services, water safety organisations, local, state and federal government agencies, judiciary, community organisations and NGOs.

The plans incorporate a holistic approach to drowning prevention, incorporating a range of research processes, media engagement, stakeholder workshops, political engagement and strategy development. Critically the plan development process examined local contexts and engaged deeply with community.

The approach was modelled on two leading Australian collective impact and drowning prevention approaches/frameworks:

1. The Roadmap to Social Impact (Ramia et al 2021); and
2. The Australian Water Safety Strategy (Australian Water Safety Council 2021)

The presentation will cover:

1. The process, inputs, enablers and barriers to the process
2. The stakeholders and why differentiated strategies of engagement were needed
3. Lessons learned and best practices, supported by the case study and literature
4. Why this model is scalable and repeatable and how it aligns with Social Impact literature and international and national drowning prevention agendas.

A Safe Systems approach to Local Drowning Prevention Planning - Albury City

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Background

Over the past 10 years there has been a range of programs and services implemented to assist in reducing drowning in Albury however none of this had been coordinated and led by the Local Government. Following a call on Christmas Day to council staff regarding a drowning death of an overseas born resident in the Murray River, NSW, Albury City Council sort to drive a collaborative approach to drowning prevention to ensure an event like this did not happen ever again.

Description

Albury City Council partnered with Royal Life Saving NSW to develop a Local Drowning Prevention Plan. Using the Safe System for Drowning Prevention Model, Albury City and Royal Life Saving worked together to conduct a range of initiatives. These included an extensive risk assessment, community surveys, community consultation workshops, and Community feedback session.

The Safe Systems for Drowning Prevention model is based on a widely used system in Road Safety and Maritime Safety and tailored for the context of Drowning Prevention. The model is based on 6 principles:

- Death and Serious Injury are unacceptable
- Humans make mistakes
- People are vulnerable
- Responsibility is shared
- Safety is proactive (not reactive)
- Redundancy is crucial

The Model also has key responsible for Local Government (Land Managers) which includes that the Local Government

- Commits to working towards a future of zero drowning incidents
- Demonstrate leadership by valuing and progressing the safe systems approach
- Build capacity at all levels of the organisation
- Fosters shared responsibility
- Utilises and examines relevant data to monitor and evaluate performance
- Ensures that safe systems policies are evidence based
- Integrate the approach into corporate and strategic plans

The Plan was reviewed and adopted by the Councillors and is integrated into other Albury City Council Plans.

Lessons Learnt

The model allows for drowning prevention to be understood, driven and put into context at the local level thus creating outcomes that local communities embrace to make a difference.

Conclusions

The systematic approach to Drowning Prevention Planning that is lead and driven by a Local Government and supported by Drowning Prevention experts has proven to be an excellent working model.

Using community action to drive policy development in drowning prevention: a case study from Zanzibar

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Zanzibar is an archipelago with a population of approximately 1.3 million. The ocean is used daily for transportation, fishing, bathing, cleaning and recreation. Despite regular interaction with water, water safety knowledge is low, and only half of adults know how to swim (13% of females)(1). Consequently, drowning risk is high, reported to account for 20% of young adult deaths (aged 15-24) on Pemba island (2).

In 2013 the Panje Project, a Zanzibari NGO, started the Aquatic Survival Programme, the first water safety education programme in Zanzibar. With technical support from the Royal National Lifeboat Institution (RNLI), and an international advisory group, appropriate resources were developed to improve water safety education and provide basic swimming skills to high-risk groups.

From 2013-2015 these interventions were piloted and refined, ensuring they were suitable for the local cultural context, including creating suitable swimwear for girls.

From 2015-2018 the project was scaled-up. Tools were developed to monitor the delivery of the project, and to engage with local communities.

New delivery partners supported implementation, including community groups, NGO's, state run schools (with support and coordination from the Ministry of Education), and Islamic schools. Different delivery models were piloted, resulting in the Panje Project training teachers and providing quality assurance and safety monitoring. In 2018, activities were broadened to include other drowning prevention activities, with the goal of integrating the project into existing community structures. This included the development of six community-led drowning prevention committees, who coordinated multi-sectoral involvement in the project, engaging with women's groups, fisher folk, aquaculture workers, and the government Disaster Management Commission.

In 2018 and 2022, Panje Project hosted international workshops, and contributed to WHO guidelines on drowning prevention, establishing Zanzibar as a model for drowning prevention activity.

The 2021 UN general assembly resolution encouraged member states to adopt drowning prevention plans, leading to the appointment of a drowning prevention focal point within the Zanzibar disaster management commission, and the development of an action plan with support from Panje and WHO.

This community-driven approach to engaging government in drowning prevention could be used as a role-model in other LMIC settings.

Lex Aquatica: The role of Small Island States in the making of a transnational drowning rescue law. A Mauritian legal perspective.

Hanna Kureemun

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Mauritius is a small island developing state (SIDS) of the Indian Ocean and a well-recognised tourism destination for aquatic leisure. In order to make it a safe destination, lifeguarding along the coasts of Mauritius requires internationally recognised standards to be applied in terms of drowning prevention and rescue. At the same time, the lack of legal means for reducing the risk of coastal drowning, such as proper beach lifeguarding and entailing the responsibility of the stakeholders involved therein contributes to increasing the current vulnerability factors of this SIDS to risks coming from the climate-induced sea-level rise. While under Mauritian law some beaches are classified as public beaches and are regulated as such by the Beach Authority, the rest is subject to private safety management, including from the hotel industry. In parallel, lifesaving efforts are only being conducted through organisations like the Royal Life Saving Society and Surf Life Saving. Without any clear or constant government support, their local branches however take the form of associations for allocation of resources dedicated to lifesaving. Therefore, a lifeguard on duty, either working for government or the private sector in Mauritius is trained and qualified under the international standards of these two organisations. This paper explores this parallel development towards drowning rescue organisation in Mauritius which appears to be made both through and without the state. It is thus suggested that this can form a new stand-alone body of rules and principles which can be exportable to other SIDS.

The role of collaborative leadership in developing meaningful regional water safety and drowning prevention strategies.

Nicola Keen-Biggelaar

Drowning Prevention Auckland, Auckland, New Zealand

Background

Since 2021, Drowning Prevention Auckland has been leading the development of a regional strategy for Auckland, as an action from the National Strategy, Wai Ora Aotearoa: Navigating to a safer future. The water safety and drowning prevention sector within Auckland and New Zealand has a history of mistrust, distrust, and poor behaviour. A new approach to working together was needed if this was to succeed, and that approach has been led by a deep commitment to authentic collaborative action.

Description

Through a Strategy Development and Implementation Manager role, the principles of collaborative leadership have been demonstrated by including, accepting, and mobilising others to bring the sector across Auckland together to cocreate the mission, vision, strategic goals and areas of focus.

These principles have included leading from a definition of collaboration that goes beyond resource sharing and includes:

- the establishment of a common and shared vision
- ensuring a structure to the process that ensures participating organisations can see the bigger picture and the value they bring, and that value is seen within the outputs that are developing
- high trust environment where any perspective can be respectfully shared safely
- as the leading organisation, a demonstration from DPA as being an open-handed participant and co-creator, with no agenda (i.e. a devolvement of power)

Lessons learned

- Take the time to understand the history and current state of the environment you are entering
- Build trust and relationship first
- Prioritise open and transparent communication
- Be authentic and accountable
- Share power
- Demonstrate your accountability through the sharing of the process you are following

Conclusions

Collaborative initiatives implemented as a result of the Wai Ora Tamaki Makaurau Strategy will be shared. As leaders within a sector aiming to positively impact a significant health issue, we need to expect more of ourselves and challenge our leadership styles to be more inclusive and collaborative. The call to action is to build our collaborative muscle – value the good in other organisation's work and contribution and seek out the possibility to achieve more together.

Advancement and Challenges in the Development of a National Water Safety Action Plan for the U.S.A.

Morag MacKay

Safe Kids Worldwide, Washington, USA. US National Water Safety Action Plan, Washington, USA

In 2018, Water Safety USA undertook a process to develop a National Water Safety Action Plan (USNWSAP). The process, which was overseen by an arms-length Steering Committee made up of members within and beyond Water Safety USA, involved four stages: establishing scope and selecting a framework that would support development and implementation; establishing working groups to develop recommendations for action and further research; stakeholder feedback and convening an expert panel to help finalize the plan; formalization of USNWSAP and plan launch. These stages were supported by a communications plan to engage stakeholders.

Since we last shared progress in 2019, we've completed the second and third stages and the fourth is well underway. Between 2019 and 2022, six working groups (data/public health surveillance, life jackets/other flotation, water safety/water competency/swimming lessons, supervision/lifeguards, rescue/CPR, and barriers/entrapment/electrocution) undertook an environmental scan and situational analysis and produced 100+ evidence-informed recommendations for action or research. During development, recommendations were reviewed twice by the Steering Committee and once by an external panel of experts. A Blue Ribbon Panel (BRP) of 26 experts from across the country was convened and a modified Delphi process was conducted in parallel with two stakeholder surveys to get feedback from individuals and organizations. Two BRP meetings were held in late 2022 and early 2023 to discuss unsettled recommendations, cross-cutting issues, national-level activities that would support implementation at the state, county, and community levels, and longer-term considerations.

The inaugural U.S. National Water Safety Action Plan was launched in June 2023 and dissemination is ongoing. The Steering Committee is working on providing tools to support our call to action - guidance and technical support on undertaking a context-specific situational analysis to inform the development of water safety action plans at the state, county, and community levels, an online implementation database to support evidence-informed action planning and formalization of the USNWSAP to provide a foundation to support implementation and monitoring of the plan. This presentation will share progress, challenges, solutions, the initial response to the launch, and progress on implementation.

Victorian State Government approach to Water Safety in Victoria.

Jenni Rigby¹, Paul Shannon²

1Emergency Management Victoria, Melbourne, Australia. 2Life Saving Victoria, Melbourne, Australia

Background

In 2020-21 Victoria experienced a 20-year drowning high, 63 people tragically lost their lives in Victorian waters. At present, Victoria's drowning toll of 51 remains eleven above the 10-year average which highlights an alarming trend. Victoria falls concerningly short of the Australian Water Safety Strategy's goal of 50% reduction in drowning by the end of 2020. Of the priority areas, urgent work is required to address drowning among people aged 65+ years, high-risk populations, and inland waterways, which have increased by 24 per cent, 30 per cent and 30 per cent respectively, since baseline.

Description

The Victorian government established a Water Safety Taskforce in response to a high number of drownings across the 2018-2019 summer period. This Taskforce drew together the state's collective endeavours and expertise in water safety to streamline drowning prevention in the state. This initiative provides a platform to oversee the diversity of action and investment of agencies, and how efforts should interconnect.

Lessons learned

Throughout 2021 the Taskforce developed the Victorian Water Safety Strategy (VWSS) 2021-25, with a vision to "Encourage more Victorians to safely participate and enjoy recreation in and around water, while reducing the number of drownings and water-related injuries to zero". To achieve this vision, the VWSS promotes collaboration and coordination between agencies; encourages shared community responsibility for drowning prevention; and advocates to collaborate with local partners to manage local risks. The VWSS acknowledges the growing issues for water safety: more Victorians are spending leisure time in and around waterways; more people are using recreational vessels, often with less experience; and learn to swim education is under pressure — an issue exacerbated by extensive COVID-19 lockdowns in Victoria. To complement the VWSS, a Water Safety Action Plan was developed to spell out tangible actions to address these growing water safety issues.

Conclusions

The strategy and action plan are the product of unprecedented cooperation between all agencies involved in responding to drowning. However, state-wide collaboration is just the start for keeping Victorians safe. We need local organisations to drive local initiatives which focus on local risks to achieve the VWSS's vision.

Harnessing the knowledge and experience of a diverse multisectoral stakeholder cohort to design and implement the California Water Safety Strategy

Rob Williams^{1,2}, Chris Carlson^{1,2}, Karen Cohn^{3,2}, Megan Ferraro^{3,2}, Julie Lopiccio^{4,2}, William Koon²

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Background

California is the world's fifth largest economy, home to nearly 40 million residents, and a tourist destination to an additional 250 million people per year. The state has thousands of kilometers of ocean and inland lake coastline, approximately 320,000 kilometers of rivers, and over 1.3 million swimming pools. Drowning is a major public health problem for this large and diverse state with an average of 427 drowning deaths and an additional 1,253 non-fatal drowning events per year (1).

The United Nations General Assembly and World Health Organization recommend that countries adopt national water safety frameworks to advance drowning prevention efforts (2, 3). This presentation outlines the collaborative effort to design a multisectoral water safety strategy for a broad range of stakeholders to motivate and align actions for drowning prevention.

Description:

The nearly two year consultation process to launch the California Water Safety Coalition and deliver the State's first water safety strategy involved multiple components:

- Epidemiological review of drowning burden
- Landscape analysis and key stakeholder in-depth interviews
- Online workshop with 72 participants
- Multiple sector specific "working group" meetings involving 47 participants
- In-person strategy workshop involving 38 participants
- Two strategy document drafts reviewed by 43 stakeholders

Additionally, the strategy design process reviewed and incorporated information from over 150 initial draft knowledge gaps and action recommendations from the USA National Water Safety Action Plan (4), which had significant input from California's drowning prevention community.

Lessons Learned

While drowning is often described as a health issue, prevention activities frequently involved non-health actors, similar to other locations (5). Legislation proved to be a challenging topic with competing interests among stakeholder groups. The level of detail required for a strategy document was difficult to ascertain; some stakeholders wanted prescriptive step-by-step action plans, others realized follow through would be difficult without significant funding and resources. While the strategy consultation process endeavored to be inclusive, there were still important communities missing from the process.

Conclusions

The California Water Safety Strategy drafting process required a strategy framework that was flexible, iterative, and comprehensive to allow for multiple stakeholders across the state to be working collaboratively.

Wai Ora Aotearoa 2025, The New Zealand Approach: Achieving Effective Water Safety Outcomes Through Collaboration and Evidence-Based Decision Making.

Daniel Gerrard

Water Safety New Zealand, Wellington, New Zealand

Water safety and drowning prevention require a comprehensive and collaborative approach to address the many factors that contribute to drowning incidents. This presentation will showcase New Zealand's Wai Ora Aotearoa 2025 Water Safety strategy and how it utilises a framework of education, research, communication, leadership, and frontline prevention to achieve positive outcomes in the sector and for all New Zealanders.

Attendees will learn about the Wai Ora Aotearoa water safety education framework, designed to promote behaviour change and prevent drowning incidents. The presentation will share insights on the importance of evidence-based decision-making, and how a trusted "knowledge hub" can provide relevant data, research, and insights to focus investments and response activities.

Collaboration and partnership are critical components of achieving sector outcomes, and this conference will highlight examples of strong sector collaboration utilising members' strengths and capacity. Participants will learn about sustainable engagement at local, regional, and national levels, ensuring best practice is enacted, and cost-effective solutions and efficiencies are adopted.

Effective leadership and advocacy are also key components of achieving water safety objectives and interventions. The presentation will showcase strategies that advocate for water safety and drowning prevention, and how to influence key decision-makers to increase public and political support.

Finally, the presentation will showcase successful strategies in frontline prevention, search and rescue. Participants will learn about New Zealand's approach to preventing or reducing drowning and water-related injuries through targeted supervision and surveillance, safety services, guidance, and rescue for those exposed to water hazards. In conclusion, this presentation will provide valuable insights for those interested in achieving effective water safety education and prevention through collaboration, evidence-based decision-making, leadership, and frontline prevention strategies.



PREVENTION

Developing research priorities that advance health equity in drowning prevention at the US Centers for Disease Control and Prevention

Tessa Clemens, Briana Moreland, Karin Mack, Michael Ballesteros

Centers for Disease Control and Prevention, Atlanta, USA

Background

Each year over 4,000 people die from unintentional drowning in the United States. Some people are at an increased risk of drowning including children aged 1 to 4 years, American Indian and Alaska Native people, Black people, and children with autism spectrum disorder. In 2020, the US Centers for Disease Control and Prevention (CDC) launched a domestic drowning prevention program aimed at strengthening data and reducing disparities. CDC developed research priorities and associated research questions, rooted in health equity, to establish focus and create a framework for measuring progress.

Methods

CDC established an internal working group that worked with an external consultant to: 1) set guiding principles for the scope of the research priorities 2) review all prior drowning publications and products produced by CDC; 3) conduct targeted literature searches to identify drowning research gaps; 4) review websites of key agencies and organizations that conduct drowning prevention research; 5) assess CDC's capacity to conduct drowning prevention research; 6) conduct interviews with CDC and non-CDC subject matter experts and drowning prevention partners; and 7) draft research priorities and related research questions for review by CDC's Board of Scientific Counselors.

Results

This process led to the development of three health equity-focused research priorities: 1) Describe the risk and protective factors associated with fatal and non-fatal drowning with an emphasis on persons who may be disproportionately affected; 2) Identify and evaluate effective strategies to prevent drowning among persons who are at increased risk of drowning; and 3) Identify how to effectively and equitably implement basic swimming and water safety skills training among persons at increased risk of drowning.

Conclusions

CDC's domestic drowning program uses the new research priorities and research questions in strategic planning. Current projects include partnering with child death review teams to strengthen data on risk and protective factors and partnering with national organizations to pilot and evaluate basic swimming and water safety skills training programs in communities at increased risk of drowning. CDC will track these and future research activities to demonstrate progress towards addressing the research priorities and research questions over the next five years.

Ka hura tangata uta te tiaki atu ki tangata tai - Ngāti Porou Surflifesaving, following ancestral legacies

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Ngāti Porou Surf Life Saving (NPSLS) was established in 2014/15. Mr Peter Boyd and others created NPSLS as a kaupapa Māori (Indigenous Māori) surf lifesaving club to create space for Māori and people of Ngāti Porou (Māori tribe in the Tairāwhiti East Coast of the North Island of Aotearoa, New Zealand) in surf life saving, which is a predominantly non-Māori space. NPSLS is committed to training 'Nāti guards', Māori surf lifeguards grown from the heart of Ngāti Porou based on Ngāti Porou traditional narratives.

NPSLS aims to encourage Māori participation in surf life saving and to reduce the Māori drowning rate through education and prevention. This is achieved through training qualified surf life guards, iwi and community patrol support people and training educators using a kaupapa Māori and uniquely Ngāti Porou approach. For example, the club's logo features Paikea. According to Ngāti Porou, Paikea was the first ancestor to come to Aotearoa on the back of a whale. The club uses Paikea's story to highlight many of the members have genealogical links to Paikea, whilst reinforcing that historically Māori have been people of the ocean.

NPSLS has produced 75 qualified lifeguards, completed eight surf life saving patrol seasons and multiple rescues, run numerous community kaupapa, including delivering surf awards in Te Reo Māori and contributed to the cultural direction of the national organisation for surf lifesaving at a strategic level. In its short lifespan NPSLS has also been awarded club of the year, rescue of the year, club innovation from the national body. The work of NPSLS however reaches beyond the flags and outside of the summer patrol season.

NPSLS seeks to return the people of our iwi to the ocean and to embody their mana moana (authentic manifestation of the ocean), exemplifying what it means to be descendants of Paikea and Māui (famous ancestor of the East Coast). At its essence this is about flourishing mauriora (wellbeing) and having a strong Ngāti Porou identity, which is a life lived in harmony with the ebbs and flows of the tides of Te Tairāwhiti.

Decolonising translational research to enhance water safety for Aboriginal and Torres Strait Islander people and communities: A partnership process between Guunu-maana (Heal), Aboriginal and Torres Strait Islander Health Program and Royal Life Saving Society – Australia.

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Background

Translational research is the scientific process of efficiently translating research into evidence-based programs, practices and policies. It's a continuum that moves through stages of idea generation to program feasibility, effectiveness, and scale-up. Decolonising translational research is a crucial step in addressing the power dynamics that exist within any field involving First Nations people. This is particularly important and relevant to enhancing water safety and drowning prevention strategies in Aboriginal and Torres Strait Islander communities. Aboriginal and Torres Strait Islander partnership in each stage of the continuum is critical for this decolonising process to occur effectively.

Description

This project describes the partnership process between Guunu-maana (Heal), Aboriginal and Torres Strait Islander Health Program and Royal Life Saving Society – Australia (RLSSA).

'Weaving' is an Indigenous research methodology based on Aboriginal traditions of intertwining fibers for structural integrity in the process of basket making, it is analogous to the intertwining and drawing together of First Nations and Western knowledges. Through representation of one non-Indigenous and four Aboriginal and Torres Strait Islander researchers within Guunu-maana (Heal) and two non-Indigenous representatives from RLSSA – this project establishes 'Weaving' of knowledges at idea generation, the first translational research stage, to understand how Aboriginal and Torres Strait Islander people and communities relate and connect to water(ways).

Lessons learned

For Aboriginal and Torres Strait Islander people, water is much more than a colourless, transparent, odourless liquid that forms the seas, lakes, rivers, rain and feeds life. It plays a vital role in culture – providing food, kinship, connection, recreation, stories, songlines and healing. Contextualisation of how Aboriginal and Torres Strait Islander people relate and connect to water(ways) is essential for collaborating in community-led water safety programs, through the integration of cultural, spiritual, and social knowledge systems.

Conclusion

This partnership highlights both the importance of cultural safety and reflexivity in the translational research process, and the need for open dialogue between Guunu-maana (Heal) and RLSSA. The way forward must be established through genuine partnerships that adequately integrates Aboriginal and Torres Strait Islander peoples' knowledges to inform the development of suitable water safety programs, practices and policies.

Kauora: A Theory and Praxis of Swimming for Māori, the Indigenous people of New Zealand

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Background

The aims of this research were

- 1) To understand how Māori whānau (family) practice and perceive swimming and its contribution to whānau health and well-being
- 2) To create a swimming initiative that satisfies the needs of our whānau and wider Māori community.

Methods

This research was undertaken using Kaupapa Māori Theory and Methodology (Māori research framework), ngā mātāpono o Raukawa (family values), and Pūrākau (Māori narratives) (1; 2; 3). These methodologies were used to capture the voices of our community so that it was a distinctly family lead project that had intentions to benefit Māori communities across New Zealand. I undertook 6 interviews with 6 family members (aged 35-60) alongside developing and implementing a Māori swimming programme with one 9 year old.

Results

The main findings of this research were Kauora as a theory and praxis of swimming for Māori, and Kura Kauora (Māori swim school). Kauora revitalises swimming through the lens of our ancestors and connects us to whānau (family) past, present and future. It is made up of three key pou (pillars): kaukau (swimming as play), kauhoe (swimming as providing) and kautiaki (swimming as protection) that each contribute to enhancing whānau health and well-being. Kauora was developed as a response to how Western framings of swimming do not adequately address understandings and practices of swimming from an Indigenous, and specifically Māori worldview (4; 5).

Kura Kauora is a Māori swimming school initiative that applies kauora in both the awa (river) and pool. It is informed by ngā mātāpono o Raukawa (family values) so is whānau led and targets the swimming and water related needs of whānau Māori to strengthen connection to water and enhance whānau health and well-being (2).

Conclusions

Kauora and Kura Kauora are a transformational, whānau derived theory and praxis that address the need for a Māori understanding and application of swimming. Kauora redefines swimming for Māori and is an initiative that is relevant and practical for Māori to flourish in the water environment and therefore contributes to decreasing drowning rates across New Zealand.

Developing Introductory Water Polo Programming as a Vehicle for Racial and Socio-economic Equity in Water Safety in New Haven, Connecticut, USA

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Racial disparities in drowning, particularly among youth, represent an urgent public health problem (1). The structural inequities in water access and aquatics learning opportunities that perpetuate higher drowning rates in non-white and low-income communities also result in lack of access to aquatic sports such as water polo and the subsequent physical, mental, and emotional health benefits associated with water-based physical activity (2). In response, a coalition of community stakeholders across the organization engaged with USA Water Polo's Task Force for Racial Equity and Reform to develop a community-based introductory water polo program model entitled Equity FLOWS (Furthering Opportunities in Water Safety). The first Equity FLOWS pilot program was conducted in New Haven, CT from June 26th-August 6th, 2021 and targeted late elementary and early middle-school aged low-income youth (n = 61) in New Haven, Connecticut enrolled in Horizons at Foote School, a non-profit academic and enrichment summer program. Participants demonstrated significantly improved basic swimming and treading ability and onboarding into subsequent local USA Water Polo fall programming, in addition to increased knowledge of water polo game play and comfort in the water. Similar results were found for the program in 2022 and this level of success supports the dissemination of Equity FLOWS to multiple sites across the nation.

Tangaroa Ara Rau - The many voices of Tangaroa

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Tangaroa Ara Rau is a collective of Māori (Indigenous peoples from Aotearoa New Zealand) water practitioners passionate about kaupapa wai (the essence of and programmes connected to the water) and connecting whānau (families) to the water. Tangaroa is a Māori water deity and immediately centres the importance of spirituality, identity and culture for Indigenous peoples. Tangaroa Ara Rau was formed to provide a collective for Māori water safety practitioners to exercise mana motuhake (self-determination) and advocate for Māori communities.

Tangaroa Ara Rau run social media campaigns, share and compile educational resources, provide research support and advocacy and run water safety courses, all of which are provided free or with minimal cost to the communities we serve. As a collective with over 30 years experience working with whānau (families) hapū (sub-tribal groupings) iwi (tribal groupings), communities, national organisations and government, we have learnt that our on the ground approach and direct connection to communities is the most efficient way to serve our communities.

Tangaroa Ara Rau began in 2016 due to the refresh of the Māori water safety strategy. This was in response to the lack of Māori voice and leadership in the national organisations for water safety in Aotearoa. Tangaroa Ara Rau has a strong focus and presence in the community where we listen to the needs and aspirations of our Māori communities. Tangaroa Ara Rau has also had a positive shift on a governance level where there has been an increase in Māori involvement on water safety related boards to allow for Māori voices and worldviews to be heard and applied across the water safety sector.

Alongside members of Tangaroa Ara Rau, leader of Tangaroa Ara Rau Rob Hewitt will discuss the successes, learnings and challenges. We will address the scope of work and influence, from working directly in the community, to governance boards so the needs of Māori and Indigenous peoples of Aotearoa are met. We are committed to connecting with the communities we serve through multiple water related initiatives so that whānau flourish in the water space by strengthening connection to water.

Self-rescue, explorative learning, and a need for a scientific approach to Drowning Preventive Swimming Education in primary and lower secondary schools in Norway

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Background

In the last 15 years, there has been strong governmental engagement in improving education for drowning prevention in Norway, followed by several changes in legislation, regulations, curriculums, and learning methods. For many years swimming education in Norway has been based on instruction, targeting swimming techniques in pools. The curriculum for Knowledge Promotion 2020 and the core curriculum gives direction for training and teaching in subjects. The competency-based subject curriculum in Physical Education 2020 provides explorative learning in safe behaviour, swimming, self-rescue, risk assessment, and lifesaving in the outdoors.[1],[2],[3]

Description

Changes in legislation and a curriculum based on a progression in competence call for a change in didactics. The curriculum of 2020 provides a need for an explorative approach based on the pupil's interaction with the environment, and the facilitated task.

Lessons learned

An explorative approach to learning provides a need for knowledge about what the pupils must discover. We discovered that teachers' and instructors' didactical approach and planning for suitable tasks must be built on an understanding of water physics, and knowledge about the different water environments.[4]

Conclusions

This project has targeted without going into theory, how to facilitate explorative learning through tasks designed in a way that the pupils by solving the task:

- discovers the desired phenomenon for gaining competence
- creates prerequisites for the next task in the progression of competence
- understand and reflect in an integrated formative assessment.[5]

The findings are in accordance with the curriculum of 2020. Practical examples are presented on the governmental website svommedyktig.no. [6],[7],[8]

Title: How a School Based Drowning Prevention Program in Cambodia is Increasing Drowning Risk Minimization Skills and Knowledge.

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Background.

Every year thousands of children drown in Asia. Child drowning in Cambodia is considered a silent epidemic. In a country crisscrossed by rivers, canals and rice paddies, the latest WHO data published in 2020 state Drownings Deaths in Cambodia reached 1,113 or 1.24% of total deaths. The age adjusted Death Rate is 7.01 per 100,000 of population ranking Cambodia #12 in the world however due to the difficulties of collecting and collating robust sources of data, the number is acknowledged to be much higher.

The Helpcode Cambodia Drowning Prevention program is aimed at raising awareness around water safety, to keep children safe in and around water, to prevent child drowning and reduce injuries to children caused by drowning.

Methodology

This is a descriptive study showing the efforts of the drowning prevention program facilitated by Helpcode since 2019.

The course is a competency-based training program with programs tailored towards children and adults covering ten key messages on water safety, teaching participants how to effectively perform Cardiopulmonary Resuscitation and how to Swim for Survival. The teaching resources developed were designed for low resource settings by RLNI and adapted and translated by Helpcode to the Cambodian context. Due to the recent impacts of the COVID-19 pandemic, Helpcode also adapted the implementation approach of the program and developed a series of Drowning Prevention Program videos which were able to be delivered into communities virtually on a variety of social media platforms.

Results

Since 2019 supported technically by SWIM (Safety When It Matters) the Helpcode Drowning Prevention Program in Cambodia has educated 4211 people, children 3890 and 321 adult caregivers in the coastal communities of the south of Cambodia, Sihanoukville and the nearby islands of Koh Rong and Koh Rong Sanloem.

Conclusion

In the communities the Drowning Prevention Program has been implemented in and based on participant's experiences with the program, training in Water Safety and Cardio Pulmonary Resuscitation has improved community's knowledge and confidence in knowing how to stay safe in and around water and take action on the prevention of drowning.

Talk to the kids first - engaging with students to design a high school beach safety education presentation

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Introduction

Greater and improved beach safety education programs in schools are often key recommendations in the Australian and global beach safety literature. These programs are valuable as hazard and safety knowledge developed at younger ages are foundations for risk assessment and decision-making as adults. However, while a plethora of school beach safety education programs exist, little is known about the design, content and effectiveness of these efforts. This study used a co-design process to design and deliver a new school-based beach safety education presentation for youth aged 11 to 13 years in a coastal community in the Lake Macquarie City Council (LMCC) region of New South Wales, Australia.

Methods

A mixed-methods approach involved triangulating feedback from beach safety education experts, lifeguards and students to design a school-based 45 minute presentation to be given by lifeguards. Following an expert content survey analysis of the initial presentation and an expert workshop to discuss the survey results, four student focus group sessions (two male, two female) were held on a high school campus. Discussions followed a semi-structured interview schedule focusing on student experiences at the beach and their recommendations for beach safety education programs in schools.

Results

The co-design process provided valuable lessons for future beach safety education program development. Student focus groups identified aspects of this age group's beach experience that initiated revision of the presentation in terms of content and safety messages. Peers are a primary motivator for this age group and students' growing independence emerged as an important theme. While our cohort was knowledgeable about beach hazards and risks, due to their proximity to surf beaches, students conveyed mixed safety attitudes and self-reported safety practices, highlighting the importance of designing programs to motivate behaviour and promote safe decision-making vs raising awareness alone. UNSW Sydney ethics approval was obtained.

Conclusion

Findings of this study show the importance of engaging with target audiences of intended beach safety programs in the design phase as existing programs may not be delivering information that is needed, wanted or useful. A similar co-design approach is highly recommended for future beach safety programs for all demographics.

SOBRASA's Kim at School program to reduce drowning in Marataízes (Espírito Santo) and throughout Brazil

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Introduction

In Brazil tragic drowning events occur in different aquatic scenarios such as buckets, washing machines, household, coastlines and lakes. In Brazil, in 2020, drowning was the 1st cause of death in children aged 1 to 4 years old, and 2nd in children aged 5 to 9 years old¹. Kim at School program was developed by the Brazilian Lifesaving Society (SOBRASA¹) and consists of dissemination of drowning prevention tips targeting children aged 5 to 14 years old in schools, churches, recreation and other places frequented by children, teaching them how to assess the risks and behave in different aquatic environments. This study aimed at evaluating the knowledge retention of children impacted by the program.

Methods

The Water Rescue Group of Marataízes-ES and Secretary of Education are responsible for implementing the prevention program. Children watch playful videos and interact with prevention tips for fresh water, beaches and floods. They learn about safety materials such as life jackets, flags, through theater, comic-books, banners, survival chain games, and others. After these dynamics, questionnaires are applied. The questionnaire addresses a wide range of topics in different aquatic scenarios, in varying degrees of difficulty covering

Results

Lectures in Early Childhood Education took place in October 2019 (196 children) and November 2022 (230 children) and, due to the pandemic, there were no actions in schools, making it impossible to apply the questionnaire. However, starting off in January 2023, new school visits are being carried out with a plan to impact 7.433 students. Evaluation forms are being applied until September 2023 and detailed results about knowledge retention according to age, sex, school level and level of difficulty of the question will be presented. Preliminary results show that children learn the content and are able to multiply it.

Conclusion

Preliminary results indicate that this program creates a drowning prevention culture, which might impact the way children behave in aquatic settings. Further studies are needed to compliment this information and assess how much of the theory knowledge is translated into attitudes and behaviors towards water safety.

The Role of Legislation in the Prevention of Pool Drownings

John Pearn

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From the early 1970s, child drowning in domestic swimming pools reached epidemic proportions in developed nations. The three primary preventive approaches, to reduce the high incidence of drowning particularly in pre-school aged children, were (a) public education of risk; (b) improved safety design of environmental equipment, including child-proof barrier fences; and (c) safety legislation. This paper reports the results of a thirty-year analysis to quantify the specific effects of safety legislation and the reduction of child drownings in domestic swimming pools. In summary, legislation as a specific preventive tool has reduced pre-school domestic drowning by 40%. Seen in broader perspective of child safety generally, legislation, monitored and enforced, is the most powerful intervention to reduce preventive child death and residual disability.

Child Drowning Prevention: Next Steps

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Prevention of child drowning has been a major component of global efforts around drowning prevention. Child drowning is complex. Decisions made by others (e.g., design of the environment, supervision, provision of swimming lessons, etc), physical and mental development (both overall and between children), underlying determinants of health (such as socio-economic-status) impact a child's risk of drowning. Water is a major part of life from bathing to drinking and recreation to travel often obfuscating the risk of drowning to carers. This presentation looks at the current evidence and recent literature around child drowning to propose next steps for drowning risk reduction during this high-risk life stage.

Methods

We synthesized literature extracted from SafetyLit using the terms drown* and child*. Papers not in English were excluded. For the purposes of this project, we define a child as a person under the age of 16 years. However, this is based on no clear rationale, as variable definitions are used in the literature. Using the literature, we identify gaps in current understanding and frame next steps for the global drowning prevention community around these gaps.

Results

Studies describing the size of the problem were common. However other studies report prevention strategies such as child care, restricting access, swimming skills, education and awareness programs, risk factors (including determinants of health, distraction, rescues), and parental knowledge. There were limited studies evaluating programs. Restricting access to water is a successful child drowning prevention strategy regardless of a country's income level.

Discussion

Children drown across the globe at higher rates than other age groups. Locations are skewed to places closer to home such as swimming pools in high income countries (HIC) and natural water in low- and middle-income countries (LMIC). There is a need for global collaboration to strengthen the evidence base for child drowning. This includes a better understanding of risk factors, what makes programs successful, effectiveness of policy and legislation, and infrastructure (both physical and human) that can influence drowning including that linked to learn to swim, community education, supervision (both formal and informal), and scalability of programs (including the uptake of cardiopulmonary resuscitation).

Parent and caregiver experiences of non-fatal drowning-related hospitalisations of children

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Background

Although children and adolescents are disproportionately impacted by drowning, there is a dearth of information regarding non-fatal drowning among this age group (1). Available data are typically quantitative in nature or medically focused (2), with little qualitative examination of the issue. Data on causal factors associated with fatal drowning are typically found in coronial files and police reports, with few studies reporting incident information from parents and caregivers.

Methods

To address this knowledge gap, semi-structured interviews were conducted with parents and caregivers of children aged 0-16 years who presented to the Emergency Department (ED) or were admitted to hospital due to a non-fatal drowning incident of three tertiary care paediatric hospitals in New South Wales, Australia. Interview data were thematically coded using an inductive approach (3) with a focus on causal factors and recommendations for prevention.

Results

86 parents/caregivers were interviewed. Children who drowned were more often male (59.3%), aged 0–4 years (79.1%) and 30.2% were from household who spoke a language other than English. Incident descriptions were coded to five themes: lapse of supervision, unintended access (commonly in home swimming pools), brief immersion (usually young children bathing), falls into water and ongoing impacts. Drowning prevention recommendations from interviewees were grouped under supervision, pool barriers and maintenance, cardiopulmonary resuscitation (CPR) training and emergency response, drowning is quick and silent, and learning swimming. Significant challenges were faced by people residing in rental properties, culturally and linguistically diverse families and parents/caregivers who cannot swim.

Conclusions

Interview data yielded rich information and informed recommendations around ongoing parental education on supervision and pool fencing (including additional support for people residing in rental properties) as well as a need for culturally diverse drowning prevention education, including CPR training, and swimming lessons.

Outcomes in pediatric survivors of drowning – a NSW population-based study

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Introduction

Drowning is a major cause of injury in children and young adults worldwide. Survivors of drowning may suffer long-term neurological and physical impairment due to hypoxic brain injury. The extent of this health burden has not been documented in the Australian context. This study aims to investigate the neuropsychological and serious behavioral outcomes in New South Wales children and young people who survive a drowning incident.

Methods

People aged 0-25 admitted to an NSW hospital or who died between 1 July 2001 and 31 March 2019 with a diagnosis or cause of death of drowning or immersion, were identified in the Admitted Patient Data Collection, NSW Register of Births, Deaths and Marriages, and National Cause of Death Records. Survival, readmission, and new neuropsychological and behavioral disorder diagnoses after the index admission were quantified. The risk factors associated with readmissions were investigated.

Results

There were 1934 cases identified, 1871 of whom survived. Among survivors, 61.89% were male, 53.66% were aged 0-4, and 24.21% were 16 and older. The commonest site was swimming pool. Younger survivors were more likely to drown in swimming pools or baths, and less likely to drown in natural water than young adult survivors. Subsequent readmission with a diagnosis of specific mental, behavioral or nervous system problems occurred in 9.73% of survivors (N = 182). Within this readmitted group, 74.18% (N= 135) had newly diagnosed health problems: 62 (8.00% of readmitted, 3.31% overall) with mental and/or behavioral problems and 87 (11.22% of readmitted, 4.65% overall) with nervous system problems. Subsequent mental or behavioral disorders were more likely in older survivors while subsequent nervous system disorders were more likely in young survivors, with no significant gender difference for either.

Conclusion

The majority of drowning survivors are young and as in most injury, males are overrepresented. Re-admission with mental, behavioral or neurological diagnoses occurs in 10% of drowning survivors, with more than 80% of these being new diagnoses. The long-term impact on families and the health burden after drowning survival is considerable. Hospitalizations represent only part of this burden. Increased investment in drowning prevention is needed.

Sharing their stories: The lived experience of Parent Ambassadors in drowning prevention

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Background

Peer and social influence-based roles such as champions and ambassadors have been used in public health broadly. Those taking on ambassador roles can include those with a public profile [1, 2]; as well as lay people with personal and/or lived experience with the issue [2, 3]. They are often able to disseminate program messages to a wider audience, and in some circumstances have a personal story related to the cause that they are willing to share. This study reports on lived experiences of those participating in a specific health promotion strategy, the Keep Watch Ambassador Program delivered by Royal Life Saving Society of Western Australia (RLSSWA) [4]. The program began in 2001 with one ambassador, with eight parents currently involved. This study sought to illuminate the perspectives on the value and experience of using ambassadors with lived experience of drowning in WA.

Methods

Participants were either Ambassadors or organisational representatives. The study utilised interpretive phenomenological analysis [5] to identify patterns of meaning via semi-structured, in-depth interviews (n=11). Interviews were transcribed, inductive thematic analysis was undertaken [6]. After individual analysis, cases were grouped to develop overarching and subthemes.

Results

Ambassadors (n=6) and organisation representatives (n=5) had been involved in the Program for between two and 20 years. Four overarching themes were identified: The event; Motivation and benefits; Social support; and Amplifying value. All ambassadors recounted a positive experience during their participation and identified their involvement as supporting them through their grief and helping to add purpose to their lives after a traumatic event. Narratives suggest the impacts of the Program have been felt throughout the organisation.

Conclusion

The use of an Ambassador Program in drowning prevention comes with a unique set of opportunities and challenges. There is relatively limited information in the public health literature that explores the role of ambassadors or their impact. This study suggests that ambassadors in health promotion and prevention programs appear to have benefit for both an organisation and the Ambassador and adds to the dearth of findings in this often utilised, but rarely researched or evaluated strategy for drowning prevention.

Supervision and Guardianship Across Canadian Fatal Drowning Locations

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The presence of supervisors and capable guardians has continued to play an important role in mitigating the risk of fatal drownings in both natural and built spaces. To evaluate its impact on Canadian fatal drowning cases, this research collated all known accidental drowning records from January 1st, 2006 to December 31st, 2016, representing an 11-year period from each Canadian coroner and medical examiner's office in partnership with the Canadian Drowning Prevention Research Centre. Descriptive and bivariate analyses were computed ($n = 5,105$) to give an overall summary of drowning characteristics in relationship to the supervision and guardianship present during the event; characteristics include the activity that the individual was engaged in prior to death, including the types of recreation, daily living, or occupational activities that they were undertaking. Significance was calculated to a 95% confidence interval ($n = 0.05$). Binary logistic regression was then used to examine the impact of activities prior to death and demographic characteristics (age, sex, swimming proficiency) on the likelihood that someone would have died in the absence of a capable guardian. Data were analyzed and visualized using a combination of RStudio, IBM SPSS, and Tableau. By applying the principles of Crime Prevention Through Environmental Design (CPTED) principles to drowning locations, we can assess the push-pull relationship between physical environment characteristics on risk-taking behaviours. More specifically, results shared included an assessment of a) natural surveillance of known fatal drowning locations, such as effective lighting and clear line of sight of water users, b) natural access control, such as the implementation of gates in privately owned and/or managed pools, c) territorial reinforcement to generate a clear delineation of swimming zones, and lastly, d) activity support and passive surveillance by capable guardians, as assessed by the presence of witnesses, site managers/lifeguards, and/or individuals that assume the role of bystander-rescuers.

Beyond the numbers: water safety knowledge, attitudes and participation of migrant adults to determine their drowning risk

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Background

The Australian Water Safety Strategy identifies migrants as a key population for reducing drowning by 50% by 2030 (1); 30% of all drowning deaths in Australia are people from migrant backgrounds (2). Key risk factors for drowning among migrant communities include age, sex, time in Australia, alcohol, and swimming skills. Recently, there has been an increased availability of swimming and water safety education programs aimed at increasing skills and knowledge among migrant communities. However, little is known about adult migrants attitudes, awareness, knowledge towards water safety and their participation around the water, and how this this contributes to their drowning risk.

Methods

An exploratory qualitative study using semi-structured focus groups and interviews was conducted with 105 adult migrants (>18 years) in May-September 2021. Purposive sampling was utilized to reflect migrant groups represented in drowning data. The domains of enquiry were guided by the health belief model and theory of planned behaviour. Focus groups and interviews were recorded, transcribed and thematically analysed.

Results

Participants included new arrivals (<5 years in Australia), to long-time residents (≥ 20 years). Two key groups were identified, non-swimmers, and those who learnt to swim as an adult. Themes across both groups were: awareness of drowning risk, safety concerns for children, barriers and enablers to participation, including cost, peer support, social and cultural determinants. Differences in attitudes and risk perception were evident when stratified by sex, age, parents/non-parents, time in Australia.

Discussion

Migrant adults were aware of drowning risk, especially for children. However, obtaining skills was not a priority for themselves, barriers exist accessing programs/resources that specifically meet their needs. The challenge for drowning prevention practitioners is establishing supportive environments where migrants are empowered to make informed decisions for the safety of themselves and their families, creating generational change.

Learning outcome

Drowning prevention is a complex issue where a one size fits all approach is ineffective in changing behaviour. Numbers only tell one part of the story and represent one part of the solution. Qualitative research provides rich insights that can inform development of drowning prevention strategies that are directly informed by the target audience.

Social awareness campaign on migrant population drowning

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Background

According to UNHCR data, the number of refugees and migrants crossing the Mediterranean to reach the shores of Europe has been decreasing in recent years, from over one million (peak in 2015) to 123,300 in 2021. However, the number of fatal crossings has not only not decreased, but is increasing, and in 2021 an estimated 3,231 people lost their lives or went missing in the Mediterranean Sea.

To the harsh conditions in which these crossings are made, fleeing in many cases from violent situations, conflicts or persecution, we must add the fact that when they reach their destination, in many cases they are faced with legislation or bureaucratic procedures that dehumanise them, turning these people into mere numbers and making it difficult for society to empathise with them.

Description

With the aim of raising awareness about the high number of deaths that occur among migrants and refugees on their journey to Europe and the conditions in which these journeys take place, the Royal Spanish Lifesaving Federation has carried out an awareness campaign based on the broadcasting of testimonies of different people related to the migratory movement across the Mediterranean through the different profiles on the organisation's social networks:

- Migrant who arrived to Europe and now works as a lifeguard
- Civil Guard of the Maritime Service
- Emergency health technician who attends to refugees on their arrival to Europe
- Worker at a Youth Centre that takes in migrants.

Lessons learned:

The testimonies shown have had a great impact in terms of number of visits and reactions. Showing this type of testimonies helps to put a face to a problem that sometimes seems distant and to raise awareness of the drama that these people live in their countries of origin and that forces them to put their integrity at risk in the hope of finding a better life.

Conclusions

Minimising the number of drowning deaths among migrants in the Mediterranean requires the development of a coordinated strategy between different entities and countries. Focusing attention on the problem may be the first step towards implementing this type of initiative.

Program pathways for CALD community drowning prevention: “16 years of coal-face CALD community water safety engagement “

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Background

Within Victoria, Australia, CALD communities are overrepresented in drowning statistics. In 2007 Life Saving Victoria created a stand-alone Multicultural department to deliver targeted water safety programming to these communities. These programs continue to focus on newly arrived, refugees, and international students. This presentation outlines the successes and continuous participation growth of an award winning 16-year initiative to increase CALD community water safety knowledge, aquatic skills, organisational inclusion, settlement, and wider social cohesion within Victoria.

Description

Central to the initiative is the highly popular and effective ‘program pathway’, which provides opportunities for program participants to progress into employment within the aquatic industry. This is achieved through the 500+ partnering community organisations (eg. local elders, coaches, settlement service coordinators, teachers), who recruit the 24,000 CALD participants each year into activities including: classroom sessions (incursions); excursions to local waterways; learn-to-swim and, aquatic industry courses (pool lifeguard, swim teacher and surf lifesavers).

Lessons learned

Case studies will be discussed that reflect the critical part ‘CALD role-models’ play in the growth and reach of the initiative; the dispersion of vital water safety messaging; and, obtaining ‘real’ industry inclusion. CALD role models need to reflect the CALD communities in need of water safety education, and can take the form of individuals, communities, or even participating pools and lifesaving clubs. Significant social outcomes of the initiative are also reported: a 2021 Social Return on Investment study revealed for every \$1 invested (in this initiative), there are \$14.85 of benefits to the wider community.

Conclusions

The success and popularity of the program pathway has been due to its simplicity, achievability, variety, and logical progressions. All ages/ groups can participate: participants can undertake one or all levels of the pathway, with water safety information embedded throughout. The model has recently been successfully adapted to other at-risk groups around water (seniors and those with disabilities), demonstrating the transferability of this model and how it could be further adapted to tackle drowning risk among other vulnerable populations.

Reducing Migrant Risk of Drowning in Queensland through tailored programs.

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Multicultural communities are a key population group in the Australian Water Safety Strategy 2030, with an average of 73 overseas-born resident deaths per year in Australia (1). More than 100,000 overseas migrants moved to Queensland in 2021-22, many from countries which are either landlocked, or where swimming for recreation is not practiced (2). With minimal exposure to swimming in any location, and the abundance of natural waterways available throughout Queensland, water safety education for multicultural communities is vital (3).

In response to the need for better targeted water safety and swimming programs, Royal Life Saving Society – Queensland has developed three types of programs for multicultural communities, depending on their identified needs: dry land; wet (water-based); and a combination of dry and wet programs.

Dry land programs focus on water safety knowledge with dry land practical activities to assist in understanding. These can include; learning how and when to wear a lifejacket, how to supervise children effectively, understanding aquatic safety signage and information, and learning what to do in an emergency. Wet programs (water-based), provide in-water skills focusing on water safety knowledge, personal safety and survival skills. The combination programs offer core elements from both the dry and wet programs.

These programs are supported by community-led water safety discussions, in conjunction with community leaders, to assist with learning water safety strategies, the provision of resources, and materials.

Through delivery and refinement of these programs, specific cultural needs and adjustments have been identified. One significant barrier is communication and interpretation of common Australian terms, which often do not translate (4). This has led to refined delivery, to ensure that meanings and demonstrations are clearly understood by participants and transferrable to various aquatic locations.

Assisting with the often deeply held fears around entering the water for many of these communities, and other key learning which will be explored in this presentation.

With fatal and non-fatal drownings continuing to be a significant health burden globally, exploring lessons learned from implementation of programs at a community level and sharing that knowledge is important to ensure future programs better meet the needs of migrant communities.

Increasing Women and Girls' Access to Swimming: Local Perspectives on Swimming, Recreational Ocean Access and Gender Barriers in the Maldives.

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One third of drowning fatalities are female¹. Two thirds of women worldwide cannot swim². In the Maldives, women and girls do not swim, snorkel, or engage with the sea recreationally as much as men and boys; some girls are four times more likely than boys to feel unconfident swimming in the sea³. Although swimming is in the curriculum, most schools do not teach it due to lack of instructors. The Maldives is 99% ocean. Learning to swim is imperative not only for safety, but for enabling access to the dominant environment and core recreation and economic space⁴. Ocean recreation initiatives can also improve confidence and wellbeing, empowering women and wider communities to access new livelihoods and address societal inequalities⁵.

In 2022, we spent five weeks in the Maldives to qualitatively understand local perspectives on ocean access inequalities, impacts and solutions and collaboratively design an intervention. We conducted semi-structured interviews with 35 people, and consultations with 164 people from 43 stakeholder groups across 13 islands. Transcripts were thematically analysed.

Summary findings:

- 11/13 islands reported most local children cannot swim.
- Every island reported less females can swim than males. One reported <5% females can swim.
- Barriers include: fear, lack of swimming programmes and instructors (especially female instructors), community perceptions of the sea as a male space, gender norms (women have more caring responsibilities), skin tone concerns, and in-accessible swim areas.
- There is high demand and willingness-to-pay for swimming lessons in every island. Having qualified instructors, accessible areas, teaching mothers to swim, and government-implemented school swimming programmes are key to improving access.
- Benefits of teaching women and girls to swim include safety, health, empowerment, job opportunities and environmental connection and action.

Our findings reveal gendered ocean access inequalities in the Maldives, and that training local instructors, especially females, could enable more people to safely access their dominant blue space. In response, we piloted a female-focused swimming instructor training programme and are researching whether this could be replicated as a model elsewhere. Our presentation aims to stimulate discussion on both inequalities in access to swimming, and the tangential benefits of drowning prevention activities.

Analysis of deaths by drowning during migration movements in Europe

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Background

Every year, thousands of people try to reach Europe through the dangerous Mediterranean routes in search of a better future. However, not all of them succeed, and many of them lose their lives or disappear each year during the crossing.

Knowing the real number of deaths is a complex task and although there are many entities that try to quantify the data of these deaths and disappearances (from governmental entities to NGOs), the figures published are only an estimate and there are large differences depending on the source consulted, something that may be due to the methodology used by each of the entities that publish data.

Methods

In order to carry out this study, we analysed the data published by the main sources that analyse mortality during migratory movements in the Mediterranean, including UNHCR, the International Organisation for Migrants and the Euro-Mediterranean Human Rights Monitor, as well as the methodology they use to make this estimate.

Results

The sources analysed show very disparate data; using the year 2021 as an example, we find differences of up to 43% in the number of deaths recorded, depending on the entity that publishes the data.

Even between organisations that are part of the United Nations, such as UNHCR and the International Organisation for Migration (partner organisation), there are differences of more than 37% in the data published.

Conclusions

The lack of a unified criterion in the collection of information, together with the high number of disappearances of migrants and refugees, make the task of making a real estimate of the deaths that occur each year in the Mediterranean very complex and thus put an end to a problem whose dimension is not known.

Parents as First Teachers Preventing Drowning

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Background: Globally, children aged 0-4 years are disproportionately at risk of drowning (1). In Aotearoa-New Zealand 23 (5.6%) of the 413 preventable drowning fatalities in the past five years (2018-2022) were aged under five.

World-wide, inadequate supervision has been implicated in almost all childhood drownings (2, 3). Moran & Stanley report that parental understanding of, and beliefs about water safety as applicable to under 5s improves as a result of education. They found that parents were less likely to underestimate the danger of home pools in under 5 drownings, and more likely to identify the importance of supervision. In addition, they report significant changes in parental water safety attitudes with fewer parents thinking that swimming lessons were the best way to prevent toddler drowning (4).

Description: In 2021 Drowning Prevention Auckland (DPA) evaluated three initiatives educating parent and caregivers of under-fives to determine changes in attitudes and behaviours, and the best delivery methods to generate these.

A 'control group' of parents received educational material with the potential for developing knowledge, attitudes, and behaviours to ensure pre-schooler safety in and around aquatic environments. The second selection of parents received the same educational material and a link to the (DPA) eLearning module Early childhood water safety. The third initiative involved parents who participated in one or more targeted education sessions including a seminar/workshop, in-water pool session and/or an open-water environment session. These parent/caregivers completed a pre- and post-survey before and after the education components.

Lessons Learned: Overall, significant safer responses were shown in knowledge, understanding and attitudes. Less parents/caregivers think under 5s drown because they have not learnt to swim, and that any child sized lifejacket is better than none for their child under 5. More parents/caregivers are identifying safety and confidence as the most important reasons for teaching their child water safety than learning to swim and being able to perform other practical water competence skills.

Conclusion: Particularly encouraging is that more parents/caregivers are acknowledging that active supervision is first and foremost the most important drowning prevention strategy.

Proposal of Bathtub Drowning Prevention System using Smartphone

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Background

In Japan, the number of drowning accidents in bathtubs are larger than in traffic or fires (1). The drowning accidents in bathtubs are especially fatal to the elderly who are 65 years and older (2). Heat shock and heat stroke are the most common causes of accidents (3). When these occur, it is considered that a bather is unconscious or otherwise unable to free their body, leading to drowning. In this study, we assumed that the water surface does not fluctuate because the bather is stationary after drowning, and developed a system that monitors the water surface fluctuation to notify their emergency situation to others using an acceleration sensor of the smartphone.

Methods

Seven data sets consisting of three water surface cases, fluctuation for bathing, stationary and outgoing were collected. Threshold values of the acceleration for those were calculated from the positive and negative averages of the five sets of the training data respectively, and verified by the remaining two sets of validation data. A system to notify the condition of the bather was developed using this method and applied to two test data to verify accuracy. These test data were collected from normal bathing situation unaware of three water surface fluctuation patterns.

Results

It was confirmed that the acceleration of water surface fluctuations for three patterns were different by analysis of the data sets. In the validation data, the stationary conditions of the bather could be determined with a correct response rate of approximately 91 % in three patterns, and that for determining the stationary condition of the bather as stationary was 100 %. In the test data, the correct response rate was approximately 62 % in three patterns, but that for determining the stationary condition of the bather as stationary was 100 %. The notification system also had the same response rate as the test dataset, it was verified that the system worked properly.

Conclusion

It was confirmed that the developed system is able to detect the conditions of the bather being stationary with a certain degree of accuracy using an acceleration sensor in the smartphone.

Investigating the potential of virtual reality panoramas to impart water safety knowledge to children.

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Background

Unintentional injuries, including drowning represent the largest proportion of injuries among children. Globally, there is growing interest in applying advanced technology to enhance safety training with children to minimise the risk of accidental injury (1, 2). Virtual reality [VR] technology offers users immersion and a sense of presence, and has been used as a teaching aid for children, to simulate environments that are difficult to navigate in the real world (2); however, there is little research on the usefulness of VR for water safety education with children. This study examined how VR panoramas compare to traditional teaching methods in engaging, improving, and retaining water safety knowledge in children.

Methods

A between-subjects design was used to compare knowledge and engagement between students from two schools recruited using convenience sampling – 1. Intervention: trained using workbook and audio files plus VR panoramas; and 2. Control: trained using just workbook and audio files. Children (n=156) aged 8-12 years participated in the four-week study. Knowledge and retention were measured using a water safety questionnaire completed at baseline, post-test (after four weeks), and at follow up (three months later). Engagement was assessed at post-test using the Intrinsic Motivation Inventory. Statistical analysis of knowledge data included a linear mixed model including a Group by Time interaction. A Mann-Whitney U test was utilised to analyse engagement data.

Results

Overall, 80% of participants increased their water safety knowledge. The intervention group had significantly greater improvement than the control group over time ($F(2,316)=4.61$, $p=.011$) with higher engagement levels in the VR group ($U=3154.5$, $z=-4.603$, $p<.001$). The VR group had higher knowledge increase from baseline to post-test (mean diff=3.50, $SE=0.47$, $p < 0.001$) and baseline to follow-up (mean diff=5.04, $SE=0.58$, $p<.001$) compared to the control group.

Conclusions

VR panoramas are a useful teaching aid to increase water safety knowledge and retention of knowledge among children, compared to traditional teaching methods. Greater engagement was also found with VR. VR can facilitate better comprehension of complex topics such as rip currents by visualisation and immersion. Further research is required to examine whether knowledge improvement translates to behaviour change.

The impact of COVID-19 on child drowning prevention activities in rural Bangladesh

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Background

Drowning is the major cause of mortality among children aged 1-4 years in Bangladesh. The COVID-19 pandemic impacted personal and family practices, which may have an influence on drowning prevention measures either directly or indirectly. To prevent child drowning in rural Bangladesh, the CIPRB is intervening with a package that includes Anchals (community-daycare facilities), family education, community sensitization, and stakeholder awareness. Approximately 32,202 rural children were unable to access Anchal supervision services due to the shutdown of over 1,775 Anchals during the pandemic. The purpose of the study was to explore the COVID-19 impact of child drowning in rural Bangladesh before and during the pandemic.

Methods

Passive surveillance was carried out in 45 unions in rural Bangladesh between March 2019 and February 2021, encompassing approximately one million inhabitants. A pre-tested, structured questionnaire was used to collect information on fatal drowning events.

Findings

Before COVID-19 (March 22, 2019–March 21, 2020), the fatal drowning rate among children who attended Anchals was 72.1/100,000 per year. The fatal drowning rate increased to 108.7/100,000 people per year during COVID-19 (March 22, 2020–March 21, 2021). The fatal drowning rates among Anchal children increased over 1.5 times, and the majority of drownings happened near dwellers' homes. As per government instruction, all Anchal-enrolled children could not participate in the Anchal's activities, and the parents or primary caregivers also could not supervise them. Boys had higher rates, and the majority of drownings happened near dwellers' homes. Ponds and ditches were the most common drowning locations (73.7%), and nearly all drownings (86%) happened throughout the day between 9:00 a.m. and 18:00 p.m.

Conclusion

Comparing rates in the intervening areas prior to the pandemic, the fatal drowning rate during the pandemic was consistently higher. Higher rates of child drowning may have resulted from a lack of child supervision services. The methodology used in this study may allow researchers to differentiate between COVID-19's pre- and post-impact on child drowning in Bangladesh and other similar settings.

Child drowning situation in the midst of COVID-19 pandemic and Social Distancing Restrictions in Viet Nam

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Objective

This study aims to provide insight analysis of the child drowning situation and how the impacts of the COVID-19 pandemic and social distancing restrictions in Viet Nam.

Methods

The study was carried out in 12 provinces in Viet Nam which accounted for the high burden of child drowning. In selected communities, child drowning data from 2020 to 2022 was collected. The researcher visited the household of the children who had drowned and interviewed the parents and caregivers to get deeper information on the cases. A total of 116 child drowning cases have been studied. Additional child mortality from 2019 to 2022 was extracted from the commune health station's death recording book to calculate drowning rates.

Results

A fluctuating child drowning trend was observed over the past few years. In 2020, the rate of drowning was recorded at 12.7/100,000, which then dropped significantly to 7.6/100,000 in 2021, and increased to 13.9/100,000 in 2022, returning to the level observed in 2019 with 14.2/100,000. Among drowned children, 43.1% were under 6 years old and children aged under 3 accounted for 25.9%. While children under 6 years old mostly drown in ponds in their home yard (60%) or near home (20%), older children tend to move further away from home such as neighborhood ponds (45.5%) and the sea (18.2%). Compared to 2019, drowning in rivers or streams has plummeted from 35% to 10% in 2022. In addition, 74% of the drowning cases that occurred in 2022 were among children who had accidents while swimming or playing in groups.

Conclusion

The results of the evaluation showed that child drowning remains a significant concern, with a fluctuating trend observed over the past few years. The drop in drowning rates observed in 2021 is a positive outcome, but the subsequent rise in 2022 highlights the need for continued attention and intervention to prevent child drowning. These results emphasize the importance of ongoing efforts to promote water safety and prevent child drowning through education, supervision, and access to safe swimming facilities and child supervision, especially for children aged under 5.

Policy advocacy on child drowning prevention during COVID-19 outbreak in Thailand.

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Background:

In Thailand drowning has been the first major cause of death in children in the past several years. In 2020-2021, global were suffered from COVID-19 pandemic including Thailand. All agencies/organisations advanced such multiple resources such as human, finance, and supplies to ease the hurdles. Therefore, drowning cases were hit 18% increment during 15 years of intervention. This was the first time of the highest number of drowning death tolls has shown in Thailand. The objective of this study to driven the policy on child drowning prevention during COVID-19 outbreak in Thailand.

Description:

We analysed and synthesised both quantitative and qualitative data from multiple databases, government policies or measures against COVID-19 outbreak, and period of school holidays and online learning classes for children. The results were as of the input for designing solution process and methods for intervention.

During COVID-19 outbreak, we found augmented risk factors in which support the drowning incidences. In respect to the aforementioned limitations which were difficulties to reach the target audience using traditional methods, the DDC has therefore 1) developed processes and methods for providing knowledges, 2) promoted risk communications, 3) developed potential staff to strengthen their skills, and 4) produced network engagement to response for/against particular situations.

Lessons learned:

COVID-19 is the first pandemic over a century and there was no suitable operational tools and methods. Therefore, our operations for solving problems were was specific due to immediate issues. As a result, monitoring and evaluating procedure were limited. Based on the past experiences, we suggested to prepare effective tools and operational guideline to implement drowning prevention which are timely and appropriately response against/for particular situations.

Conclusions:

Our solutions consisted of 1) initiated Virtual Reality (VR) and Augmented Reality (AR) for educations, 2) produced interactive multimedia through online leaning system, 3) developed e-learning course (Drowning Prevention Course) for general population, 4) delivered policies/measures across national networks through Virtual Conference, 5) Online Drowning Prevention Campaign, and 5) advanced United Nation Resolution as dialogue mechanism for mobilising intervention across relevant entities and government agencies at national level.

Communities' immediate practice and health seeking behavior for child drowning cases: qualitative findings from the most drowning prone areas of Bangladesh.

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Background

About 14,500 children die from drowning each year in Bangladesh (1). Barisal division, geographically contains various water bodies, is the most drowning prone area in Bangladesh. Significant number of fatal and non-fatal drowning occur among the children. This study aimed to explore communities' immediate responses and health seeking behavior for post drowning cases of children.

Methods

The study conducted 12 In-Depth Interviews (IDIs) and 9 Focus Group Discussions (FGDs) with community people, parents, household heads, elderly people and caregivers. Data was collected in February 2017. Three different areas, Amtoli (inland), Charpara (near river) and West-Khajura (costal area), were selected for data collection based on geographical diversity and context.

Results

Community people used range of traditional methods as post drowning treatment likely using clay utensils, sand, blankets or clothes to remove water from victim's body. Another most common technique was to hold the child on top of the head and keep spinning so that the water comes out. Moreover, for the drowning treatment people also went to religious leaders and traditional healers for "holy-water" and "holy-words". Parents also went to the religious leader for amulet as drowning protector. If the victim's condition became worse, the community people first went to local drug seller and then set off to the health facility when it was too late. In most of the cases, victims found dead before reaching to the health facilities as those were far away and arrangement of going hospital delayed getting the treatment.

Conclusions

The community had very little knowledge and miss-perceptions on how to treat drowning child after rescuing as there is no intervention was found. Besides community dwellers also carry out various traditional practices those are not accepted scientifically and went out for hospital when it is too late to save the drowning victims.

Adolescent drowning prevention: An underexplored issue of global importance

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Background

Adolescence represents a significant life stage, whereby improvements to health and wellbeing during the teenage years persist throughout adulthood and into the next generation (1). However, adolescents are a neglected group, particularly when it comes to injury and drowning prevention (2). Similarly, despite the potential lifelong effects of non-fatal drowning, there has been far less focus on disability attributed to drowning among adolescents, when compared to younger children.

Methods

To address this knowledge gap, two discrete studies were conducted: 1) a global analysis of transport and other unintentional injury using the Global Burden of Disease (GBD) 2019 (3); and 2) a systematic literature review of the evidence for effectiveness of interventions to address unintentional adolescent injury. Results relevant to drowning from both studies will be presented. Drowning (International Classification of Diseases [ICD] codes W65-74) deaths and disability adjusted life years (DALYs) for adolescents 10-24 years as absolute numbers and rates were sourced via GBD 2019 online and reported by age group, sex, socio-demographic index (SDI) and as trends over time between 1990 and 2019. A systematic review of peer-reviewed original literature on adolescence injury prevention interventions published between 2010 and 2022 was conducted.

Results

In 2019, drowning was the leading cause of unintentional injury-related fatality among adolescents with 45,391 deaths and the second leading cause of unintentional injury DALYs (3.27 million). Rates and absolute numbers of unintentional drowning deaths and DALYs have declined between 1990 and 2019 in all SDI quintiles, aside from low SDI countries. Significant increases in drowning fatality rates between 1990 and 2019 were identified in Cabo Verde (+89%), Vanuatu (+24%) and Tonga (+23%). Despite a significant burden, the review of literature identified no evaluated interventions to prevent drowning among adolescents.

Conclusions

Unintentional drowning causes significant health burden for adolescents, which is increasing in low SDI countries. Literature reporting injury prevention interventions yields no evaluated primary interventions for drowning prevention among adolescents. Globally, there is a need to better recognise and reduce the burden of unintentional drowning among adolescents, as well as identify burden due to other drowning mechanisms, such as intentional, water transport and disaster.

University students' experiences and perspectives on a water safety educational intervention "Swim for Safety" – A qualitative study in Sri Lanka.

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Introduction

Drowning is a significant public health problem among young adults in Sri Lanka (1). Water safety education is vital in drowning prevention. In response, a 12-lesson adapted water safety training programme, "Swim for Safety" was delivered as a group intervention, for six consecutive weeks, among 78 undergraduates in Sri Lanka. This study aimed to explore the experiences and perspectives of undergraduates who had undergone the Swim for Safety programme.

Methodology

A qualitative descriptive exploratory study was conducted among a purposive sample of 19 undergraduates who had undergone the Swim for Safety training programme. Data was collected using focus group interviews, consisting of 6-8 participants per group using a semi-structured interviewer guide, enrolling the participants until the reach of the point of data saturation (2). Inductive thematic analysis was applied in data analysis (3).

Results

Three key themes were identified: (a) facilitators for participation, (b) challenges to participation, and (c) sense of satisfaction with the programme. Facilitators for participation were perceived drowning risk, desire to acquire missed or lacking life experience, influence from others, other programme-specific factors, programme delivery, attributes of the training team members and attributes of participants. Challenges to participation revealed were constraints and conflicts related to academic and other student activities, fear of getting in the water, fear of being embarrassed, obtaining parental permission, cost constraints of the swimwear, conflicts with socio-cultural beliefs and myths, and restrictions related to pool usage. Participants' sense of satisfaction was revealed by participants' overall satisfaction with the training, benefits of the programme, satisfaction with the level of improvement, utilizing learnt content and recommendations for future programme delivery.

Conclusion

The Swim for safety programme was effectively delivered to undergraduates, and it influenced improving water safety knowledge, attitudes and survival swimming skills. The participants' commitment, the effectiveness of the teaching methods, and the qualities of the training team greatly influenced the success of the programme. The "Swim for Safety" program can be recommended as a routine training programme for universities in Sri Lanka.

Acknowledgement

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School Leavers celebrations in Western Australia – a captive audience for youth water safety and drowning prevention strategies.

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Over the past 10 years, there have been 38 fatal drowning incidents recorded in the 15–24-year age group. [1] Alcohol is a major risk factor of drowning incidents, and the reduction of alcohol-related deaths has been highlighted in the Australian Water Safety Strategy 2030. [2]

The Youth Water Safety Program (YWSP), implemented by Royal Life Saving WA (RLSWA), aims to increase the knowledge and skills of youth aged 15-24 years in Western Australia (WA) to prevent drowning incidents, with a focus on raising awareness of the risks associated with alcohol use in and around water. A key setting for delivery of the YWSP is at the annual Leavers Event, that brings together thousands of students graduating high school in the Southwest of WA.

RLSWA has been involved in Leavers WA since 2004 and has established itself as an essential agency in the multi-agency collaboration delivering harm reduction strategies. A key strategy in delivering the YWSP is engaging face-to-face with Leavers. To facilitate this a group of youth volunteers are recruited and trained to engage Leavers in peer-to-peer conversations about alcohol and water safety, distribute resources and deliver diversionary activities including hosting BeachFest, an alcohol-free event providing a fun and safe environment for Leavers to enjoy the beach and participate in activities.

At Leavers Week 2022, a total of 13,445 resources were distributed and 8,000 Leavers were engaged in diversionary activities. BeachFest attracted an estimated 4,500 Leavers.

Leavers WA provides a captive youth audience, where water safety messages can be delivered in an environment where alcohol consumption is front of mind. The involvement of youth volunteers to support the YWSP program delivery is critical to the program's success.

In 2022, WA recorded zero drownings amongst 15-24 years. [3] This is in stark contrast with a 61.3% increase in the fatal drowning rate over the past decade. [1] While still in early stages, this indicates progress is being made and RLSWA's approach to influencing behaviours is working.

RLSWA's commitment and involvement in Leavers WA has helped to promote positive behaviours and prevent drowning incidents among youth in WA.

The changing Trend analysis of unintentional drowning mortality among people under the age of 20 in China, 2013 - 2021

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Backgrounds

Unintentional drowning is the leading cause of death among people aged 1-14 in China. This study aims to describe the changing trend and subgroup differences in unintentional drowning mortality rate among people under 20 in China from 2013 to 2021.

Methods

Data from the National Mortality Surveillance System (NMSS) was used for the estimation of unintentional drowning mortality rate. The unintentional drowning mortality rate of people under 20 years old was calculated by different sexes, age groups, area types, and regions within each year. The linear regression model was fitted to calculate the Annual Percent of Change (APC) and its 95% confidence interval to describe the changing trend of unintentional drowning mortality rate.

Results

In 2021, the unintentional drowning mortality rate of people under the age of 20 in China was 3.28/100,000. The mortality rate of men was higher than that of women. People aged 15-19 had a highest mortality rate among all age groups, The mortality rate of people from rural areas was higher than that of those from urban areas, and the mortality rate of people from western regions was higher than that of those from central and eastern regions. The national drowning mortality rate decreased from 6.60/100,000 in 2013 to 3.28/100,000 in 2021, with a total decline of 50.30% (APC=-9.06% (-11.31%, -6.76%)). All different sexes, areas, age groups and regions saw decreased mortality rates between 2013 and 2021.

Conclusions

From 2013 to 2021, the mortality rate of unintentional drowning among people under 20 years old in China showed a downward trend. The decreasing trend of mortality varied in different sexes, urban and rural areas, age groups and regions.

Exploring adolescents' risk taking knowledge, attitudes and behaviours through pre-post evaluation of an open water education program on the Mornington Peninsula, Australia.

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Background

The Mornington Peninsula has the highest drowning rate of all 79 local government areas in Victoria, Australia.¹ Fifty-nine people fatally drowned in the region in the past decade.² Research indicates two in five Victorian children leave primary school without sufficient water safety knowledge.³ Moreover, there is currently no recurrent state government funding for secondary school swimming and water safety education. The project aimed to examine risk taking behaviours of adolescents. This research was funded by the Andrews Foundation, delivered in partnership with the local council and three life saving clubs.

Methods

The existing program was modified to include adolescent-specific content. Participants completed pre- and post-program surveys, and trained researchers observed program engagement. The survey included questions about demography, aquatic exposure, impulsiveness, safe behaviours and aquatic competence, guided by the Health Belief Model.^{4,5} Analysis determined the proportion of participants who had safe aquatic attitudes, aligning with LSV's water safety messaging, at baseline and post-program.

Results

Seventy-four participants completed the survey pre-program and 60 participants post-program, resulting in 56 matched pairs. Participants were aged 13 to 15 years and 54% were male. The strongest increases in favourable responses pre- and post-program were: checking the conditions (65% to 81%), wearing a lifejacket (71% to 85%), and alcohol impacts (88% to 96%). However, at post-program: 88% of participants intended to partake in pier-jumping, 27% intended to swim alone at an unpatrolled beach and 23% intended to not wear a lifejacket. Female participants had safer attitudes towards checking the conditions, swimming alone at an unpatrolled beach, lifejacket use, and pier jumping. Males had safer attitudes towards consuming alcohol and peer pressure. Participants were highly engaged in the practical program elements.

Conclusions

Findings suggest the program prompted participants to reflect on their impulsive attitudes but demonstrates cognitive dissonance for certain high-risk behaviours. Representation of diverse youth cohorts is encouraged, so interventions can be tailored to suit their engagement needs. Future relevant programs should increase coverage of pier-jumping and alcohol consumption risks, performing safe rescues, and lifejacket wear; and research should analyse the impact of multi-session interventions and adolescent long term skill and knowledge retention.

Effect of a Drowning Prevention Educational Intervention on Water Safety Knowledge, Attitudes and Survival Swimming Skills: A Randomized Controlled Trial among Young Adults in Sri Lanka.

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Background

Drowning is a significant public health problem among young adults (18- 34 years) in Sri Lanka (1). University students (19–28 years) are one of the young adult groups at high-risk of drowning. The National Action Plan for Drowning Prevention and Water Safety, Sri Lanka highlights the need for water safety education among undergraduates. This study aimed to evaluate the effectiveness of an adapted educational intervention, “Swim for Safety” on improving water safety knowledge, attitudes and survival swimming skills among undergraduates in Sri Lanka.

Methods

This study is a parallel-group, two-arm randomized controlled trial (Trial Registry: SLCTR/2019/012). The intervention group (n = 78) received a face-to-face, 12-lesson education programme, and the control group (n = 78) received a brochure and weekly mobile phone messages for six consecutive weeks. Water safety knowledge, attitudes and survival swimming skills were evaluated at baseline, immediate post-intervention and three-month follow-up. Knowledge and attitudes were assessed using a self-administered questionnaire and skills were evaluated following a skills assessment protocol. A total of 116 participants, including 60 in the intervention group and 56 in the control group, completed the study. Wilcoxon signed-rank test and Mann-Whitney U test were used to compare total scores of knowledge, attitudes, and skills over three different time points and between groups, with a p-value significance level ≤ 0.05 .

Results

There were no differences between groups in median scores of water safety knowledge, attitudes and survival swimming skills at the baseline. The intervention group demonstrated statistically significant increases in median water safety knowledge, attitudes and survival swimming skills scores compared with the control group, at immediate intervention and was maintained at the three-month follow-up ($p < 0.05$).

Conclusion

The adapted Swim for Safety programme is effective in improving water safety knowledge, attitudes, and survival swimming skills among young adults in Sri Lanka. Swim for Safety programme can be recommended to implement widely among young adults in Sri Lanka, specifically as a routine programme offered to university students.

Acknowledgement

Life Saving Victoria and Sri Lanka Life Saving for providing the Swim for Safety Programme, funding and technical support. Full paper can be found through: <https://doi.org/10.3390/ijerph18211428> .

Partnering with Councils to Assess Freshwater Hazards

Ants Lowe

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Background

In New Zealand, there are more than 425,000 km (264,000 mi) of rivers and streams and about 4,000 lakes. People are recreating more in and around fresh water, increasing the number of fatal and non-fatal incidents in lakes and rivers.

Drowning Prevention Auckland (DPA) partnered with three councils in Auckland, Northland, and Waikato, to identify their local hazards associated with these natural waterways to inform policy and raise public awareness.

Description

DPA completed freshwater hazard assessments at 50 sites across the three regions. DPA undertook field observations and desk analysis to identify Identification of hazards within the individual aquatic environments, assessment of existing aquatic safety signage onsite and providing recommendations to enhance public safety, knowledge and wellbeing within specific aquatic environments or locations.

Hazard pins for freshwater sites in Northland and Auckland were established on the Safeswim platform (<https://www.safeswim.org.nz/>). These inclusions provided an opportunity to inform awareness and thereby change behaviours.

Lessons learned

Some of the sites observed in their normal state did not pose a hazard to the public (depth, topography). However, flood levels water lines were evident on riverbanks with no public flood warning system or signage to alert the public of flash flooding or an increase in water levels.

Recommendations across the three regions include public rescue equipment (PRE), additional or new signage, or inclusion as a new pin to the SafeSwim forum to enhance public safety at these locations.

Most of the signage found in sites was not compliant to the New Zealand Standard AS/NZS 2416.1:2010 Water safety signs and beach safety flags - Specifications for water safety signs used in workplaces and public areas, including carpark and access signs.

Conclusions

The project identified that to analyse actual risk of each of the environments, in-depth visitation data should be obtained. Observing the public on how they recreate in and around the water further informs policy, rescue response equipment and signage.

Councils are becoming more aware of their obligations to provide a safe environment and safety advice. Engaging with councils across the country will ensure a consistent approach to freshwater water safety and public awareness.

Waikato River – Motivators to risky behaviours

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Background

The Waikato River is the longest river in New Zealand. It is a tupuna (ancestor), a taonga (treasure), and the mauri (life force) of Tainui Waka and Ngāti Tūwharetoa.

In the past ten years, 35 drowning fatalities have occurred in rivers in Waikato. As the land managers of the most densely populated area of the river, Hamilton City Council (HCC) sought expert guidance to steer mitigation strategies. HCC requested Drowning Prevention Auckland (DPA) assess hazards and research actual behaviours and attitudes to provide recommendations.

Method

The study included an observation study with a follow up interview to determine the level of at-risk behaviours and attitudes toward safety in the Waikato River at five key venues within the HCC boundary during January and February 2023.

The observational study reported on actual behaviours of visitors to the Waikato River hotspots. Numbers of site visitors and behaviours were recorded electronically on an Alchemer survey. An interview study was completed for follow up information regarding perceived risk and water safety attitudes. Interviews were completed orally and recorded on Alchemer.

Results

175 observations were completed over five sites. Head counts ranged from 0 to 88 per site, with numbers entering water between 0 and 34. Risky behaviours included jumping into water, jumping from height, river drifting, and wearing inappropriate swimwear. 106 interviews were completed with people performing risky behaviours, predominantly wearing inappropriate swimwear (43%) or jumping from height (31%). Most were male (60%), under 15 years (38%), and of Māori ethnicity (70%). Most have high perceived water competency (swimming 96%, floating 92%), low perceived risk awareness (slight / no risk; jumping from height 58%, missing exit point 47%). Reasons for being in the water include; temperature (75%), more fun than pools (35%), friend's encouragement (33%), free (31%). Family is the predominant source of information for river safety (42%) and learning to swim (38%).

Conclusion

Overestimation of competence together with underestimation of risk were observed. It is recommended that culturally appropriate education and awareness are implemented to develop water competence and risk knowledge to help develop safer interaction with the Waikato River.

What can prevent drownings in urban harbor's, canals, and marinas and why does it happen?

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Background

We believe most fatal drowning can be prevented, but we lacked knowledge of why and how the drownings happen. We hand out up-lit rescue ladders and free lifebuoys – and yet the drownings in the Danish harbor's, canals and marinas is not decreasing[1]. To get wiser we needed to get in dialog with people who was fortunate to survive a drowning incident and could provide us with details of what made the difference for them to escape the water. With these findings we will, in the future, be able to qualify a new approach of safety and prevention where water and people meet in urban harbors, canals, and marinas.

Methods

The first stage of the study was carried out in the winter of 2022/23.

It was divided into three parts: 1. Facebook questionnaire followed up by qualitative interviews, 2. Mapping of the safety of urban harbor areas in the three major cities in Denmark and 3. Observation study and vox-pop interviews. The third part is repeated in the Summer of 2023 to identify the difference of the behavior in winter- and summertime [2]

Results

We ended up having 269 completed questionnaires, 14 qualitative interviews, six evening/night observations studies and 312 vox pop interviews. All the results were analyzed and made into a report. The report will be updated in the fall to include the summer findings.[3]

Conclusion

We can conclude that many of the reasons for the persons to survive a drowning incident are the opposites of why it can end fatally.[4] Conditions like available and lit up rescue ladders, lightening or lack of it, time of day and year, being alone or in company with others, age, and gender, drunk or sober etc., are all game changers of surviving the unexpected meeting with the water or suffering a fatal drowning.[5]

Good Practices' Guide for Developing Shorelines with Drowning Hazards

Research and coroners' reports show that drowning deaths in rivers results from specific behaviors, like failure to recognize river-specific hazards, overestimating one's abilities, attempting feats, and acting recklessly.

Guilaine Denis

Lifesaving Society, Montréal, Canada

In Quebec, 70% of drownings occur in natural environments, 33% in rivers and 29% in lakes. The Lifesaving Society compiles drowning data annually, listing the incidents and resulting Coroner's recommendations. We can thus determine that drowning in nature mostly affects men between 18 and 34.

In 2015, 2 teenagers drowned in a river, leading to a public inquiry. The coroner recommended that a guide for developing river and other natural shorelines be created. It also recommended to offer a support service, to reduce drowning risks from the shore.

The Lifesaving Society identified every situation associated with drownings to develop this guide. What distinguishes it is how it is written. Each chapter provides specific insights. A tailored risk analysis grid for natural environments is included. The Haddon Matrix, a collection of pictograms and messages resulted from this exercise.

Most operators don't know their responsibility regarding shoreline development and risk management of each environment. The Quebec Civil Code's obligations are poorly understood. The support service offered municipalities and operators help to implement good practices.

Not knowing the river, the woman accompanying the 2 victims in 2015 stated that she wouldn't have endangered herself while swimming had she known the risks. This statement supports the need for awareness campaigns and risk reporting based on environmental analysis. Experts in white water, risk management and the Quebec government's department of safety in sports and outdoor activities were key contributors.

Published in January 2019, over 80 municipalities and regional parks received a printed guide. It is also publicly available online. It is currently being translated.

Since its release, 15 municipalities, cities and parks have used our support service. Over a dozen regional parks have independently analyzed risks and adjusted signage. A dozen conferences were on outdoor activities, reaching nearly 500 site managers.

The next step is to observe and evaluate changes in user behavior in various environments.

Sustainable partnerships in drowning prevention – a Victorian case study

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Background

Inland waterways are the leading drowning location in Victoria, Australia¹, however water safety programs are often not implemented in these settings. Life Saving Victoria (LSV) provides thousands of children with water safety lessons in open water environments, yet despite regional residents being twice as likely to fatally drown than those in metropolitan areas¹, only 15% of LSV's programs are delivered to regional communities. Regional communities experience greater barriers to accessing water safety education. Accordingly, creating sustainable partnerships with regional organisations to deliver LSV's programs was prioritised to increase LSV's provision.

Description

Partnerships provide organisations with resources required to deliver LSV's programs within inland waterways, including: LSV's planning tools; curriculum; equipment; risk management templates; and, staff training. Offering an all-inclusive package allows LSV to manage quality assurance and ensures risk management and program delivery align with best practice.

A three-year partnership model facilitated sustainability. In year one LSV provides full support with planning, promotion, training and delivery. In year two LSV continue to support programs in a scaled back manner. By year three, partners deliver programs with minimal assistance.

Sustainability of the partnership model was piloted over three years in Echuca. This partner is now delivering programs independently.

Lessons Learned

The importance of local providers delivering programs to their community is paramount: local knowledge allows programs to be further tailored to suit local waterways and environments. Regional communities can feel isolated and lack opportunities to assist in building capacity, expertise, and qualifications to deliver programs. Therefore, for partnerships to be successful and sustainable, the product needed to be all-inclusive and offer opportunities for connection and networking. Feedback showed the value of associating with the peak Victorian water safety body and leveraging the LSV reputation helped community engagement. LSV has 10 partners across Victoria, with many other organisations expressing interest.

Conclusions

By partnering with local organisations to deliver locally tailored programs, LSV can sustainably increase program delivery in regional locations; areas otherwise limited in their ability to access water safety programs. Through increased delivery, LSV aims to reduce drowning rates in regional Victoria and inland waterways.

Understanding the interconnecting factors involved with rural and remote drowning prevention.

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Background

Rural populations have higher rates of drowning, positively correlated as rurality increases. (1-2) Rural drowning fatality rates have remained steady over time, with limited research exploring drowning specific to rural Australians. Understanding the risk factors increasing drowning risk to this population is necessary, however further understanding regarding the challenges presented to prevention strategies is required.

The aim is to understand the challenges in applying prevention strategies into regional, rural and remote locations.

Methods

Following the systematic review which examined incidence, risk factors and determinants of drowning in rural populations(3), this study explores the interconnected factors affecting delivery. We gathered a range of data and analysed them with respect to rurality. Documentation examined included; supervision plans for rural aquatic centres, local government aquatic industry workforce assessments, benchmarking data for swimming ability of rural and remote residents, and local water safety strategies. Implications from the data were then applied, as a case study, to local pools using the Guidelines for Safe Pool Operations (GSPO), and Workplace Health and Safety Legislation. Data points will be consolidated and analysed, with tailored recommendations made for future drowning prevention efforts in rural communities. Analysis is underway with full results to be presented at the conference.

Results

There are a number of challenges in the delivery of drowning prevention in rural communities. Workforce shortages, especially with skilled staff; small population numbers spread out across large areas; cost of delivery; and awareness of the issue. Understanding legislative and GSPO requirements to find workable solutions for aquatic centres to provide safe places is vital.

Conclusion

Rural populations are proportionately overrepresented in drowning statistics. Rural populations use water extensively, highlighting the need for water safety. This study demonstrates the need for further investigation into rural drowning prevention which takes into account the complex socioeconomic and demographics in rural Australia, as well as the challenges faced translating effective preventative actions into a rural setting. A multifaceted approach will be required in the prevention of rural drowning. This includes increasing access to suitable swimming environments, CPR and first responder awareness and training, water safety messaging, and providing water safety education.

Ruku Kai Piki Mai – Enhancing Māori Wellbeing through Ruku Kai (diving for cultural food gathering purposes) (this is a PhD thesis was submitted on 27/10/2023)

Benjamin Hanara

University of Otago, Dunedin, New Zealand

Ruku kai, a traditional Māori practice, involves diving for seafood. It encompasses the gathering of food from the sea through diving techniques. This research focuses on rekindling Māori diving practices to improve Māori health and wellbeing, and explores a Māori perspective on diving through ruku kai. While limited research has explicitly examined ruku kai, it is essential due to its growing popularity and the rising rate of Māori drowning incidents in diving-related activities.

This study adopts a Māori-centered approach, emphasizing that Māori initiatives are most successful when led by Māori for Māori. The research aims to explore Māori perspectives on diving through four key areas: ancestral Māori connections to diving, a Māori water safety program, Māori diving knowledge for fisheries management, and insights from water practitioners. The research is guided by Kaupapa Māori Theory, which values collective wellbeing, cultural authenticity, and self-determination in research, policy, and practice.

The findings of this research highlight that ruku kai serves as a means of preserving and passing down ancestral Māori diving knowledge. It also emphasizes the importance of collective efforts and ongoing practice to ensure the safety and positive outcomes for Māori engaging in ruku kai. Additionally, ruku kai plays a crucial role in sustainable fisheries management and empowers Māori diving knowledge and practice.

This research carries significant implications for Māori and the wider community. It addresses Māori diving safety, contributes to fisheries management, and provides insights into sustainable living practices. Furthermore, it can influence national and international perspectives on diving for food, emphasizing Indigenous connections to diving, safety measures, and contributions to fisheries management.

Valuing drowning prevention in a difficult economic climate

Peter Dawes

RNLI, Poole, United Kingdom

The Royal National Lifeboat Institution (RNLI) is a charity that provides a 24/7 lifeboat service, lifeguard services and drowning prevention education in the United Kingdom, Republic of Ireland, Isle of Man and Channel Islands¹. The lifeguard services are provided on behalf of landowners, predominantly local authorities, who contribute toward towards the costs of delivering the services².

With the cost-of-living crisis inflation has hit a 40 year high becoming a global problem³, this has had a severe impact on both the charities capacity to continue to subsidise services and client's capacity to contribute⁴. As the provision of beach lifeguards and coastal drowning prevention is not a statutory requirement in the UK⁵ gaining funding in a difficult economic environment requires demonstrating the value of these services to the community against other competing demands for government funding.

This presentation seeks to address the emerging paradox in relation to the effectiveness of drowning prevention strategies in the UK – namely how on the one side, it is has been widely recognised by policy-makers and influential stakeholders that drowning represent a leading cause of death worldwide for decades⁶ and one of the highest causes of accidental death in the UK, while on the other, there remains a lack of available funding underpinning drowning prevention initiatives⁷.

The presentation provides a case study in developing a mutual understanding of the value of drowning prevention and demonstrates an example of building a case for support for a funding proposition by identifying economic, health, community amenity, capacity building and risk mitigation benefits^{8,9,10}.

The case study seeks to share lessons learnt from a methodology that has proven successful in improving collaboration between local government stakeholders and the RNLI and resulted in increased funding for services in one of the most difficult economic periods in memory¹¹. It is expected that the lessons learnt would be equally applicable to agencies competing for internal funding as it would be to third party providers of water safety services.

The monetary value of a Danish lifeguard service in 2023

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Background

In many parts of the world, lifeguard organizations are under pressure to justify themselves and their associated costs to local councils, trusts, or whoever finances the lifeguard organization. Often, decision-makers know well the monetized cost of the organization but not the monetized benefits. Poor understanding of the monetized benefits of lifeguarding increases the risk of “blindly” altering or reducing the organization’s budget in a way that compromises safety and the value it is protecting. In 2018 this was exactly the challenge encountered by the most experienced lifeguard organization in Denmark.

Aim

To monetize the benefits and costs of a (specific Danish) lifeguard organization – that is, to undertake a cost-benefit analysis (CBA).

Method

Based on (1), (2), and (3), we have performed this CBA of a Danish Lifeguard Organization, involving the following process:

1. Defining the research question
2. Defining the relevant system
3. Identifying all activities and impact categories to assess
4. Predicting impacts quantitatively over time
5. Monetizing the impacts
6. Discounting benefits and costs to obtain present values
7. Performing sensitivity analysis.
8. Documenting the resulting conclusions

Results and conclusion

We are in the process of collecting data from 2023 to present at WCDP 2023. However, results from 2016 from the same Danish organization show that the benefit/cost ratio for the society can be as high as 22, based on an estimated benefit of USD 12,11 million and an estimated cost of USD 0,54 million.

These CBA results were published in local newspapers, and contributed to preventing the local council from closing down the most experienced lifeguard organization in Denmark.

The Safer Community Partnership – An initiative designed to encourage multisectoral leadership and collaboration in water safety, drowning prevention and lifesaving education in the Kingdom of Bahrain.

Sam Rahman

Royal Life Saving Bahrain, Manama, Bahrain

The Safer Community Partnership is a strategic multisectoral approach to increase collaboration between government, private sector, and communities. It has the goals of empowering people with lifesaving skills, increasing volunteer opportunities, and exploring systemic and legislative changes to improve water safety and out of hospital cardiac arrest survival rates in the Kingdom of Bahrain.

The Safer Community Partnership was launched in December 2022 and involved 28 entities from a range of sectors signing a memorandum of understanding to work with RLSB to achieve the above goals by;

- Collaborating on water safety campaigns and other activities that promote Bahrain, volunteerism, and water safety advocacy.
- Promoting our education programs and opportunities to learn lifesaving skills to the wider community.
- Facilitating opportunities for members of their communities to learn lifesaving and water safety skills.
- Encouraging members of the community to become volunteer lifesavers and support our other community initiatives including beach clean ups, first aid, and assisting in the delivery of junior education programs.
- Exploring ways to improve the survival rate of out of hospital cardiac arrests with a focus on community engagement.

We identified strategic partners that would allow us to advance the above goals in the following ways;

Legislate/Regulate

Government departments responsible for education, public health, public safety, beaches, and waterway developments, along with authorities for sport. These partners allow us to work towards systemic and legislative changes.

Facilitate/Educate

Nurseries, schools and Universities, water sports operators and large companies are large communities of people to train. They also have the capacity to facilitate a community workshops and volunteer recruitment and training.

Communicate

Telecommunications and media partners help us to raise awareness on water related issues, promote opportunities for communities to learn lifesaving skills and become volunteers.

Since launching the SCP, we have seen a 25% increase in water safety and first aid courses in the first quarter of this year and an increase in community volunteerism.

We are also working with multiple government departments to advance public beach safety, first aid in the workplace legislation, access to public defibrillators, and lifesaving and swimming education in government school curriculums.

Decade of collaboration: An international partnership for drowning prevention in Sri Lanka.

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1Life Saving Victoria, Port Melbourne, Australia. 2Monash University, Clayton, Australia. 3Sri Lanka Life Saving, Colombo, Sri Lanka

Background

Drowning is a leading cause of unintentional injury death in Sri Lanka, (1). In 2012, an opportunity was identified for two lifesaving organisations to come together to tackle the high drowning rate (4.4 per 100,000 population). One from a developing country (Sri Lanka Life Saving, SLLS) and the other a high-income country (Life Saving Victoria, LSV), Australia. This partnership model involved bringing together organisations, individuals, industry, and government to work towards a water safe Sri Lanka.

Description

Over the past decade SLLS and LSV have been working together. Initial key steps were development of the first Drowning Prevention Report for Sri Lanka (2014), and National Drowning Prevention and Water Safety Plan (2015) and incorporating this within government. Outcomes from implementation of the Plan include development of aquatic safety guidelines for public pools and coastal waterways, training lifesaving personnel, developing water safety programs, and conducting drowning prevention research. Other outcomes include: 5000+ lifesaving personnel trained; eight Building Leaders Scholarship visits by 60 young volunteer LSV members; 20+ Sri Lankans visiting Australia to gain business and lifesaving skills; use of lifesaving club equipment from Australia shipped to SLLS annually; development of a research partnership with a local university; and development of a survival swimming and water safety program for school children, later expanding to university students.

Lessons learned

Overall, the drowning rate in Sri Lanka decreased by 20% over the ten years, and over one million people received water safety education. Localised solutions and effective sustainable programs were developed by leveraging skills and knowledge of subject matter experts, utilising resourcing and training to upskill others, and aligning to the WHO recommendations on drowning prevention. Other components include: communication, transparency and clear responsibilities to ensure informed and engaged stakeholders; flexibility and adaptability when working with multiple stakeholders and dealing with unanticipated issues such as the COVID-19 pandemic by adapting to online delivery methods. Additional benefits include fostering cultural exchange and understanding between countries.

Conclusion

This international partnership model provides an example of a collaborative approach to addressing drowning by leveraging the expertise and unique resources of each stakeholder to create sustainable solutions.

Abstract title: Lifesaving Sports Development in Kenya and Jamaica.

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Background

The RLSS Lifesaving Sports Development in Kenya is meant to promote, build, and engage trained Lifesavers and Lifeguards to embrace the Sports as a way of measuring the levels of competencies through individual/team endurance buildups from competition at local, regional, national and international arenas thus showcasing international best practice. This is the only sport where the competition showcases humanitarian purposes through drowning prevention, first aid and water rescue skills. Athletes develop goals for individual and team events. The foundation of Lifesaving Sports Development is currently being formulated by the RLSS Lifesaving Sports Technical committee started in 2021.

Methods

Basic introduction of Lifesaving Sports and robust awareness campaigns in Local Communities and key stakeholder engagement highlights the importance of the Sports to the youngsters above 16 years and youth which is instrumental to the development of the individuals/teams through competitive activities. By developing team and individual goals through the long term athlete develop model (LTAD) and personal best time achievements, encourages teamwork, co-operation and co-ordination thus enhancing personal and social development. This ultimately complements the Drowning Prevention role.

Promotion of Lifesaving Sports to beginners in junior schools, college institutions, swimming clubs, will accelerate Lifesaving Sports Development programs as a humanitarian and bench marking activity hence creating interest and motivation for athletes and stakeholders at Community to National levels progressively within Kenya and globally.

Results

Systematic Lifesaving Sports Development Community buildups, is a baseline entry point to be gradually rolled out and so far is creating Community interest through the pool and beach activities organized post Covid to date in Kenya. The Lifesaving Society in Canada has started Lifesaving Development teams in the Caribbean Islands of Jamaica.

Conclusions

Lifesaving Sports Development programs is a way of elevating Drowning Prevention initiatives in Kenya as well as in other middle and low income countries. More advocacy, awareness campaigns and availability of basic Lifesaving training equipment will go a long way in supporting and motivating all startups.

More Lifesaving Sports development programs will accelerate absorption of other Drowning Prevention initiatives to sustainable levels of excellence as we all "say no to drowning".

“I just don’t think about it”: Working with communities to deliver and evaluate water safety interventions in regional Victoria, Australia

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1Life Saving Victoria, Melbourne, Australia. 2Monash University, School of Public Health and Preventive Medicine, Clayton, Australia

Background

Inland waterways are the deadliest location for drowning in Victoria, Australia. In 2021-22, there was a 90% increase in fatal drowning in rivers, creeks and streams, compared to the 10-year average (2011-12 to 2020-21).[1] Over the past decade, regional Victorians were almost twice as likely to drown than their metropolitan counterparts. [1] This research aimed to better understand how to work with regional and rural communities to deliver and evaluate water safety interventions, with the Loddon Mallee region selected due to its high relative drowning risk. [2] The project was funded by the Australian Government through Royal Life Saving Society – Australia’s Inland Communities Water Safety Project.

Methods

Focus group interviews (FGIs) were conducted by McGregor Tan, who had expertise working with inland regional communities. Following collaborative discussion guide development between Life Saving Victoria and McGregor Tan, FGIs were conducted in January 2023. Questions examined participant awareness of water safety messaging and campaigns, water safety knowledge and attitudes, and preparations and behaviours for aquatic environments.

Results

FGIs were conducted at Mildura (n=9), Swan Hill (n=8) and Castlemaine (n=8). The 25 participants were aged 19 to 76 years; 48% were female, 3 participants identified as Aboriginal/Torres Strait Islander, 4 identified as having disabilities, and 3 were from culturally and linguistically diverse backgrounds.

Preliminary analysis indicated young males were the most unaware of water safety messages; further, other participants believed this cohort was the most complacent around water. Many participants regarded water safety as ‘common sense’; however, in practice was an afterthought, as participants believed they had enough skills and knowledge to cope in an emergency.

Conclusions

There is need for targeted, community-led water safety interventions in regional Victoria. Public messaging campaigns should have a call to action; benefit from emotive, striking imagery and phrase repetition; and be evaluated over time for impact on behaviour and drowning outcomes. Industry may benefit from examining development, implementation and evaluation of initiatives in partnership with communities. Research with greater representation of diverse communities is encouraged, so interventions can be tailored to better suit the needs of groups more vulnerable to drowning.

Community participation in the drowning prevention program of rural Bangladesh: implications for other low- and middle-income countries

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Background

Most children in low- and middle-income nations, such as Bangladesh, are in danger of drowning due to a lack of community knowledge and involvement. Drowning prevention relies heavily on behavioral changes, which must be implemented in collaboration with the local population in order to be sustainable. As a result, a component of community participation was designed and implemented in the Saving of Lives from Drowning (SoLiD) project in Bangladesh, which is a comprehensive pediatric drowning prevention effort. The purpose of this study was to describe the process of community group creation and their roles in the prevention of childhood drowning in rural Bangladesh.

Methods

The SoLiD study site consisted of 303 villages from three sub-districts in Bangladesh: Raiganj, Sherpur, and Manohardi. Local religious leaders, social workers, and powerful village residents were recognized as potential community group leaders. Prior to forming a group, eager locals were invited to a meeting to examine the size and repercussions of drowning, as well as preventative measures. It was also mentioned how members of the community may help avoid drownings. Following that, the community organized a Village Injury Prevention Committee (VIPC) comprising 7–10 members each village. One of them was chosen as the VIPC president; a general secretary was an Anchal Maa (child care provider), and others are members.

Results

More than 3,000 community volunteers formed 375 VIPCs, and each committee has 30% female representation. Every month, committee members gather to discuss the previous month's implementation status of drowning prevention programs in their town. Individual and group responsibilities are established, and action plans are developed in response.

Other challenges were also identified, such as internal conflicts among committee members, inactive members, male dominance, political participation, and so on.

Conclusion

VIPCs found an impactful factor for a child drowning prevention program in order to transform the community into a drowning-free community.

From nearly drowning to Surf Lifesaver: A community partnership led strategy for drowning prevention of at-risk culturally and religiously diverse males, their families and communities.

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Background

Following a mass rescue on the coast involving a group of 8 men from a Western Sydney Mosque, a learn to swim program specifically designed for men from culturally diverse backgrounds was born. In 2022, Swim Brothers partnered with Surf Life Saving NSW (SLSNSW) through a strategic project to support the surf skill education of Muslim men who started the journey with no ability to swim at all. By spring of 2022, SLSNSW, welcomed it's first 7 graduates from this program, as official Surf Life Savers.

Description

The developed strategy and tiered program structure involved key activities held both on the coast and on the coast and in-community aquatic centers.

1. In-community beach safety awareness events to support promotion of the program to community.
2. In-community water safety events run at community aquatic centres, inclusive of beach safety theory, basic CPR and rescue demonstrations.
3. Family fun days run at coastal beaches and beach pools, providing beach safety education, beach and sand games, and basic instruction on rips, waves, duck diving and entering and exiting the surf.
4. Surf Survival Certification (SSC) to provide program participants with a broader and deeper knowledge and skill in surf safety and techniques.
5. Bronze Medallion (BM) training for those participants who meet requirements and are able and interested to commit to training and volunteering.

Lessons Learned

This program is the first of its kind in Australia and as such provided a solid pilot program from which we have learnt about the significant barriers and challenges and how to potentially overcome them.

- The importance of open and honest dialogue from the start, allowing for the management of expectations, the elimination of assumptions and the development of understanding between communities.
- The need for flexibility and empathy of all participants, staff and volunteers involved.
- The vital role that passion and enthusiasm play in supporting commitment and dedication to the program.

Conclusion

This program has provided a solid foundation and set of criteria from which to develop and expand similar projects targeted at culturally and religiously diverse groups of males, their families and communities.

Evaluation of a comprehensive community engagement intervention for drowning prevention: reflection on successes and challenges from Bangladesh.

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Background

Community engagement is instrumental in mobilizing community members to participate in different interventions, ensuring that the interventions are culturally appropriate and responsive to local needs, and providing ongoing support and guidance to program staff of the drowning prevention initiatives in Bangladesh. Engaging stakeholders from multiple sectors, including local government agencies, non-profit organizations, community-based stakeholders, and beneficiaries for implementing drowning prevention activities. The aim of conducting a process evaluation is to learn some deeper insights into the community engagement intervention's success and challenges from the perspectives of the intervention workers and communities from a comprehensive drowning prevention project in Bangladesh.

Methods

Data were collected through a mixed method approach that includes observation, in-depth interviews (IDIs), focus group discussions (FGDs), and project monitoring reports. Some participants were interviewed over the phone for a special occasion. Participants were selected through purposive sampling methods to get insights into the challenges and successes, and participants were selected from community volunteers, program staff from the fields, and the head office. Various community engagement sessions were also observed in the project areas. In addition, minutes from 30% of the community engagement activities were reviewed from both the drowning prevention programs.

Results

Planned community engagement activities were accomplished including 3217 VIPC meetings, 123 UIPC meetings, 1058 courtyard meetings with 29,722 community members reached, 73 social autopsies with around 3,500 community members participating, and 9284 parent meetings held. The intervention was evidently successful in terms of awareness building, planning, implementation, and monitoring of program activities in the communities. The major obstacles identified in the intervention were inadequate orientation for stakeholders, insufficient coordination among project staff and stakeholders, lack of skills for conducting meetings, and cultural and social norms relating to gender roles.

Conclusions

Providing ongoing training for staff to develop their skills, establishing effective communication coordination, using competency-based selection processes to choose staff or volunteers, and recognizing excellent drowning prevention initiatives are recommended as effective community engagement strategies to improve communication, and encourage the development of future drowning prevention projects across the globe.

An Irish coastal community partnership aimed at drowning prevention.

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Water Safety Ireland, Galway, Ireland

Background

Local Authorities provide a seasonal lifeguard service on popular beaches during the summer months. Out of season, safety provision and rescue is by small independent voluntary groups. Safety around the Irish coast is monitored by the Irish Coast Guard, who provide an efficient 24/7 service but this has limitations. The growth in year round open water activities requires an immediate response from suitably qualified personnel.

Often, a number of voluntary groups operate within low populated areas. While working towards the same goal they compete for limited resources such as funding and membership.

Another major concern is the fact that the first responders at many water based incidents are the Irish Police Force who have little training in water rescue. The risks taken are recognised at annual awards ceremonies.

Description

Water Safety Clare- Ireland has embarked on an extended programme to promote synergy among voluntary groups while also supporting the Gardai, Coast Guard and Local Authority.

This involves:

- Developing community based rescue and training centres.
- Designing signage to highlight specific local hazards.
- Circulating visitor information about specific dangers locally.
- Provision of Rescue Throw Bags and training in use for Garda patrol cars.
- A voluntary call out group is being formed to provide an immediate local response until the EMS arrive. Surfers and former lifeguards are central resources.

Lessons Learned

This process highlights a number of considerations, as follows:

- Access to funding is easier when applied for by a larger representative body which is nationally aligned.
- More members permits better succession planning.
- Localism is an issue because many feel threatened by outside influences. Strategies to develop ownership are necessary.
- Rescue equipment can be simple.

Conclusions

The parts of the project that are completed have raised the profile of Water Safety Awareness by attracting more media attention and sponsorship. Co-operation among voluntary groups has increased.

The inclusive nature of this project involves a wide skills set and is attractive for younger members.

This concept has the potential to be applied in many water based communities. Most importantly it provides crucial immediate interventions until the arrival of the EMS.

Comprehensive solutions in water safety on the example of the City of Szczecin (Poland)

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There are over 400k inhabitants in the city of Szczecin, and 700k in the entire agglomeration. The Odra River flows through the city, creating meandering backwaters with its branches, two large lakes, ponds and canals. The seaport, the main railway station, offices, universities and several kilometers long boulevards are located on the river, which are a meeting place for residents and tourists visiting Szczecin. There are 2 bathing areas by the lakes, and 1 bathing site by the river. There is also a large outdoor water park. There are 7 sports swimming pools and 5 hotel swimming pools. Several times a year, mass events are organized on the Odra River, attracting from several dozen to several hundred thousand spectators. Drownings in the years 2016-2022 in Szczecin took place outside bathing areas and swimming pools, in 2016 there were 7 drownings, 2017-3, 2018 - 6, 2019 - 9, 2020 - 6, 2021 - 3, 2022 - 4. The main causes of drownings were: 1) people (men) entering water at lakes after alcohol, 2) people (men) entering/falling into water by the river/boulevards after alcohol, 3) accidents during the work of workers on quays /bridges, 4) suicides. Since 2018 the city authorities have taken the following actions to reduce the number of drownings. WOPR lifeguards were ordered to: 1) Maintain intervention teams of lifeguards with a RIB boat throughout the year (24h) (1st team on permanent duty - 365 days, 2nd & 3rd team outside the hot season - reaction time 20 minutes). 2. Organizing swimming pools. 3. Joint preventive patrols with the Police on lakes and boulevards (season). 4. Drowning prevention in schools (before the season) and at bathing areas (season). 5. Organization of water safety for mass events (together with the Police, Fire Brigade) 6. Maintaining the WOPR Water Rescue Coordination Center with dedicated telephone numbers (984, 601100100), lifeguards - dispatchers. 7. Providing municipal monitoring over water areas. The effect of this strategy of the Szczecin authorities are: a decreasing number of drownings among adult men, single victims among children and a noticeable, constant presence of lifeguards in places with the highest risk of drowning.

Measuring the swimming skills of adults attending swimming lessons in Australia as a drowning prevention measure

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Background

Between 236,000-295,000 people fatally drown each year worldwide, 90% occur in low-and-middle income countries, with males and children aged 0-4 years over-represented (1,2). In high-income countries (HIC), these trends are reversed, with 80% of drowning deaths among adults (3). In Australia, 273 people drown annually, 80% are aged 18+ years (4). The World Health Organization recommends swimming and water safety skills and training bystanders in safe rescue and resuscitation as a key drowning prevention strategy (5). Swimming and water safety programs generally focus on children; less is known about the swimming and water safety skills of adults.

Methods

A retrospective cross-sectional study of adults attending swimming programs in Australia between 2018-2021. Adult swim skills assessment records were analysed against the Australian National Swimming and Water Safety Framework and the three National Benchmarks (6). Descriptive statistics and chi-square analysis were undertaken.

Results

A total of 4,914 adults attending swimming lessons were included, more females than males attended lessons, (61% vs. 39%), median age 38 years, 84% were from high socio-economic areas. On average adults attended nine lessons, with 43% attending lesson between 1 and 2 months. The average time in water was 4.5 hours. At their final assessment, 69% could swim at least 5m, 33% could swim 25m and 18% could swim 50m continuously.

Discussion

Findings highlighted that there may be an equity issue for some adults in accessing vital swimming and water safety programs, with men and those from low socio-economic backgrounds less likely to be attending such programs. This study found that while swim skills being taught to adults are the same as expected of children, adults may take longer to achieve skills such as floating, breathing and going underwater which then impacts on their ability to achieve the National Swimming and Water Safety benchmarks.

Conclusion

Adults of all ages can learn to swim; however, many do not stay in lessons long enough to achieve minimum swimming and water safety skills. The importance of developing water safety and survival skills at any age cannot be overstated and is one key factor for reducing drowning

Make the Right Call: designing and delivering evidence-informed adult drowning prevention campaigns for older adults.

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Background

In Australia, child drowning prevention interventions have been a focus of injury prevention actions. In the past 20 years drowning among older people has increased from 12% to 16% (1). The rate of drowning among older people is likely to continue to rise as Australia's ageing population increases (2), and older people participate in aquatic activities for fitness and recreation. While there has been a call for robust, evidence-informed drowning prevention interventions across the life course; there is a lack of evidence for drowning prevention programs for older people. For more than a decade, drowning prevention researchers and practitioners (the partnership) in Western Australia (WA) have worked together to design evidence-informed programs. This paper describes the development of the 'Make the Right Call' (MTRC) program for adults 45+ years in WA.

Description

The partnership undertook a staged, mixed methods study to explore factors influencing drowning amongst WA older adults, specifically theory-mapping, project logic development, cluster analysis of coronial data 2008-2018 (n=93), in-depth interviews (n=15) with people aged 65+ years, and content validity testing of the baseline questionnaire with experts (n= 11). Results informed the design and evaluation of a new program by the Royal Life Saving Society of WA, the MTRC drowning prevention program for adults 45+ years. The campaign comprises: a media campaign, aqua skills classes, lifejacket trade-in, subsidised first-aid training and community education.

Lessons Learned

MTRC program planning, implementation and evaluation are theory-driven and evidence-informed. The program applies findings that demonstrate changes in an individual's perceived risk and participation in particular risk practices over the life course. Impact evaluation has found the program is relevant and effective for the target group. The partnership continues to collaboratively refine program strategies using findings from regular evaluation.

Conclusion

An investment in targeted mixed-methods research by the partnership has added rigour and credibility to program design and dissemination of findings for a variety of stakeholders. To our knowledge, this is the first older adult drowning prevention intervention to apply a theory-driven and evidence-informed approach to development, implementation and evaluation. The program has been delivered in other jurisdictions and has scalability.

Finding Your Lane: Experiences and Beyond for Adults Learning to Swim

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Background

Although programs do exist that are designed to teach all people to swim, adults are often overlooked in the process which would serve to break the generational cycle of non-swimmers¹. We know that the least effort is placed on adults although this group continues to experience drowning at a concerning rate². Consequently, this is then perpetuated with their children, family members, and others in their community. Furthermore, in the United States, historically some groups were denied access to public swimming pools and swimming lessons as the result of race leading to a gap in generations being able to swim and enjoy the water². This study examined the experiences and impacts of adults and racial minorities participating in an adult swim instruction program.

Method

This qualitative study involved conducting semi-structured interviews with 20 participants. The purpose of the study was to understand experiences, motivations, and outcomes of those participating in an adult swim instruction program between 2014-2021. Data were coded individually by members of the research team for emerging thematic outcomes with final agreements congealed by the entire research team.

Results

Participants expressed these programs had an effect in three areas: (a) life affordance, (b) emotional affect, and (c) interpersonal relationships. Participants indicated not knowing how to swim was often deeply rooted in a visceral fear of water and drowning. Interpersonal relationships were a prominent reason for deciding to complete an adult swim instruction program. Interestingly, it was these relationships that caused our participants to decide they wanted to learn how to swim so they could teach others in their lives. The majority of individuals who participated in the program and 75% of participants identified as a race other than White.

Conclusions

Public health experts and aquatics leaders should consider targeting programs aimed at teaching adults to learn how to swim, especially to minoritized individuals. These programs would work to decrease drowning for the adult non-swimmer and others in their network; and even cultivate excitement to engage in water-based activities. Consequently, we were able to better understand the historical and systematic barriers and exclusions these individuals experienced.

Pre-Existing Medical Conditions: A Silent Contributor to Adult Drowning

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Background

The global population is aging (1,2), along with increasing levels of chronic diseases and polypharmacy(2,3). Medical conditions can increase drowning risk (4-7). Limited work has explored these contributory factors on drowning in the adult population, with no prior study systematically reviewing the published evidence globally regarding medical conditions and drowning risk for adults.

Methods

A systematic literature review (8) was undertaken to identify and critically analyse studies of unintentional fatal adult drowning and chronic diseases. MEDLINE (Ovid), PubMed, EMBASE, Scopus, PsycINFO (ProQuest) and SPORTDiscus databases were searched for original research published between 1 January 2005 and 31 October 2021 that reported adult (≥ 15 years) fatal or non-fatal drowning of all intents and pre-existing medical conditions. Conditions were grouped into the relevant International Classifications of Diseases (ICD) codes.(9)

Results

Eighty-three studies were included (85.5% high-income countries; 38.6% East Asia and Pacific region; 75.9% evidence level III-3). Diseases of the nervous system (n=32 studies; 38.6%), mental and behavioural conditions (n = 31; 37.3%) and diseases of the circulatory system (n=25; 30.1%) were the most common categories of conditions. Common medical conditions included cardiac arrhythmias, neurological disorders (motor neuron disease/multiple sclerosis/epilepsy), and psychiatric disorders. Epilepsy was found to increase the relative risk of drowning by 3.8 to 82 times, with suggested preventive approaches including supervised bathing or showering. Drowning was also found to be a common suicide method for those with schizophrenia, psychotic disorders and dementia.

Conclusion

Review findings indicate people with pre-existing medical conditions drown, yet relatively few studies have documented the risk. There is a need for further population-level research to more accurately quantify drowning risk for pre-existing medical conditions in adults, as well as implementing and evaluating population-level attributable risk and prevention strategies.(10) Review findings suggest cardiac conditions, along with the associated polypharmacy, may contribute to adult drowning risk. Drug pharmacodynamics should be discussed with medical professionals (including the potential impact on function on, in or around water), particularly central nervous system interactions. Medical conditions and polypharmacy need to be research congruently for a true prevalence and attributable risk to be appreciated.

Silver Salties: Addressing concerning risk perception, behaviour and mortality in Australians over 55

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Introduction

Drowning risk in older Australians has become an emergent area of concern. (1, 2) Older Australians regularly engage with the coast, comprising 31% of Australian coastal visitations in 2021/22 (2). They are also an emerging population of concern relating to coastal drowning.(2, 3) Understanding how older Australians engage with the coast is crucial to inform future coastal safety interventions and messaging.

Methods

National mortality and survey data was used to explore mortality, participation and behaviours around Australia.

Results

Mortality, participation, and behaviours of Australians over 55 will be analysed to understand trends relating to risk, coastal visitation, hazard perception, and swimming ability of this high-risk demographic. Over 55's comprise one in three coastal visitations, yet 30% perceive the beach to be not very/or at all hazardous - a contradiction which could lead to an underestimation of risk in this age group.(2) Increasing drowning risk is also being observed, with over 55's accounting for 38% of coastal drowning deaths in 2021/22, which increased to 50% in 2022/23.(2,3)

Discussion

Staying physically active, eating well, socialising and maintaining positive, healthy experiences throughout life stages can help us to live a healthy, happy and active life as we get older. Surf Life Saving Australia have introduced Silver Salties - a health promotion program to educate older Australians about how to stay safe at the coast, while also improving the social, physical and mental health of participants. These Silver Salties further serve to reduce the coastal drowning burden by often joining as an active member of the Surf Life Saving movement, supporting our mission to save lives, create great Australians, and build better communities.

Men are most at risk: Understanding the impact of emotions in RNLI communications in relation to behaviour change

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Stimulated by the 2014 WHO report that recommended every country should have a national water safety and drowning prevention plan, the National Water Safety Forum (NWSF), created a drowning prevention strategy in 2016 setting out a clear framework together with organisations RNLI, RLSS, MCA and RoSPA. One of the key strategic themes of the strategy is to prioritise drowning prevention activities, such as, improving understanding of behaviours to design relevant behaviour change messaging in order to reduce drowning fatalities by 50% by 2026. According to the NWSF, "drowning in the UK accounts for more accidental fatalities annually than fire deaths in the home or cycling deaths on the road." (WAID, 2023). On average 400 people drown accidentally in the UK each year (both from coastal and inland water areas) and crucially there are tens of thousands more* near fatal incidents in the water resulting in severe, permanent life-changing injuries, such as brain injuries from oxygen starvation and PTSD. This puts huge pressure on the UK's national health system (NHS) and to the families of those who have been affected.

Globally, males are 80% more likely to drown than females, specifically middle-aged men and teenage boys. Men are in the water more often and exhibit riskier behaviour, such as swimming alone, drinking alcohol and not wearing lifejackets. CDC research also suggests the increase in male drowning is due to social pressures and underestimating risk. The RNLI acts as an important service for water safety communication and education. They use "Float to Live" as a key message through emotional story-telling, and use emotions to highlight risks and emphasize the dangers.

This study measures whether emotional, hard-hitting content illicit a stronger response than a softer, more up-lifting approach? If so, for how long? The research aims to understand how to use different emotions to promote lasting behaviour change e.g. fear, guilt, humour, hope, empathy, anger, gratitude. Using VR and EEG technologies to record and explore men's experiences of water safety communications and the effects on their emotions. Secondly, ethnography to determine whether the messaging is effective in behaviour change long term.

Lessons from the Royal National Lifeboat Institution's (RNLI) approach to the challenge of responding to incidents involving water-based suicide and people in mental health crisis across the UK & Ireland.

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Background

The purpose of this project has been to define the RNLI's position regarding water-based suicide. This included the internal support for its lifesavers attending incidents involving people threatening, attempting, or dying by suicide, and the external opportunity to contribute to prevention. Annually RNLI volunteer lifeboat crews respond to over 700 incidents involving vulnerable people in crisis, and more than 200 people die by suicide around UK coastal and inland waters. In 2019, water-related suicides overtook accidental drowning for the first time on record in the UK.

Description

Given the RNLI's involvement with this societal issue, two key project objectives were identified:

- Prepare, protect and support lifesavers involved with suicide related incidents. This internal audience includes lifesavers, occupational health, training & research.
- Contribute to water-based suicide prevention by partnering with experts. This external audience includes public health, suicide prevention & emergency services.

Activity & inventions phases

Understand

- RNLI incident analysis
- Networking with public health & suicide prevention specialists

Engage

- Internal multi-level stakeholder engagements
- Internal communication on World Suicide Prevention Day
- Local Authorities engagement

Act

- Improve training and support for lifesavers
- Create policy to support operational teams
- Establish a national forum to engage experts and advocate support

Lessons learned

Suicide is a public health issue and collaboration is vital to support multisectoral prevention strategies. Suicide prevention is complex and enthusiasm to help may have unintended consequences. Suicide is an emotive issue, so allow time and prioritise wellbeing. Drowning data can support suicide prevention activity. Responding to suicide related incidents is traumatic and lifesavers can be at greater risk of suffering with their own mental health as a result. It's vital they are supported. Suicides are preventable with timely, evidenced based interventions

Conclusions

Suicide is a public health issue that our drowning prevention community can support. Preparing & supporting first responders it vital to reduce their personal risk and sharing data with experts can contribute to suicide prevention

Collaborating for Water Safety and Environmental Stewardship: The Swim Global Project and Waterkeepers Bahamas Partnership

Nathalie Martin

Swim Global Project, Orlando, USA. Water Keepers Bahamas, Freeport, Bahamas

The World Conference on Drowning Prevention 2023 recognizes the importance of building strong coalitions and partnerships to effectively address the global issue of drowning prevention. The Swim Global Project and Waterkeepers Bahamas serve as an excellent example of a cohesive partnership that focuses on teaching water safety, lifesaving, drowning prevention, and environmental stewardship.

The Swim Global Project (SGP) is a non-profit organization that provides free swimming and water safety lessons to children in developing countries. SGP partners with local organizations to train instructors and create sustainable programs. In the Bahamas, SGP has partnered with Waterkeepers Bahamas (WKB), a non-profit organization that focuses on protecting the country's watersheds, on expanding its mission. Together, SGP and WKB are able to provide comprehensive water safety education to Bahamian children and their families while also promoting environmental stewardship.

The partnership between SGP and WKB has demonstrated the power of collaboration in achieving common goals. By leveraging each other's strengths and resources, they have created a holistic approach to addressing water safety and environmental protection. The success of this partnership can serve as a model for other organizations and communities looking to address the issue of drowning prevention and promote environmental sustainability.

Insights into Drowning Prevention and Bystander Rescues in Madagascar, Nigeria, and Ghana through interviews with International Surfing Association (ISA) qualified surf coaches

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Background

Bystander rescues conducted by surfers save thousands of lives (1,2,3). The author's previous study (4) indicated in many locations; International Surfing Association (ISA) surf coaches are one of the few effective drowning prevention resources available. This research focuses on three countries with high rescue rates per coach to uncover the factors contributing to these rescues.

Methods

Three Surf Coaches who took part in the International Surfing Association/International Lifesaving Society award training were asked questions about their experiences in an online interview. Two from nations without ILS organisation members (Madagascar, Nigeria) and one from Ghana to try to determine:

- Factors leading to why they are rescuing.
- Their experiences before, during, and after rescues.
- The Drowning Prevention resources and support they have in their countries and specifically, beach locations.
- The impact on rescues after this training and comparison to any they did before training.

Results

In these Surf Coaches' communities, the beach areas and tourists that come are important sources of income. These communities "guard the beaches" using a chain of survival systems specific to their location. They describe this as an informal, but effective system.

These communities' Surfers provide a lifeguarding role, usually with little or no external organisational support, by watching people from the beach or in the water, with surfboards as floatation devices.

These coaches, after ISA/ILS course training said they were more confident and also understood how to manage the rescue situation and the causes. They removed the person from danger more swiftly and effectively and also had skills to provide critical first aid.

Conclusion

The ISA has shown, using our global network of coaches, that we can facilitate the effective collection of data and provide analysis of Bystander Rescues and Drowning Prevention resources to lead to informed actions and interventions to improve Drowning Prevention. This study shows that providing experienced surfers with low-cost resources and training enhances their localities' confidence and self-sustaining drowning prevention offer. The author believes this is an effective linking strategy to reduce drowning in many cases until wider International and national organisational policies and strategies are implicated and in place.

Viet Nam Health Efforts for Drowning Prevention Program

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Background

Drowning is the leading injury cause of death in Viet Nam. Every year, more than 5,700 lives are lost of to drowning. The highest drowning prevalence (39%) was found in the group aged 20-59. The rate among males is three times higher than females. Not only the major public health issue, Drowning is deeply highly associated with quality of life, safety, and health disparities - (especially among the vulnerable groups living in the poor and highest burden areas).

Interventions

Following the National Program on Injury Prevention and WHO recommendations, the Ministry of Health plays a critical role for in policy development and launching the massive interventions, with focus on deployment of community- based and hospital -based surveillance systems to assess the burden of drowning, design evidence-based launching of proper interventions, and pilot of surveillance systems in the highest burden areas. It also includes the capacity strengthening for in the areas of drowning first aid and emergency services among for local grass root health care providers, and health volunteers, child care givers providers, and school teachers, and the red cross network; as well as the integration of drowning prevention into the national movement of safe community development, that covers 42% of provinces, remarkable with a total of 462 accredited safe communities; Diversified communication campaign for raising public awareness; and jointly inter-ministerial taskforce for community initiatives.

Lesson learnt

It's essential for consolidating the data surveillance system for systematical assessing the burden and evidence based for development of effective interventions, sustainable policies. Viet Nam shall invest in fostering the specific interventions programs for specific age groups, occupation and highest burden areas. Lastly, it shall have inclusion of the drowning prevention in the master plan of injury prevention and safe community development, environmental health and natural disaster management programs towards improvement of improve the quality of lives and jointly implementation of SDGs goals in Viet Nam.

Conclusion

Drowning prevalence was decreased by 10% (from 6,164 cases/ year in period of 2005- 2010 to 5,542 cases/ year in period of 2011- 2020).

Swimdo: developing a model for the implementation of child drowning prevention-based grassroots movements in low- and middle-income countries

Indira Santi, Neal From

Swimdo, Gianyar, Indonesia

The purpose of this project is to develop a replicable model for encouraging and incentivizing local community buy-in into child drowning prevention efforts in low- and middle-income countries. Key features of the project include developing rapport with community leaders, fostering trust, empowering community members to contribute to the project, establishing a clear need for the project offerings, determining appropriate locations for swim lessons, identifying ideal target demographics, student recruitment, curriculum development, the promotion of local industry and implementing project programs (survival swimming, water safety and safe-save techniques) in safe and efficacious ways. Over the past 8 years, Swimdo has developed a model for the implementation of child drowning prevention programs at a local level for minimal costs in low- and middle-income countries. Swimdo has found that the most efficacious ways in which to implement child drowning prevention programs is through grassroots community involvement that helps to significantly reduce cost per student while creating local industry and inspiring generational shifts towards the necessity of early aquatic education for all children. Our experience over the last 8 years has led us to conclude that community involvement is not only important, but is essential in creating sustainable, low-cost programs. Furthermore, our efforts have shown that through early childhood aquatic education and water safety awareness, we can create a significant shift in the cultural attitudes towards drowning, drowning prevention and the necessity of water safety programs. Our experience in Indonesia serves as a model for the rest of the world in successfully creating programs that are efficient, purpose driven, sustainable, and valued within the local community.

Community Lifesaver and UITEMATE Survival Swimming Program

Asanka Nanayakkara¹, Prof. Kimura Takahiko²

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Sri Lanka has faced many natural disasters in the past, including floods, landslides, tsunamis, droughts, and cyclones. The country is also vulnerable to the current and anticipated effects of climate change. Of note is the expected greater frequency of more intense monsoons. Temperature and precipitation inconsistencies are expected to drive more frequent floods, droughts, and epidemics. Around 1000 drowning deaths are thought to occur each year, and 80% of said incidents happen in inland water bodies. Therefore, water survival teaching is essential at the community level to safeguard vulnerable communities during disasters and schoolchildren during day-to-day activities.

When responding to a disaster situation, the priority should always be to ensure the safety of yourself and others around you. This may involve evacuating the area or finding a safe place to shelter. Once safety is ensured, the next step is to assess the situation and determine the extent of the damage and the needs of those affected. This may involve communicating with local authorities and emergency responders and conducting a visual assessment of the area.

The key to responding to a disaster, mainly a flood, is to remain calm, assess the situation, and take decisive action to provide support and assistance to those affected as first responders, including medical assistance, food distribution, shelter, and other basic needs. Clear and timely communication with the many stakeholders at the village level is very important.

UITEMATE survival swimming is an essential skill that can save lives during flood disasters, particularly at the village level. Communities that teach and practice this survival swim skill are better prepared to protect themselves, their families, and bystanders, empowering them to be community lifesavers.

USAID, US Embassy Indo Pacific PACOM Augmentation Team, Community Lifesaver SL Team, UITEMATE Sri Lanka, and Sarvodaya Shramadana Movement have joined hands with Sri Lanka Life Saving to collaborate with the above-mentioned training program for community volunteers to build a community response team. We have trained over 1,000 young individuals across eight districts to serve as a first-responder community lifesaver group during any kind of disaster.

Community-Based Approaches to Drowning Prevention in Ghana: A Study of Current Efforts and Opportunities for Improvement.

John Kwame Bordebo

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Drowning remains a significant public health concern in Ghana, particularly among children. Despite various prevention efforts, the problem persists, and new strategies are needed to effectively address this issue. This study aims to examine the current state of drowning prevention efforts in Ghana and identify opportunities for improvement. The study was conducted using a mixed-methods approach, including a review of the current literature and in-depth interviews with key stakeholders, including government officials, healthcare providers, and community leaders. Results indicate that while there are some ongoing drowning prevention efforts in Ghana, they are often fragmented and lack sufficient resources and coordination. Recommendations include increasing funding and resources for drowning prevention programs, strengthening collaboration between stakeholders, and involving local communities in the design and implementation of drowning prevention initiatives. In conclusion, addressing the high rates of drowning in Ghana will require a comprehensive and coordinated approach, with a strong focus on community involvement and empowerment.



RESCUE

“I actually thought that I was going to die”: Lessons on the Rip Current Hazard from Survivor Experiences

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Background

Rip currents are strong, narrow, fast-flowing currents of water that occur on beaches globally where they are a major hazard for swimmers and bathers. In Australia they contribute to an average of 26 drowning deaths and several thousand lifeguard/lifesaver rescues each year. Educating the public about the rip current hazard is a primary focus of beach safety practitioners, but there has been a lack of qualitative research exploring the firsthand experiences of being caught in a rip current, which may assist in this regard. The aim of this study was to undertake and analyse interviews of rip current survivors to understand more about their experience of being unintentionally caught in a rip current. It is hoped that lessons learned from this approach may help guide future rip current public education efforts.

Methods

Semi-structured and recorded interviews took place with 56 individuals (primarily Australian-born) about their experience being caught in a rip current. Interviewees were recruited via an online survey and varied in age and self-reported swimming ability. Interviews were analysed via thematic analysis.

Results

Three key temporal stages to the rip current experience were identified: Before the Rip in which lack of awareness and knowledge, complacency, over-confidence, and attitude were prevalent themes; During the Rip which identified panic and temporary inhibition of decision making, physical response, prior experience, and relationships with other beach users as themes; and After the Rip where post-rip effects and rip safety messaging and education were key themes. The importance of experiential immersion (i.e. learning about the rip by having been in a rip) was a prevalent thread throughout all phases of the thematic analysis.

Conclusions

Our research shows that being caught in a rip current can be an intense and traumatic experience and that lessons learned from survivors have significant implications for improving existing and future rip current education efforts. In this regard, this presentation will discuss several recommendations based on evidence-based insights gained from our interviews including the development of immersive rip current experience using virtual reality (VR).

Rip Currents – Evaluating a behavioural change safety campaign

Shane Daw, Jaz Lawes

Surf Life Saving Australia, Sydney, Australia

Introduction:

Rip currents are the number one coastal hazard in Australia, contributing to an average of 26 people death (since 2011/12). The majority of these are due to drowning (96%) with a well-established relationship between rip currents, beaches, swimming.

Description

SLSA began a five-year coastal safety campaign to address rip current drowning.

Phase 1 (2016-18), 'The Facts About Rips Campaign', increased awareness and knowledge. This phase challenged beachgoer's understanding of rips, identification skills, knowledge of what to do if caught in a rip and how to swim safely at the beach.

Phase 2 (2018-21) was designed to influence beachgoer behaviour in Phase 1. Phase 2 used emotive, harder hitting messaging to change safety behaviours. Using personal, real-world stories, 'The Think Line Campaign' introduced the concept of a line in the sand to remind swimmers to STOP. LOOK. PLAN. before entering the water.

Lessons learned

The National Coastal Safety Survey (NCSS) evaluated its impact each year. After its final year, final evaluations revealed The Think Line campaign is clear and resonates with the Australian population. The campaign has intrinsic value with clear messaging that communicates rip currents can be hazardous and dangerous and has the potential to change behaviour. For example, after seeing the Think Line campaign (Phase 2) components, 83% of Australian adults were more likely to swim between the red and yellow flags in the future, and to STOP. and LOOK. for rip currents prior to entering the water. This change was highest among swimmers with 96% reporting that (after the campaign) they would LOOK. for rip currents compared to only 46% that reported to always do so prior to seeing the campaign.

Conclusion

These results show that we have an effective behaviour change tool however required longer term community exposure to create impacting change. The opportunity to utilise these principles are being used to address other drowning ie boating, rock fishing etc with the 'Think Line' principle and the elements of STOP, LOOK, PLAN being applied to have a consistent community alignment to water activity safety. This is being evaluated through the National Coastal Safety Survey (2023).

What is a shore dump?: Exploring Australian university students' beach safety knowledge and their perceptions of Australian beach safety signage

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Background

On average 122 coastal drowning deaths are recorded in Australia every year. Typically, young adult beachgoers (15-34 years old), many of whom were born overseas, account for 25% of these fatalities. This study identifies university students as appropriate subjects for investigating typical interpretations of beach safety messages and signage among this high-risk demographic.

Methods

This study involved an online survey of Australian university students (domestic: n=136 international: n=84). The survey comprised both closed and open-ended questions about beach safety terms and signage. Participants were recruited through university newsletters, course announcements, social media, and at beach safety workshops. Data were analysed with SPSS for descriptive analyses and Pearson Chi-Square to test for statistical differences between domestic and international students.

Results

Over 55% of domestic and over 75% of international students did not understand the common safety terms shore dump and shore break and approximately half of both groups misunderstood the sign, always swim between the flags, believing that surfers should also stay between the flags. Concerningly, 21% of international students perceived this meant that beachgoers who don't or can't swim need to stay outside the flags.

So what?

Existing beach safety signage is not as effective as authorities assume due to linguistic and translation challenges. Some terms are improperly translated into Japanese and Chinese in the current search on Google Translate. Such linguistic issues must be addressed so as to improve the delivery of coastal safety messages.

Investigating beachgoer's perceptions of coastal bathing risks in South-West France

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Background

It is widely admitted that beachgoers are generally unfamiliar with coastal hazard and underestimate the associated risks therefore [1]. This contradicts the hypothesis that, as laypersons, beachgoers should, on the contrary, overestimate the risks, particularly in comparison with lifeguards [2]. In addition, little is known about the physical factors on which beachgoers base their risks assessment.

Methods

In this presentation, we investigate beachgoers risk perceptions at a beach located in the southwest coast of France where severe rip current and shorebreak wave hazards co-exist [3]. We constructed a unique multidisciplinary database with individuals data coming from an onsite survey (N=722), environmental information provided by French marine and weather forecast organisms (Météo France, SHOM) and local lifeguards on site hazards assessments. Beachgoers risk perception questions focused on both rip current and shorebreak wave hazards at the time of the interview, for accompanying adults and for accompanying children, and for a wide range of environmental conditions (waves, tide, weather, day, hour ...). The level of risk was estimated on a 5-point scale (from 0: very low to 4: very high). The lifeguards carried out a similar exercise by indicating (during patrolling hours, 11AM-7PM) their own hazard level assessment on rip current and shorebreak waves.

Results

Our findings are in line with the common heuristics [DJ1], i.e. individuals have a lower risk assessment for themselves than for the people accompanying them, especially if they are children. Beachgoers estimated risk associated with shorebreak waves was lower than that associated with rip currents, whereas accidents caused by shore breaks are more numerous [3]. Beside personal dimensions, several environmental factors (i.e. wave periods and wave heights) have a significant influence on the perception of beachgoers' judgement. We also demonstrate that beachgoers and lifeguards assessments are correlated.

Conclusions

Despite the differences in risk and hazards perception, common factors can be identified that will improve communication between beachgoers and lifeguards. Communication on shorebreak wave hazards need to be strengthened. While hazard level of French beaches is still based on a three-color flags system, a five-level risk assessment is foreseen in term of wider communication.

Rip currents: An update and the novel next steps regarding the number one coastal drowning hazard

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Introduction

Rip currents are strong, narrow, and often channelised currents of water that flow offshore through the surf zone and beyond. They are common features on Australian beaches with an estimated 17,000 rips occurring on any given day around the coast. Rip currents are significant contributors to coastal drowning deaths, representing the number one coastal hazard here in Australia.

Method

National fatality and survey data was used to explore rip-related mortality and rescue characteristics around Australia over the 10-year study period.

Results

Between 2013-23, 257 rip-current-related coastal deaths were recorded, 96% due to drowning (n=247). This annual average of 26 rip-related deaths is above the previously reported average of 21. Most deaths occurred to men, while swimming or wading, greater than 1km away from a Surf Life Saving service, mostly at unpatrolled locations during patrol season. Beaches are the dominant location, which is unsurprising given the coastal processes involved in rip current formation.

Rip currents continue to be the highest rated coastal hazard by Australian adults. More than 4.4 million Australian adults have unintentionally experienced being caught in a rip current, with half of these occurring at unpatrolled locations or outside of patrol times. Novel analyses of survey data suggest that annually more than 200,000 Australians get unintentionally caught in a rip, of which ~54,000 required rescuing (including by lifesaving personnel, surfers and others).

Discussion

Rips are more likely to occur in energetic, wave- and rip-dominated beaches, such as the transverse-bar and rip typology. Understanding beach typology and coastal processes may increase awareness of how certain beach types may be more hazardous than others. Most who think they can identify a rip current cannot – so what does that mean for the next steps in rip current prevention? Understanding risk factors and community behaviours relating to rip currents has important implications for coastal safety organisations and risk managers. We will present novel research approaches, intended to increase rip current awareness, that will inform the development of strategy about this important public safety issue both within Australia and globally.

Taking it to the beach - a pilot blackspot beach education initiative

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Background

Pearl Beach, on the NSW Central Coast, is an unpatrolled beach and has been identified as a drowning blackspot due to its dangerous beach morphology; surging waves, strong backwash into a deep drop off and recent drownings. There are multiple stake holders who, whilst actively involved in beach safety risk management, are not all part of the same conversation, resulting in an uncoordinated approach to beach safety management and an overlap of resources.

The aim of our program was to:

- Engage, Educate and Empower beach goers to understand safety risks at Pearl Beach.
- Provide strategies that could help beachgoers to learn how to be safe at an unpatrolled beach and know how to seek help.
- To connect local beach safety stakeholders

Description

We worked with Surf Life Saving Central Coast to create a Pearl Beach safety brochure. This was used to launch our series of 9 community education sessions where lifesavers manned an education stall and actively walked the beach approaching beachgoers to invite them to learn about safety at Pearl Beach. Over the 9 sessions our program trialled a variety of education resources. We collected survey data and anecdotal observations. We also engaged our surf club youth in the process.

Lessons learned

Whilst our program was effective in increasing beachgoers understanding of the dangers at Pearl Beach, we noted there could be improvements to the safety brochure and survey. Also, that a risk assessment of beach conditions on intervention days would be beneficial in interpreting survey responses.

Conclusions

The program was well received by all participants and local stakeholders. Participants reported they learnt not only about safety at Pearl Beach but felt better equipped to visit any beach. We identified that engaging our youth improved their surf safety knowledge and increased their confidence to deliver education to the general public. Our program helped to create a more coordinated approach to safety at Pearl Beach.

Analysis of the United Kingdom national-scale rip current forecast after 10 years of operation

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Rip currents are concentrated seaward flows that originate near the shore and can take bathers from the shallows out to sea. They are estimated to cause hundreds of drownings and tens of thousands of rescues (>50% of all beach lifeguard incidents) globally each year. Forecasting when and where rip currents are likely to pose a high level of hazard has the potential to provide lifeguards and members of the public with forewarnings to help mitigate or avoid potential drowning incidents at the coast. A combination of comprehensive incident analysis, field experiments, and numerical modelling identified metocean thresholds associated with high rip current hazard and led to the launch of an operational U.K. scale rip forecast system, used by lifeguard managers around the UK since 2013. The system is now one of the longest running national-scale rip forecasts in the world. This study investigates the efficacy of the U.K. rip forecast by comparing its predictions to 10 years of Royal National Lifeboat Institution beach lifeguard incident data from around the U.K. coast. The results reveal that the forecast can reproduce the vast majority of rip incidents, with a hit rate >95%. The highest predictive skill was achieved at open beaches featuring bar-rip morphology, while at beaches without bar-rip morphology rips were not predicted as reliably. This study confirms that rip current hazard is, in the majority of cases, predictable using simple metocean thresholds to achieve a useful national-scale forewarning system.

Environmental controls on summer surf zone hazards, beach crowds, and resulting life risk at a high-energy sandy beach in southwest France

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Background

Surf beaches can be dangerous environments with powerful wave conditions and the presence of rip currents [1]. Understanding and predicting surf zone risks is of paramount importance to prevent drowning incidents. However, physical hazards and water-user exposure at the coast have traditionally been measured separately. For the first time, this study holistically addressed risk at a given beach by implementing a cross-disciplinary research approach in close collaboration with lifeguards at a rip current-dominated beach in southwest France.

Methods

The experiment took place at La Lette Blanche beach in southwest France during the lifeguard-patrolled summer period (July-August) 2022. This coast is exposed to high-energy ocean waves which, together with a meso-macrotidal tide regime, result in a wealth of surf zone hazards, primarily rip currents and shore-break waves, occurring at different times and locations along the beach. During this 2-month period, beach crowds and the levels of rip current and shore-break wave hazards were estimated hourly by the lifeguards during patrolling hours (11AM-6PM). Wave, tide and weather conditions were also continuously recorded by a nearby tide gauge, wave buoy and weather station, providing comprehensive insights into the primary environmental controls.

Results

Our study shows that the daily average rip current hazard increases with large, long-period and shore-normal waves, while the shorebreak-wave hazard is increased for long-period waves and large tide ranges. Beachgoer crowd numbers increase on warm, sunny and light wind days, with a severe heat wave occurring in July 2022 significantly decreasing beach crowd. Days characterized by strong hazards and large beach attendance were also those associated with the largest amount of lifeguard rescues and of drowning incidents in southwest France. Warm, sunny and light sunny days, with large, long-period shore-normally incident waves and large tide range were the most risky days, with maximized beach crowd and shorebreak-wave and rip current hazards peaking at different times of the day and at different sections of the beach.

Conclusions

This collected dataset together with additional drowning datasets and machine learning techniques [2] form the basis of the ongoing development of a new beach exposure hazard/life risk alert system.

Measuring beach replenishment's effects on aquatic spinal injuries: an analysis of six rounds of replenishment at a high volume coastal resort

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Spinal injuries occur along beaches at coastal resorts when bathers are thrown by waves, or erroneously dive into shallow water. Victims may be thrown by waves when they are intentionally riding the waves or when they are standing, walking or sitting in the water. Because of the debilitating nature of spinal injuries, these accidents often lead to death by the injury itself or by drowning. There is a considerable body of popular literature discussing beach replenishment as a contributor to these incidents due to the effect replenishment has on beach slope (1) (2)(3). This study is the continuation of an earlier study of aquatic spinal injuries. The previous study, presented at the World Conference on Drowning Prevention in 2017, analyzed a large set of patients with three rounds of beach replenishment. The data set yielded coefficients for beach replenishment of the expected direction but outside of generally accepted confidence levels. Unlike other studies, the effects of beach replenishment on aquatic spinal injuries are measured directly and the potential effects of offshore obstructions, such as artificial reefs, are controlled for. Two approaches are used, an incidence approach, with a zero-inflated Poisson regression, and an injury severity approach, with an ordered probability regression. The time period investigated and presented in 2017 was 2000-2011. Now data are available 2000-2018 with six rounds of beach replenishment to study. The methodology presented in 2017 has been peer reviewed and vetted. The current study is expected to be the definitive answer to the question of beach replenishment's effects on aquatic spinal injuries.

Reducing drowning risk from rip currents: Comparing forecasted rip hazard to lifeguard observations of perceived rip hazard in New Zealand

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Over the last ten years, 41% of all beach and coastal fatal drownings in New Zealand occurred at a surf beach (1). Given that rips account on average for about 60% of all lifeguard rescues (2), it is estimated that the majority of these drownings were related to a rip current.

Rips are difficult to spot – nearly 80% of people in NZ can't identify a rip (1,3) – and avoiding the risk they pose is highly challenging for water users. In an effort to reduce life risk at the coast, Surf Life Saving New Zealand (SLSNZ) and the University of Plymouth in the UK developed a rip current hazard prediction model to warn people when they are likely to be present and dangerous in the Auckland region. In this contribution, we evaluate how closely the forecasted rip hazard (based on increases in observed and modelled rip activity) compares to the perceived rip hazard from lifeguard observations (based on expert judgement and local knowledge).

Following a similar approach to (4), thresholds in forcing conditions associated with increases or decreases in rip current hazard level were identified using ten years of lifeguard incident data from nine Auckland beaches, field measurements of rip currents at two locations, and numerical model simulations under 210 different combinations of wave and tide conditions. Using metocean forecasts and the developed thresholds, a warning system for rip hazard was established. This was tested with lifeguards from 22 Auckland beaches during the summer of 2021-22 and 2022-23. The aim was to judge lifeguard confidence in the hazard flags and see how well the predicted hazard aligned with lifeguard's perceptions of the observed hazard. These results are hoped to guide SLSNZ in how best to communicate rip hazard to lifeguards and the general public, and it is hoped a public-facing version of the forecast will be rolled out across NZ to help reduce risk to life from rip currents.

Forecasting hazardous surfzone currents at an embayed estuarine beach

Christopher Stokes¹, Timothy Poate¹, Gerd Masselink¹, Tim Scott¹, Steve Instance²

1School of Biological and Marine Sciences, University of Plymouth, Plymouth, United Kingdom. 2Royal National Lifeboat Institution, Poole, United Kingdom

Rip currents are the single largest cause of beach safety incidents globally, causing >50% of all recorded beach lifeguard incidents. Where estuaries intersect a beach at the coast, they often create additional flows through the surfzone, and current speeds can exceed those created by rip currents. However, there is a paucity of observations of surfzone currents at estuarine beaches, and our understanding and ability to predict how the bathing hazard varies under different forcing conditions is therefore currently limited. From observations at an energetic and embayed estuarine beach in SW England we demonstrate how surfzone currents can be driven by combinations of estuary flow, channel-rips, and boundary (headland) rips under various combinations of wave and tide conditions. While previous studies have demonstrated the high bathing hazard that rip currents pose, especially during lower stages of the tide, this contribution demonstrates that estuarine beach systems represent a more complex and potentially more hazardous bathing situation through the combined action of wave-driven and estuary-driven flows, which collectively operate across the full tidal cycle. Using a large suite of numerical simulations of flow velocity, a bathing hazard forecast system has been developed that predicts up to 5-days ahead precisely when and where peak bathing hazard is likely to occur on the beach. To our knowledge, this represents the most detailed coastal bathing hazard forecast currently used in the world. The forecast system developed from this study has led to the UK's first public-facing dynamic rip current warning system at Crantock Beach, which displays the forecasted hazard on large digital screens at beach access points. This is hoped to contribute to a reduction in drowning risk at the beach.

Making beach safety more relevant – a call to add human and dynamic beach factors to the beach hazard rating.

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Introduction

The Australian Beach Safety and Management Program uses a general numerical (1 -10) beach hazard rating in the description of every beach in Australia. The beach hazard rating is based on the prevailing wave height, the morphologic type of beach and qualitative consideration of other factors such as the presence of a shore wave break and rip currents. Higher scores refer to more hazardous beaches and increase with increasing wave height. This system has been adopted for use in several other countries. The aim of this study was to test the robustness of the beach hazard rating against actual adverse outcomes on beaches.

Methods

Rescue data from Surf Life Saving Queensland's Lifesaving Incident Management System between July 1st, 2016 to October 6th, 2021 and cervical spine injuries presenting to the Emergency Departments of Sunshine Coast Hospital and Health Service between January 1st 2015 and April 21st 2021 were linked with tide and wave data, beach type, beach hazard rating and beach swimmer numbers. Ethics approval was obtained from Metro North HREC (49754) and James Cook University (H8014).

Results

There were 8515 rescues at 54 wave dominated beaches across south-east Queensland and 79 cervical spine injuries at 15 beaches on the Sunshine Coast included. Beach hazard ratings ranged from 3/10 (least hazardous) to a maximum of 6/10 (moderately hazardous). The largest number of rescues (1005) occurred on a beach with a hazard rating of 3/10. Two beaches with hazard ratings of 3/10 were ranked 22nd and 42nd for safety with respect to rescues per swimmer (32 and 128 per 100,000 respectively). The beaches with the two highest rates of cervical spine injuries per swimmer (1.8 and 0.8 per million) had hazard ratings of 5/10 (moderately hazardous) and 3/10 respectively. The beaches with the lowest rescue per swimmer ratio (5.0/100,000) and cervical spine injury ratio (0.2 per million) had hazard ratings of 6/10 and 5/10 respectively.

Conclusion

The beach hazard rating does not accurately reflect adverse outcomes. It should be revised to take human factors and dynamic beach conditions into account in order to better inform beach users and lifeguards.

Soaking up summer: Understanding the impacts of summer coastal drowning deaths

Chris Jacobson, Sean Kelly, Shane Daw, Jaz Lawes

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Introduction

The Australian coast is a popular location for visitors, especially over the austral summer period (December – February). The coast attracts international and domestic visitors, with an estimated 14.2 M visitors last year and 500M individual visitations annually. The summer months are recognised as the peak period for coastal recreation, when warmer weather coincides with the Australia's major holiday period (including school holidays, Christmas, and new year celebrations).

The coast, the beach and holidays are embedded within the culture of summer, but there are also many associated risks and hazards that may be hard to recognise – especially when visiting an unfamiliar location. Unfortunately, many do not understand the risks and hazards along the coast, and this has led to the need for surf lifesaving services to perform 10,000+ rescues each year, in addition to thousands of first aid and preventative interventions to keep the community safe. Tragically, it has also led to fatal incidents, in particular drowning deaths.

Methods

Characteristics of coastal summer drowning deaths recorded in SLSAs coastal fatality database between 1 July 2013 and 30 June 2023 will be presented in conjunction with current and future public safety interventions.

Results

Summer is the recognised peak period for coastal drowning deaths accounting for, on average, 37% of the annual burden of coastal drowning. This presentation explores the recent summer coastal drowning profiles in the context of historical data (2012-2023) and current drowning prevention strategies. Rip currents and swimming at unpatrolled beaches are dominant factors in summer coastal drowning deaths. In Summer 2022/2023 – all coastal drowning deaths occurred away from lifesaving services, 8 out of 10 at beaches, and every second case involved a rip current – 70% increase on the 10-year average.

Discussion

Coastal drowning deaths and fatalities may continue to occur but can be prevented through multi-agency collaboration that mitigate risk and increase awareness within the community. Water safety education strategies should be targeted at all levels and reflect of the diversity of needs within the Australian population. Summer fun on the coast is an Australian staple, and especially important given the recent challenges experienced by the community.

The Surf Risk Rating App: A real-time risk mitigation tool to evaluate surf characteristics and weather conditions

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Background

Surf Life Saving Australia is the peak coastal drowning prevention and rescue authority in Australia. With ~600 million beach visitations annually, surf lifesavers conduct on average 10,000 rescues per year. However, an average of 121 coastal drowning deaths are recorded each year, with 49% occurring more than 5km from lifesaving services. Coastal environments are dynamic and experience highly variable environmental conditions. Accurate assessment of these conditions, and their associated risks, is crucial for the safety of people using the coast. The Surf Risk Rating (SRR) was developed to provide a mobile solution that allows surf lifesavers to quantitatively categorise and correlate wave characteristics and weather conditions to produce a surf risk rating.

Description

Surf Life Saving Australia has analysed and selected ten surf characteristics and weather conditions that impact on beach users inherit risk. The ten variables of the SRR are allocated a risk score for each independent parameter. Each risk score is calculated, with the result producing one of six SRR categories and corresponding risk mitigation strategies and controls. The SRR reduces the subjectivity of assessing surf conditions and hazards, and provides a practical solution to monitor surf conditions and the associated risks throughout a specific time period and act on these identified risks accordingly.

Lessons learned

Previously this tool was only used for sports events risk assessments, where changes to surf conditions caused an increase in the SRR score and impacted on athlete performance and ability to compete in events. This outcome resulted in safer practices, allowing users to proactively implement risk migration strategies and controls. However, this last lifesaving season (2022/23) saw it implemented to assess risk in real-time at lifesaving patrols safeguarding the community and water safety for lifesaving training. This presentation summarise the process actions of the SRR app, and quantifiably measure actual surf conditions facing patrols and beachgoers.

Conclusion

Further integration of the SRR into patrols will simplify in-situ risk assessments in real time, where patrolling surf lifesavers can measure surf conditions and adjust services and risk mitigation strategies to suit the conditions.

Completing the circle: Exploring the current issue of drowning and water-related accidents in St. Vincent and the Grenadines from the perspective of a Vincentian water safety practitioner/researcher in Aotearoa New Zealand.

Kurt Cordice

Enigmatic Global, Tauranga, New Zealand

St. Vincent and the Grenadines (SVG) is a multi-island, independent nation, located among the Windward Islands of the West Indies(1). The Small Island Developing State(2) is known as one of the most beautiful sailing destinations in the world. Though the primary economic driver continues to be agriculture, local connection to the sea is of critical importance, both economically and culturally(3).

St. Vincent and the Grenadines also ranks among nations with the highest per-capita preventable drowning rates. With a drowning rate of 6.9 / 100,000 in 2019, it ranked 3rd highest among all Pan-American nations(4).

I am a proud Canadian, born and raised. I am also a proud Vincentian (citizen of SVG) through parentage. SVG is my aquatic home, and the place where I feel most connected to my aquatic heritage. It is also the place where I built my foundation of aquatic knowledge and expertise, both personally during my youth, and professionally as an adult. That foundation from SVG has been a source of perspective, inspiration and strength here in Aotearoa New Zealand as I encourage, support and advocate for greater Aquatic J.E.D.I. (Justice Equity Diversity and Inclusion) within both community and industry(5).

In this talk, I will share my experience and insights as I return to SVG to explore the current status and challenges surrounding water safety and drowning prevention from a local perspective. This will include an exploration of available literature as well as insight gained from local sources.

Just as my aquatic foundation gained in SVG has been a source of insight and strength for my work here in Aotearoa New Zealand, I will "complete the circle" by sharing my reflection on the challenges faced in SVG from the perspective of my work and experience here in Aotearoa New Zealand. These reflections will include aspects of transformative learning(6) and indigenous models(7) that could be applicable in the context of the SVG challenge. Potential relevance and synergy with challenges in other Small Island Developing States, in the Caribbean and around the world, will also be discussed.

The benefits of embracing new technologies: Surf Life Saving NSW's Journey with Uncrewed Aerial Vehicles

Paul Hardy

Surf Life Saving NSW, Sydney, Australia

Surf Life Saving NSW, through its operational department the Australian UAV Service (AUAVS), provides UAV services across Australia. With over 300 UAVs and 400 UAV Pilots, the AUAVS is the provider of the largest coastal uncrewed aerial vehicle (UAV/drone) surveillance program in the Southern Hemisphere and operates RPAS for a range of different public safety uses across both the NSW coastline, as well as inland environments nationally. The capacity and capability of drones as a new tool in Surf Life Saving NSW's hands is being implemented at all stages in the chain of survival, from creation of education tools, proactive and flexible preventative actions, proactive assistance, and streamlined responses.

Notably, under a Memorandum of Understanding with the NSW State Emergency Service (NSWSES), the AUAVS was deployed by NSW Government multiple times in 2022. Utilisation of this new technology culminated toward the end of the year, where AUAVS teams were deployed continuously across the course of over three months in response to flooding in NSW. The services provided to NSWSES during this period included intelligence gathering, photogrammetry capture, live streaming, search and rescue, and rapid damage assessment missions.

As we've introduced new technology into the emergency response space, we've worked closely with our emergency service partner agencies. This experience has resulted in learnings for us, and we've adapted over ongoing coastal responses as well as flood events to increase safety standards for our aviation partners and are now permanently included on the NSW State Air Desk when required during activation of the NSW State Emergency Operations Centre.

The utilisation of cutting edge livestream technologies, coupled with Starlink connectivity devices, has resulted in the ability for UAV teams to provide other agencies with logins to see all UAV assets, their real-time position, flight heights, tracking, and camera feeds, in real-time.

The use of UAVs has also resulted in an improved risk assessment and mitigation approach for NSWSES' and SLSNSW's on-water rescue operator's, with UAV teams deployed as standard alongside on-water teams.

Legacy First Approach – Redland Resilience Training Centre

Chris Isles, Kristen Banks

Redland City Council, Cleveland, Australia

Background

Australia has endured more urban flooding in the last two years than in living memory. Climate change is likely to continue increasing the frequency, severity and risk of large-scale urban flooding across Australia. As a result, the type of water rescue skills is changing, and so to the scale of demand for assistance and rescue beyond isolated swiftwater incidents by emergency services agencies.

There is a shortage of swiftwater training facilities in the Australian-Pacific region, with emergency services personnel and athletes having to travel vast distances to access such types of facilities.

The Redland Resilience Training Centre – to be located within the 62-hectare Birkdale Community Precinct in Birkdale, Queensland, Australia – presents significant legacy opportunities as a world-class natural hazard and disaster resilience training facility for state, national and international emergency services personnel.

Description

The Redland Whitewater Centre is the proposed Canoe Slalom event venue for the Brisbane 2032 Olympic and Paralympic Games, which was confirmed in the Brisbane 2032 Master Plan during the candidature process.

The Redland Whitewater Centre will be part of the broader Redland Resilience Training Centre, with a primary focus on swiftwater and urban flooding rescue training while remaining accessible for paddle sport elite training and international level competition as well as to the community for recreational purposes.

The state-of-the-art complex will provide a purpose-built channel to serve as a training environment for emergency boat operations and submerged vehicle rescues, flanked by floodable structures to simulate conditions for evacuation training.

Lessons learnt

Redland City Council has established partnerships with the City of Penrith, International Canoe Federation, Paddle Australia and Surf Life Saving Australia to focus on a 'legacy first' approach to share information and learnings to ensure the new Birkdale facility is not only designed for tomorrow's Olympic champions but delivers a lasting legacy for South East Queensland, Australia and beyond.

Conclusion

Redland City Council is confident that the Birkdale Community Precinct, with commitment from all levels of government for the whitewater centre, can evolve to become the Australian Centre of Emergency Resilience Training.

Use of AI, Robotics and Dogs in Drowning Prevention on the Beaches of Goa, India

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1Drishti Lifesaving Private Limited, Mumbai, India. 2Drishti Lifesaving Private Limited, Goa, India

Drishti provides lifeguarding services in Goa since 2008. 6600+ lives have been saved since then resulting in 99% reduction in drowning deaths.

Drishti employs 600 lifeguards. Yet, in the 15 years of operation, it proved to be a huge challenge to provide complete coverage, including small ingresses, leading to people finding themselves in trouble without a lifeguard present.

We face a challenge where a majority of the visitors are non-swimmers and enter the ocean fully-clothed. This requires a significant amount of awareness and early warning.

Using these learnings, Drishti required tools and support to monitor randomly visited risk-prone zones and provide higher coverage to aid lifesavers in rescue and beach safety operations.

Drishti has deployed two AI platforms, Aurus and Triton, which increase monitoring and provide an early warning system to visitors.

The AI monitors the area, assesses risk and shares real-time alerts with on-duty lifeguards. AI warns visitors, without any humans in the loop.

Aurus is a self-driving robot that goes beyond monitoring and is used for logistics. Given the current success, we plan to roll out 100 Tritons & 10 Aurus immediately. Both the systems have undergone nearly 20,000 hours of deployment.

In a first-of-its-kind program in Asia, Drishti is training a team of 11 lifesaver "Paw Squad" dogs for deployment on high-density beaches in Goa to spot and rescue victims in distress and locate missing children. The team is under Mr Arjun Moitra, an expert dog trainer. Squad will be deployed in the next few months and their intensive outdoor training includes sessions on a jet-ski and sea swimming.

AI and Robotics are cost effective, 24x7 available innovations and work even in no-internet areas. Tourists tend to listen to warnings from robots and Dogs more than fellow humans either out of fear of the unknown or love for the animal.

The initiatives will have significant impact in drowning prevention in risk prone areas especially in Coastal areas of Developing nations.

Outside the flags – understanding mortality, behaviours and perceptions of Australian beachgoers at unpatrolled locations

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Introduction

Patrol flags are an important component in beach safety in Australia, clearly marking out the safest place to swim on a particular beach that is patrolled by lifesaving personnel. However, lifesaving services cannot be present at all beaches at all times. This means that a large number of beaches and adjacent coastal environments, remain without lifesaving services. In Australia, one in two coastal drowning deaths occurring greater than 5km from the nearest SLS service, often in regional or remote areas. This distance significantly increases the response time it takes for emergency personnel to reach them, and can be the difference between a rescue or a recovery. It is unrealistic to expect people to only visit patrolled locations – what are the next steps for water safety in these beautiful, yet hazardous locations?

Method

Mortality data collated from SLSA's fatality database, will provide an overview of the coastal drowning context in Australia. Using data from a longitudinal survey (National Coastal Safety Survey; NCSS) we explore associated behaviours and risk perceptions of Australian coastal visitors to begin to address this complex challenge.

Results

This presentation will present the results from the most recent NCSS, and how they may have changed over ten years of data collection. In 2022/23, of respondents last ten visits to the coast nationally, 40% were to a patrolled beach during patrol hours, while 32% were to an unpatrolled beach. Visitation patterns vary by state, for example in New South Wales, 51% of visits were to a patrolled beach during patrol hours, compared to only 8% in the Northern Territory. Differences also exist with different activities. For example, of the ~9million coastal swimmers in Australia – only four in ten swim at patrolled locations, and only 37% choose a swimming location because it is patrolled.

Discussion

Patrol flags play an important role but are not the only solution. Understanding behaviours and perceptions driving recreation at unpatrolled locations is central for water safety management to learn how we can extend current practices beyond the red and yellow flags and encourage the community to take ownership of their own safety.

Beach users and risk factors on unpatrolled beaches in New South Wales, Australia

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Introduction

Each year, a significant number of drowning deaths occur on Australian beaches which do not have any lifeguard or lifesaving services. This is not surprising given the vast majority (> 95%) of beaches are unpatrolled and many are popular destinations that are rated as hazardous. This study surveyed beachgoers at five unpatrolled Australian beaches popular with domestic tourists and visitors, locals and social media users. The aims were to gain a better understanding of who visits unpatrolled beaches, the reasons why they choose these beaches, and to identify beach user profiles and risk factors that will assist future safety messaging to address the complex challenge of unpatrolled beach drowning.

Methods

A total of 459 beachgoers were surveyed at five unpatrolled surf beaches in New South Wales, Australia between January-April 2021. Surveys were conducted in-person and took 10-15 minutes to complete. Ethics approval was obtained from UNSW Sydney.

Results

The majority of surveyed beachgoers were infrequent beachgoers (65%) with 56% living more than 50 km away from the beach they were visiting and 21% were visiting the beach for the first time. Almost all (90%) knew the meaning of the red and yellow flags on Australian beaches and were aware that the beach was unpatrolled (93%). Almost half (45%) considered themselves to be average or poor swimmers and most (86%) intended to go in the water. More than half did not notice any safety signage, despite signs being present at beach access points. The main reasons why beachgoers visited unpatrolled beaches were because they were conveniently close to their holiday accommodation or because they represented a quieter location away from crowds. 93% of respondents would recommend visiting the unpatrolled beach to others.

Conclusion

It is unrealistic to assume that all Australian beachgoers will always visit patrolled beaches. Beach safety messaging in Australia needs to extend beyond the 'swim between the flags' message to provide information that will actually benefit those beachgoers visiting unpatrolled beaches. The 'Think Line – Stop Look Plan' beach safety campaign by Surf Life Saving Australia is one approach that begins to address this problem.

Enhancing Coastal Safety with Technology: Lessons Learned from a Beach Monitoring Project

Anthony Blunden

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Background

Coastal drowning is a global public health issue that requires accurate and reliable risk assessment to inform prevention strategies. Traditional risk management approaches rely on estimated data and are limited in their ability to capture the dynamic and chaotic nature of the coastal environment. The use of technology presents an opportunity to improve the accuracy and reliability of data for coastal risk assessment.

Description

This presentation will discuss a project undertaken by Lake Macquarie City Council (LMCC) in Australia to improve coastal risk assessment using technology. The project involved the deployment of camera analytics to count beachgoers, data from nearshore wave models to record conditions as well as GPS tracking and digital signage. The data collected was used to develop more accurate and differentiated risk assessments for specific locations, leading to improvements in decision-making and better allocation of resources for coastal safety management.

Lessons learned

This project highlighted the need to tailor off-the-shelf A.I. solutions to the challenging coastal environment. The findings also show that sampling beach visitation is adequate for determining trends and making management decisions. Nearshore wave models can greatly improve and diversify risk assessments but some other technologies, whilst interesting, do not add considerably to decision making ability. Additionally, the project demonstrated the limitations of traditional risk models based on estimated data and the potential for new models to improve decision-making.

Conclusions

The use of technology to improve coastal risk assessment is both feasible and practical. The findings of this project have significant implications for drowning prevention, including the development of more accurate and reliable risk models to inform prevention strategies. The project also highlights the need for technology to be used as a guide to decision-making, rather than a replacement for skilled lifeguards and land managers who must still trade off cost, risk, and benefit in allocating resources. The future implications of this work include continued refinement and improvement of risk models, as well as the development of tools to support decision-making for coastal safety management.

Surfers as water safety agents in Victoria, Australia

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Background

There are 2,515 kilometres of coastline in Victoria,⁽¹⁾ Australia and more than 90,000 surfers⁽²⁾ riding waves across the state each year. Although anecdotal evidence suggests surfers undertake rescues outside of lifeguarded settings, the extent of surfer impact in keeping beaches safe is limited.

Methods

Between November 2020 and May 2023 (2.5 years), more than 550 Victorian surfers were recruited to be sent a short survey every four weeks recording the number of times they engaged in a preventative action (e.g. provided safety advice) to avoid a potential reportable incident; the number of times they administered first aid while at the beach; and the number of rescues they undertook.

Results

After 24 months of data collection, it was found that each 4-week period: about three-quarters of survey participants went surfing (on average twice a week); around 40% of these active surfers provided safety advice; 6% helped someone having difficulty in the water; and 3% administered first aid. More than 75% of the time, actions undertaken by surfers were at unpatrolled coastal locations.

Conclusions

These findings demonstrate that surfers are an important community resource with extensive beach knowledge and skills that can save lives. With the large number of surfers in Victoria, Australia, and around the world, there is an opportunity to have a significant impact on water safety and drowning prevention by providing educational programs to build their capacity and skills to prevent beach goers from getting in trouble and then recognising and assisting them if they do.

Advancing the evidence base for the prevention of coastal drowning

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Background

Coastal areas including beaches, rock platforms, tidal bodies such as bays and harbours, and the open ocean itself, hold significant economic, social, and cultural value for many communities. While often associated with recreation, the coast also poses risks due to environmental hazards such as waves and dangerous currents. The interplay of these physical hazards with human and social factors creates a complex, ever-changing risk profile.

Objective

To expand the evidence base for the prevention of coastal drowning. The presentation provides a high level overview and synthesis of five studies that address gaps in coastal drowning prevention science.

Methods

A mixed-methods, multi-disciplinary approach is employed to advance methods, thinking, and understanding of the issue to inform prevention efforts and ultimately, help keep people safe. Study 1 is a comprehensive scoping review of coastal drowning literature characterising the field by mapping 146 studies dating back to 1963 [1]. Study 2 is an epidemiological review of coastal drowning in Australia which incorporates revised risk measurements based on exposure and a trend analysis on a national scale [2]. Study 3 evaluates the relationship between tidal variables and risk of drowning on surf beaches in New South Wales, Australia [3]. Study 4 describes the co-design process of a high school beach safety program with ocean lifeguards and high school students in Lake Macquarie, New South Wales [4]. Study 5 is a three-part, mixed-methods evaluation of a novel program that teaches surfers basic ocean rescue techniques and cardiopulmonary resuscitation in New South Wales, Victoria, and New Zealand [5].

Results and Conclusion

Results from each of the studies underscore that coastal drowning is a complex health problem. Countermeasures require multidisciplinary research and evidence to support effective action that prioritises high risk populations and modifiable environmental and person-based risk factors. This work advances the science of coastal drowning prevention by exploring nearly six decades of previous literature in a systematic fashion, elevating epidemiological analysis and methods of the topic, exploring participatory co-design methods for the development of prevention programs, and modelling mixed-method evaluation research.

A 10-year analysis of drowning deaths and other fatalities along the Australian coastline

Sean Kelly, Jaz Lawes, Shane Daw

Surf Life Saving Australia, Sydney, Australia

Background

Surf Life Saving personnel respond to all types of coastal incidents, regardless of their cause. To develop a holistic picture of coastal deaths, SLSA collects information on both coastal drowning deaths and coastal fatalities. Developing an epidemiological understanding of the key causal factors in coastal deaths is crucial when attempting to design and implement effective coastal safety strategies and interventions. This presentation will explore trends in coastal deaths between the years of 2013-2023.

Method

National fatality collated within Surf Life Saving Australia's Fatality database was used to explore both coastal drowning deaths and other unintentional fatalities (medical incidents, marine fauna interactions, injuries) that occurred in Australian waters over the 10-year study period.

Results

A total of 1,814 unintentional coastal deaths were recorded over the study period, 1,205 of which were due to drowning. Males continued to be overrepresented, accounting for 87% of coastal drowning deaths, and 84% of unintentional coastal fatalities. 20-29 year olds comprised the greatest proportion of drowning deaths (17%) while 55-64-year-olds accounted for the greatest proportion of coastal fatalities (24%). Rip currents were a dominant contributing factor in drowning deaths (20%), while medical condition and injuries were a causal factor in four in five coastal fatalities (81%) and one in three drowning deaths (31%). Alcohol and drugs were also prevalent in unintentional coastal deaths, contributing to 17% of drowning deaths and 13% of coastal fatalities.

Conclusion

Coastal incidents, including major rescues, traumatic or fatal events, can have devastating and long-lasting effects on the health and wellbeing of families and communities. Identifying high risk groups and understanding the influence of different causal factors on coastal deaths can help to guide the development and design of broader and more targeted coastal safety interventions that work to safeguard the community.

A view from above: using high-resolution aerial imagery to quantify the exposure to drowning and injury on the New South Wales coastline

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Tragically, there were 55 fatal drowning incidents on the New South Wales coastline from 1 July 2021 to 30 June 2022; the majority occurred at unpatrolled beaches and/or outside of patrol times. To reduce the risk of drowning, it is critical that we identify the highest risk sites, times of year, and times of day so we can ensure lifeguard services, surf lifesaving services, and support operations are provided accordingly.

The risk of drowning is influenced by three key factors: the hazardous of the environment, the number of site users (exposure), and the vulnerability of site users. However, the only exposure data previously available was collected by lifeguards and surf lifesavers, and was limited to patrolled beaches at patrolled times. As such, we have been unable to quantitatively compare exposure across all sites and at different times.

As part of Coastal insights: safer coasts for the future, we have developed an innovative method to analyse exposure using high-resolution aerial imagery captured by Nearmap. The georeferenced on-nadir (vertical) aerial imagery has a Ground Sampling Distance of 5.6 cm, sufficient to detect individual site users, and a Root Mean Square Error of 19.8 cm. Each site user was digitised as a point feature in Esri ArcGIS Pro, and categorised by zone (beach, shore platform, and water) and recreational activity. Aerial imagery covers the vast majority of the coastline and is captured multiple times per year. The accuracy of this method was assessed by crosschecking counts conducted by two independent researchers using spatial analysis tools, which found over 95% consistency in the identification process.

We analysed 7-10 aerial images of over 1,000 beaches and shore platforms in New South Wales. This enabled us to quantify, for the first time, the relative use of different sites, both patrolled and unpatrolled. The relationships established between the sites are also being applied to data captured at higher frequency (but typically limited to patrolled beaches, including counts recorded by lifeguards and surf lifesavers, as well as coastal monitoring cameras) to model the use of unpatrolled sites at all times of year and times of day.

The epidemiology, risk factors and impact of exposure on unintentional surfer and bodyboarder deaths

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Background

Surfing and bodyboarding (SAB) are popular activities, but not without risk. Limited mortality and exposure risk explorations exist, so this cross-sectional study explores epidemiology and risk factors for Surfing and Bodyboarding deaths (1 July, 2004-30 June, 2020) in Australia: including decedent and incident profiles, causes of death, differences between fatalities during practice of SAB and other coastal activities; and the impact of exposure on SAB mortality risk.

Methods

Fatality data were sourced from the National Coronial Information System, incident and media reports. Tide-state data, population data and participation data were sourced from relevant authorities. Analyses included chi-square testing and simple logistic regression with odds ratios.

Results

There were 155 deaths (80.6% surfing; 96.1% male; 36.8% aged 55+years; 0.04/ 100,000 residents; 0.63/ 100,000 surfers). Drowning was the most common cause of death (58.1%; n=90), but higher in bodyboarding, with bodyboarders 4.62 times more likely to drown than surfers (95%CI: 1.66-12.82; p=0.003). Almost half (44.5%; n=69; $\chi^2=9.802$; p=0.007) were with friends/family, and the largest proportion occurred during a rising tide (41.3%; n=64; $\chi^2=180.627$; p<0.001) followed by a low tide (36.8%; n=57). Australians surf 45.7 times each year, for 1.88 hours each visit equalling 86.1 'exposed' hours. With exposure-time considered, exposure-adjusted surfer mortality rate (0.06/ 1 million hours) is lower than other in-water activities (0.11/1 million hours). Younger surfers (14-34 years) surfed more yet had the lowest mortality rate (114.5 hours/year; 0.02/1 million hours). Older surfers (55+ years) had a lower mortality rate (0.052) than the all-cause crude mortality rate of their average population counterparts (1.36). Cardiac conditions were identified in 32.9% (n=69) of deaths. Surfing and Bodyboarding is relatively safe, with lower exposure mortality rates than other activities.

Conclusion

Prevention should target older surfers, inland residents, and identification of surfers with risk factors for cardiac events.

Keywords: surfing; bodyboarding; drowning; risk; water sports; injury prevention; cardiac; exposure

Result from community-based drowning risk mapping: findings from Cox's Bazar

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Background

Bangladesh is drowning prone country where fatal drowning rate is 11.7/100,000 population (1). Due to the geographical location, Cox's Bazar district is very vulnerable to water related disasters and there are drowning incidents occur on the beaches. To reduce drowning incidents at Cox's Bazar, Centre for Injury Prevention and Research, Bangladesh (CIPRB) planned to implement a project. Before implement the interventions, it was necessary to identify the most drowning prone areas to make the intervention effective with limited fund. To identify the high-risk areas CIPRB conducted the community risk mapping at Cox's Bazar Sadar, Ukhiya and Teknaf sub-district.

Methods

Qualitative method was used to collect the data. There were 14 Focus Group Discussions (FGDs), three Key Informant Interviews (KIIs), three In-depth Interviews (IDIs) and three Participatory Rural Appraisal (PRA) conducted among the community people, elected local representatives and government stakeholders. The data were collected in July 2022.

Results

Based on the drowning risk mapping, 20 high drowning-risk villages from three sub-districts were identified. From the interviews it was found that children aged 1-10 was the most vulnerable group to drowning. The main cause of drowning is supervision of children in the busy hours of the day, 8 am to 3 pm when the fathers go out for work, mothers are engaged in doing household activities and siblings are at schools. The community people shared that drowning incidents more occur during flood season as the water level raised and small ditches filled up with water. The frequency of flash flood increases during rainy season which made the hill side dwellers and children vulnerable to drowning. It was also found that the community people did not have skills to perform land-based rescue or first aid to a drowning victim.

Conclusion

The proven interventions like survival swimming teaching, building first-aid training and community awareness were implemented in the high drowning risks areas. Community risk mapping helps to identify the high drowning risk areas and a source to understand local drowning context, reasons, and practices on victims. This is a very useful tool to design implementation plan for a project.

Relationship Between Social Situations, News Reports and Drowning Accidents in Japan

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Background

In recent years, approximately 2,400 rescues have been performed on the beaches of Japan each summer, but the number of rescues varies from year to year. One of the reasons, the number of beachgoers and rescues is considered to be affected by changes in people's behavioral psychology due to news reports on drowning accidents and changes in social situations. In this study, we investigated whether changes in the number of beachgoers and rescues are related to the number of news reports, and social situations.

Methods

We extracted articles regarding drowning accidents and their warnings in rivers, beaches, and pools from 2011 to 2023 from the article data of five newspaper companies that account for the top sales in Japan (1)(2)(3)(4)(5). The number of beachgoers and rescues were collected by the Japan Lifesaving Association. Then, we used these data to investigate the relationship.

Results

The number of news reports on drowning accidents and their warnings was the average was 327.2 cases/year. The number of news reports tended to increase in the summer, with an average total of 72.5 in May and June before summer, and an average of 233.9 in July and August. There was no change in the number of beachgoers due to the increase or decrease in the number of news reports before summer. In addition, there was no indication that the number of beachgoers and rescues increased due to the small number of news reports. On the other hand, the largest number of users was 16,073,085 in 2013, which was thought to be due to the easing of the impact of the Great East Japan Earthquake in 2011. The number of beachgoers and rescues significantly decreased in 2020. It was thought to be due to the impact of the Covid-19.

Conclusions

The number of news reports tended to increase toward the summer season, but there was no strong relationship with the number of beachgoers and rescues. It was thought the number of beachgoers was affected by social situations such as the Great East Japan Earthquake and the Covid-19.

A novel machine learning approach to real-time monitoring and risk analysis of the beach and ocean environment using inexpensive CCTV cameras

Ben Freeston

Surflife, Huntington Beach, USA

Background

Effective strategies to prevent fatal drowning will always require difficult decisions to be made on both policy and operational strategy. While lifeguarding is effective in reducing drowning only 5% of Australia's beaches are patrolled and most drownings occur outside patrolled areas (1). Responsible organisations are increasingly using data to understand risk factors and manage both short and long-term deployment of resources, but this data is generally collected by operational lifeguards, is prone to error and gives no insight into the risks at unmonitored locations. An inexpensive and scalable approach to accurate data gathering would allow for more effective analysis of risk and more appropriately targeted intervention strategies.

Description

SurfzoneAI is a monitoring tool built to use a standard low-cost CCTV camera and machine learning to identify risk factors and detailed usage data both in the water and around the shoreline. Surflife, the company responsible, already operate cameras at almost 1000 beaches globally and have used the data collected from these to train a model designed specifically for the real-time and long term analysis of this environment.

The model can identify individuals and their position on the beach and in the water and segment water users by surf craft. It can detect and track waves and infer currents from object drift and produce summary statistics of both. Using a single panning camera, it can cover an entire beach and reconstruct this as a single scene. The model has also shown skill at predicting short-term future beach and water population levels from environmental and other factors.

Trials have been underway with SLSNSW, the RNLI in the UK and the Coastal and Marine Research Centre at Griffith University.

Lessons Learned

This approach improves accuracy over manual observation while increasing both coverage and frequency and costs less overall than human monitoring.

Conclusion

Given better data, existing interventions can be managed and scaled more effectively and low-cost CCTV cameras coupled with cloud computing and a custom machine learning model can provide appropriate and accurate data for this purpose.

Proposal of Image Processing for Easy Recognition of Rip Current

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Background

In Japan, the main factor of drowning accidents is the rip current (1). Since most beachgoers hardly recognize rip currents, they enter areas where rip currents occur which can lead to drowning. In a previous study, it was found that visualization of rip currents can lead beach users to avoid them (2). According to previous research, a system has been developed and operated where AI learns and detects the location of rip currents from images captured from a fixed-point camera (3). However, the systems require a large initial cost for the creation of AI models and procurement of equipment. In this study, we propose to visualize rip currents using image processing and verify whether beachgoers can recognize them easily.

Methods

The difference between two consecutive images was calculated, and which video was created with the pixel that had the difference represented in green. It was possible to recognize the images of waves breaking in motion, and it was considered to capture the rip currents by focusing on the uncolored areas on the image. The targeted image data was taken for a total of 45 minutes over three days when three experienced lifesavers determined that there was a rip current. Each image data was chosen to be a variety of weather conditions in 5 minutes. 360 responses were collected from 20 subjects in the experiment using the following steps. First, subjects watched normal and image-processed videos respectively and drew polygons on the video to show the location of the rip currents. Second, we determined the extent to which the subjects' response areas were consistent with experienced lifesaver's areas by calculating IoU(Intersection over Union).

Results

When comparing IoU between videos with and without image processing, an improvement was not observed overall. However, it was calculated that an improvement of 29-127 % in IoU during 20 minutes of sunny weather.

Conclusion

It was found that the method could lead to improved recognition of rip currents for beach users to a certain accuracy under clear weather conditions.

Automated Help-signal Detection using AI

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Background

There are from 2,000 to 3,000 rescues every summer season on the beaches of Japan (1). At the time of occurrence of a near drowning, the “help-signal” is recommended worldwide as a rescue request sign, but it is not easy to recognize because one lifesaver watches over 1,000 beachgoers. Our previous study created the AI model which could detect the help-signals with high accuracy (2). In this study, we verified the applicability of the created AI model to data from the other beach.

Method

The help-signal detection AI model was created using the object detection algorithm YOLO v5 (3), with training data of approximately 6,200 images captured by two webcams installed on the beach in Japan. We applied this AI model to approximately 99,100 images of help-signals taken at the other beach. To investigate the accuracy of the AI model in detail, two approaches were used: Change the model confidence for detecting the help-signal [A]. Change the distance of help-signals. Two subjects were repositioned at 10-meter intervals and moved up to 120 meters away from the camera [B]. The accuracy was verified by the precision rate which is the percentage of correct AI detection results.

Results

[A] The model confidence was set to range from 0.05 to 0.95. When it was lower scores, there were many false positives. on the other hand, when it was high scores, there were many false negatives where help-signals were not detected. As a result, the AI model correctly detected the help-signals with the model confidence of 0.6 or below.

[B] The AI model correctly detected help-signals further away than those closer to the camera. However, there were many false positives for distant help-signals. In some cases, the AI detection was discontinuous for one minute of continuous help signals.

Conclusion

The AI model correctly detected the help-signals. For practical application, it is necessary to improve the accuracy of the AI model by reducing false positives and false negatives of the help signal detection, regardless of the distance. Furthermore, the fine-tuning of some parameters is needed, not only adjusting the model confidence.

Operation and Verification of Rip Current Detection System using AI

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Background

There are from 2,000 to 3,000 rescues every year on the beaches of Japan. Also, the occurrence of drowning accidents is mainly caused by rip currents, it accounts for 48% of drowning accidents (1). It is difficult for beachgoers to recognize rip currents under the momentary changes in natural phenomena. Therefore, we developed a new system that can automatically detect the rip currents with Artificial Intelligence in 2019. In this system, AI analyzes the surface image data which is taken by web cameras in real time. At the time of rip current generation, the system automatically informs it to the beachgoer's smartphone. Furthermore, if the beachgoers enter the rip current areas, the system informs it to lifesaver's wearable devices. As a result of creating the AI model under various conditions, it was possible to detect the rip currents at each beach with high accuracy (2) (3). In addition, the system enabled the drone to fly automatically by linkage with the AI rip current detection in 2023. This system has actually been operating during the summer seasons at five beaches that have different characteristics such as waves, winds, rip currents and topography. In this study, we verified the system function of these operational beaches.

Methods

The accuracy of rip current detection results under each operation was verified using an image analysis and a visual confirmation by experienced lifesavers. Also, the number of rescues was compared with past data.

Results

As a result of the analysis, although the AI model could not detect all rip currents, it could detect various types of rip currents such as the flash and fixed rip currents. For example, at one beach, 852 rip current warnings were given, 176 people were detected entering the rip current areas, and the number of rip current rescues decreased to 52 % of the recent average. In several cases, the drowning person in the rip current was rescued within about 1 minute by the system operation.

Conclusion

It was confirmed that the system is generally practical which could contribute to the prevention of drowning accidents caused by rip currents.

Identifying rip currents using artificial intelligence

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Rip currents are still the leading cause of coastal drownings worldwide¹. In New Zealand 1 in 6 adults have been caught in a rip², which accounts for why around 70% of all lifeguard rescues and 40% of drownings on beaches are caused by rip currents³. In response, over the last few years Surf Life Saving New Zealand (SLSNZ) has created a rip current drowning prevention strategy. This includes developing a rip current predictor model⁴ to warn when the rip current hazard will be highest and teaching people how to survive if caught in a rip current. However, teaching people to identify a rip current so they swim somewhere safer has always been problematic. Recent studies³ show that trained and untrained beach users in New Zealand still struggle to identify rip currents properly. Although 40% of people are confident they can identify a rip current, just over half can actually identify them correctly, which means 4 out of 5 people can't identify a rip current².

In 2021, New Zealand's National Institute of Water and Atmospheric Research (NIWA) and SLSNZ signed a Memorandum of Understanding (MoU) leading to the development of an Artificial Intelligence (AI) tool to help lifeguards and the public to identify rip currents. The aim is to enable everyone to become skilled rip current detectors through the help of drone, expert interpretation and artificial intelligence technology to help choose areas where it's safer to swim. The AI method has been proven to be a Minimum Viable Product (MVP) with a peer reviewed publication⁵. Trials are underway to test the data collection process in the field, and continued development and refinement of the AI model is planned. The final product will be disseminated through the Safeswim (www.safeswim.org.nz) website⁶ and APP along with the rip current hazard predictor model to provide the public with two science based tools to stay safer at the beach.

Using machine learning to predict drownings in surf beaches of southwest France

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Background

Southwest France golden-sand beaches are very popular destination for bathing and other sea activities in summer. However, they are also potentially dangerous environments with increased risk of accidents in unsupervised areas, especially during the off-peak season, due to strong rip-current and shorebreak waves. Predicting and quantifying these accidents is of major importance for public communication and emergency services management.

Previous work on beach risk prediction was conducted along a specific section of the coast (Gironde), using data from 2011-2017 to train a model and further predict drowning incidents based on sea and weather forecasts, which has led to the development of an alert system based on a logistic regression model used by local decision makers (1).

Methods

In this study, we further improve this model by using new statistical methods related to machine learning, a larger dataset (2011-2022) and by including spatialization in order to propose a modelling framework that could be generalized to other coasts. We estimated drowning risk as a combination of hazard (ocean conditions) and exposure (beachgoer crowd). Several machine learning models were trained and compared using 3-day weather and sea forecasts from 2011 to 2022 as predictors along with an emergency calls database used as an outcome on the same time frame. The training set covered 188 drowning events over 1988 days while the test set covered 81 events over 663 days.

Results

Our results show this new modelling framework is able to predict days with the highest risk of drowning events with improved accuracy on the Gironde coast: AUC = 0.9 (95% CI 0.89 to 0.91), PPV = 0.49 (95%CI 0.41 to 0.55) and NPV = 0.96 (95%CI 0.95 to 0.99).

Conclusions

This supports the development of a new alert system that will provide useful information to decision makers. However, "all models are wrong, but some are useful" (2). While this model could still be improved, with further feature engineering and improved data for rescues, this work also addresses the issue of identifying the right criteria to define what would actually be the "best" model depending on risk management policies set by decision makers.

Bringing all Lifeguard Patrols Online. Surf Life Saving New Zealand's journey to get complete national operational oversight, situational awareness & critical communications to all patrol locations in NZ.

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In 2019 Surf Life Saving New Zealand (SLSNZ), commenced a project to improve operational oversight, situational awareness & critical communications to all its patrol locations, with a key aim to enhance the safety of all Surf Lifeguards while they are on patrol or on a Search & Rescue tasking.

There were three components to the project:

- National Surf Lifesaving Radio Communications Network (Radio Network)
- National Operations and Communications Central (SurfCom)
- Surf Patrol Application (SPA)

The Radio Network project consolidated and harmonised existing networks so they are managed centrally and are reliable. The existing SLSNZ radio networks and terminal equipment that have reached the end of their economic life have been upgraded. The radio network coverage across all areas where SLSNZ operates has been expanded to provide dedicated DMR conventional radio channel coverage.

The SurfCom project has enabled an expansion of the existing northern regional communications centre to become a true national SurfCom, the national operations and communications centre for all 92 lifeguarded beaches. All SLSNZ radio channels have been integrated into SurfCom to enable the use of voice console, dispatch management, control tools, and other back-office applications to provide nationwide monitoring, surf lifesaving incident management, and resource coordination. SurfCom is now the 24/7 single point of contact to engage SLSNZ resources by emergency services and other SAR agencies.

The SPA has removed all paperwork from lifeguard patrols, the app used on the beach pulls live data from the SLSNZ membership database and informs Patrol Captains and SurfCom of the qualifications and wider capability of all surf lifeguards on all patrols. All incidents are recorded through the app to give live data to SLSNZ.

In October 2022 SLSNZ implemented the national release of all three components and so for the first time in SLSNZ's 110-year history, we had a live view of our operational capability.

Site use, preventative safety interventions, and incidents: developing a 'data standard' for lifeguard services, surf lifesaving services, and support operations in New South Wales

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Lifeguard services, surf lifesaving services, and support operations collect data on site use, preventative safety interventions, and incidents. This data can be used to determine the highest risk sites, times of year, and times of day, as well as identify those at the highest risk of drowning. However, the quality of this analysis is contingent on the accuracy and consistency of the data. In New South Wales, there are currently 15 different ways data is collected and stored by coastal safety stakeholders. As a result, the data cannot easily be collated or systematically analysed to inform evidence-based decision-making, from a site-specific to state-wide scale.

As part of Coastal insights: safer coasts for the future, we developed a 'data standard' to facilitate accurate and consistent data collection. We analysed existing datasets, identified gaps, and undertook a survey of coastal safety stakeholders (n = 152) to identify 'use cases' and prioritise the data that should be collected. The data standard was developed in consultation with coastal safety stakeholders through a series of presentations, meetings, and workshops. We created a data model, defined terms and methodologies, outlined fields, categories, and reference information, determined the frequency and resolution of the data to be collected, and where possible, aligned with other relevant standards.

The data standard consists of two main components: site information and safety interventions. Site information is collected at regular intervals and includes the number of beach and water users, weather, and surf conditions. Information on safety interventions is collected when lifeguards and/or surf lifesavers intervene to prevent and/or respond to an incident. This includes the geographic location, time, and factors that contributed to the incident, as well as the recreational activity, demography of those assisted, weather, tide, and surf conditions (where relevant). Coastal safety stakeholders will be encouraged and supported to update their data collection systems to align with the data standard, and existing datasets have been mapped to the standard, where possible.

Care for the carers: Understanding the mental health awareness within Australian lifesavers and lifeguards.

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Background

Surf lifesavers are a predominantly unpaid workforce of first responders that provide education, preventative, and rescue services to the Australian community. Surf lifesavers can be exposed to high-risk, demanding, and traumatic experiences, which may negatively impact mental health and wellbeing. Given the complex range of factors that can influence the mental health and wellbeing of first responders, organisations must take the time to understand the context of their specific risk profile and management strategy.

Methods

This research investigates mental health within Surf Life Saving (SLS) using in-depth interviews with both adult (18 years and above) and adolescent members (13-17 years old) to guide SLS practices regarding supporting mental health frameworks exploring prevention and post-intervention approaches.

Results

Interviews were conducted online and were anonymous underpinned by the following core questions: social support, stigma, and trauma. The adult data is currently being analysed with further analysis is to occur with the adolescent interviews still taking place. Details of the analysis will be provided in the presentation and make a significant contribution to addressing this glaring knowledge gap of understanding SLS and mental health.

Conclusions

The results from these interviews will help to promote mental wellbeing, minimise risks to mental and physical health through stress and psychological pain, support people experiencing mental health concerns and reduce stigma associated with mental health. An integrated approach to mental health combines initiatives for protection, promotion, and intervention.

Women in Lifesaving: A Conversation about the Past, Present, and Future of Female Lifeguards

Leslie Schwene

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Background

Lifeguarding, Fire Service, Police Service. All are organizations and groups that are predominantly male. I am the first female Marine Safety Captain and currently only full-time female lifeguard for Huntington Beach. I am extremely proud of this fact, but I don't want to be the only one. I want to be the first of many and be a part of achieving gender equity in lifesaving.

I have had plenty of role models to look up to, but very few were female. I am now in a position where I have the opportunity to be that person for others. I want to share my passion for lifeguarding and drowning prevention with the women who will continue to advance this field.

Description

At least half of the visitors to the beach are women, yet more often lifeguards are men, especially as you move up into ranks of full-time/permanent lifeguards. I will utilize my personal experience and journey from being a seasonal lifeguard to becoming the first female Marine Safety Captain for the City of Huntington Beach Fire Department. I will discuss the importance of having and being a role model, the importance of peers, and what to do to achieve the highest level of lifeguarding.

Lessons Learned

I believe creating a space where a dialogue with women in lifesaving from the global community can occur is important to come up with action items to continue to promote women in lifesaving. The opportunity to share and discuss in the session can provide a forum for women to come together, share, and take-away lessons that can be applied to women in lifesaving worldwide despite coming from various backgrounds, cultures, and societies.

Conclusions

Lifeguarding is a field where women can continue to grow and provide real benefit. We should continue to engage and encourage women in the lifesaving and drowning prevention world whenever we have the opportunity.

Inclusive Beaches Program, showcasing Albatross Nippers

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Background

Surf Life Saving Australia (SLSA) aims to assist Surf Life Saving clubs (SLSC) to support the inclusion of people of different abilities and backgrounds to join their local club and learn to be safe at the beach.

Description

The SLSA Inclusive Beaches Program runs in multiple SLSCs throughout Australia with support from SLSA in the form of resources, funding for specialised equipment and assistance with grant writing. The aim is to create an inclusive beach environment for everyone to participate, make it more straightforward for SLSC's to initiate a Program, and for families to find a Program. SLSA has also worked in collaboration with a number of disability organisations, including Autism Spectrum Australia, with whom they developed specific resources for anyone who wants to learn more about supporting children with disabilities in Nippers and at the beach.

Lessons Learned

Inclusion is an attitude. There isn't a one size which fits all so we offer a range of Program styles for SLSCs to choose from. A case study will be presented from Albatross Nippers, one of our award-winning SLSC programs.

Conclusions

The ocean doesn't discriminate and neither do we. Through the Inclusive Beaches Program, the content and resources made available assist SLSCs in supporting the inclusion of people of different abilities and backgrounds to join their local clubs and learn to be safe and confident at the beach, supporting our mission to save lives, create great Australians and build better communities.

Team leadership on the beach, impacts of gender on lifeguard activities

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Objective

Beach Captains set the tone for their lifeguards. During the season, new recruits look to their leader for behavioural norms and then adopt them into their own behaviours. This preliminary study explores the questions of whether female and male Beach Captains instil different behavioural norms in their lifeguard teams. Data on rescues, first aid, and interventions from a Canadian Lifeguard service was collected from annual reports from 2001 through to 2022. This included data from 26 different sites representing both waterfront and ocean beaches. To supplement this, staff lists from the same time frame were consulted to determine the gender of each Beach Captain.

Methods

We used a t-test with independent samples to determine if there was a difference in the means of lifeguard activities. The data removed sites that were in operation for less than five years and sites where the gender or identity of the Beach Captain could not be determined. We also choose to analyse the number of actions completed by lifeguards and the activities calculated per capita to remove the variability between sites of different sizes.

Findings

The data contained 191 sites led by males and 225 sites with female Beach Captains. The t-test of independence found the that null hypothesis was accepted for first aid and rescues; simply put, there was no difference between the reported incidences by male and female leadership. This is not very surprising since these activities are usually in response to activities the public undertakes and lifeguards respond to them.

The t-test found that there was a significant difference (95% confidence interval) in means between male and female leadership when it came to interventions. Overall, the sites led by female Beach Captains saw over 30% more interventions per capita than those sites with male Beach Captains.

Conclusion

As stated, this is a preliminary study that identifies a significant difference in the behaviours of lifeguards based on the gender of leadership. However, more study needs to be done to determine if there are training interventions that may equalize the performance of staff year over year.

The unexplored role of surfers in drowning prevention: Aotearoa, New Zealand as a case study

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Every year people drown while visiting coastal beaches. Increasingly, studies indicate that bystanders play a critical role in rescuing people from drowning. However, very limited research has explored the contribution surfers make to reducing fatal drowning. This research examined aquatic bystander rescues conducted by surfers in Aotearoa, New Zealand. It analysed their characteristics and the conditions under which they took place. The study draws upon an online survey disseminated through several social media platforms with the partnership of Surf Life Saving New Zealand and Surfing New Zealand, gathering 418 complete responses. The findings indicate that male and female surfers conducted an average of three rescues across their surfing career. Surfers typically perform rescues at their local surfing spot. Three quarters of the rescues were completed either at unpatrolled beaches or outside patrolled hours, thus filling a critical gap. In 46% of the rescues, surfers felt they had saved the person's life. Overall, the research emphasises the significant, yet under-estimated, role of surfers in coastal drowning prevention and water safety. It concludes that organisations involved in drowning prevention should work closely with surfing communities on ways to reduce fatalities at coastal beaches.

Preventing ‘everyday emergencies’: data-driven decision-making to reduce the risk of drowning and injury on the New South Wales coastline

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A record 55 people tragically drowned on the New South Wales coastline between 1 July 2021 and 30 June 2022, while thousands were rescued by lifeguards and surf lifesavers. To prevent these ‘everyday emergencies’, it is critical that we take an evidence-based approach to ensure services are provided at the highest risk sites, times of year, and times of day. Coastal insights: safer coasts for the future, a project funded by the NSW Government and delivered by Surf Life Saving NSW, has developed data-driven risk models and frameworks to help coastal safety stakeholders better understand and manage the risk of drowning and injury.

We analysed the influence of three key factors on the prevalence of fatal and non-fatal incidents: the hazardousness of the environment, the number of site users (exposure), and the vulnerability of site users. First, the morphology and hydrodynamics of sites on the New South Wales coastline were comprehensively assessed. High-resolution aerial imagery, counts performed by lifeguards and surf lifesavers, and data captured using coastal monitoring cameras were analysed to help us better understand the patterns and distribution of beach and water users. The analysis of recreational activities and demographic trends in fatal and non-fatal incident statistics provided valuable information on the vulnerability of different user groups. Throughout this process, limitations to existing datasets were identified, and we developed a ‘data standard’ to facilitate more accurate and consistent data collection by lifeguard services, surf lifesaving services, and support operations.

The statistical relationships established between the three factors were incorporated in a Supervision and Surveillance Model that enables us to objectively quantify the risk of incidence. Furthermore, understanding that we need more than a ‘one-size-fits-all’ approach to service provision, a Supervision and Surveillance Framework was developed to conceptualise and model risk-appropriate types of supervision and surveillance that are fit-for-purpose for different contexts.

Subsequently, coastal safety stakeholders are being provided with insights and recommendations in site-specific Supervision and Surveillance Reports. This enables decision-makers to identify the times of year and hours of day where the risk is highest so that supervision and surveillance can be resourced accordingly.

Mitigating shark hazards to humans within an inshore coastal environment involving aquatic recreation and leisure activity: An essential layered approach.

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Background

Through scientific research, operational data collection, analysis and experience the primary stakeholders in Western Australia consistently implement one of the strongest, evidence-based shark mitigation programs in the world, so that domestic and international visitors to Western Australian can continue to enjoy WA beaches and ocean areas with confidence.

Primarily resourced by state and local governments, the WA shark mitigation strategy offers a comprehensive approach and provides for a range of tools and actions to help keep ocean users and coastal communities as safe as possible.

Description

With 13,000km of pristine and diverse WA coastline the primary stakeholders that share a commitment to safeguarding coastal users must ensure a variety of initiatives are available. The overarching framework must suit and support the ability to make safer choices that drive personal responsibility while also providing government supported safeguards.

Since 2008 the primary stakeholders in WA have continuously improved strategy and associated initiatives. These improvements have targeted the implementation of both regional and localised initiatives.

WA has developed the following strategy and initiatives that have proven effective and receive ongoing resource commitment:

1. Research and development.
2. Education and awareness.
3. Surveillance and detections.
4. Communication.
5. Preventative Actions.
6. Emergency Responses.

Lessons learned

Each phase must contain overlapping initiatives that support:

1. No single initiative, applied in isolation is fail safe.
2. Each initiative is tried and proven prior to policy adoption and operational support.
3. Each initiative represents the most efficient use of finite budgets and resources.
4. Each initiative uses the capabilities of each primary stakeholders' resources and networks.

Conclusions

Stakeholders in WA have reached a balanced, consistent and evolving position to shark safety. These experiences have formed an approach toward:

1. Safeguarding the community.
2. Rapid and effective responses.
3. Science and research, including improving the understanding of white shark movements and behaviour in WA waters, and
4. Sharing information between primary stakeholders

Safeswim: an integrated beach safety platform for New Zealand.

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Until the advent of Safeswim, beach information in New Zealand was dispersed amongst multiple websites; weather and sea state from meteorological agencies, drowning risk from water safety and lifesaving organisations and water quality from environmental regulators.

A waterborne disease outbreak in 2016 highlighted the need for an integrated platform for water-related public health risks in New Zealand, leading to a review and revamp of Auckland Council's beach management programme. The 'Safeswim' programme was launched in November 2017, providing an integrated online resource for beach users, including real time risk alerts.

This paper describes the development and impact of the revised Safeswim programme, focussing on the importance of the formal partnership between Auckland Council, Surf Life Saving agencies (SLS) and the local Public Health Agency as a key enabler of success.

The 2016 review of Auckland Council's beach management programmes found two main shortcomings for drowning: water quality focus and poor communication. The programme was expanded to include physical risk information, including key factors for drowning incidents. This was enabled by SLS becoming programme partners and enabling lifeguards to communicate real time safety warnings directly to the public via the Safeswim website using an on-beach App.

Safeswim (www.safeswim.org.nz) is now a 'one stop shop' for beach safety information and has become the national beach safety communication platform for SLS agencies.

The revised programme went live in Auckland at the start of the 2017 austral summer. In the first summer, the website had over 350,000 page views from over 150,000 users. An evaluation of the programme found an increase in public awareness of risks at beaches and highlighted the importance of using Safeswim to 'check before you swim'. In 2021, Safeswim was recognised by the World Health Organisation as an exemplar of communication of information for beach users.

Safeswim was expanded to cover all 92 lifeguarded beaches in New Zealand for the 2022/23 summer, contributing to an increase in page views (690,000) and unique users (307,000). Future planned developments include adding more freshwater sites, developing a predictive model for rip current hazards and adding beach specific safety education information videos.

Understanding the importance of building social connections with(in) Surf Life Saving to enhance community resilience and encourage behaviour change

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Background

Surf Life Saving Australia (SLSA) is a community driven, diverse organization that provides surf lifesaving services to Australia's beachgoing community, with members spanning all life stages. Social connection is an integral aspect of community wellbeing and resilience. Participation in community activities (e.g. sport, volunteering, physical activity), and the infrastructure that delivers them, provides an example where aspects of social capital such as social connection can develop and thrive. Social support and connections have been linked to various measures of wellbeing, including mental health and risk communication.

Description

As an organisation, SLSA needs to better understand impacts of various aspects across lifesaving on members and the community to enable better development and provision of support and education strategies.

Lessons learned

Building relationships and social connections are integral to fostering a positive experience that creates the conditions necessary for participants to willingly engage in community activities. For example, 'friendly' open discussions between lifesaving personnel and beachgoers about their first-hand experiences of risk represented positive interactions that enabled measurable cognitive learning outcomes (e.g., awareness of rip currents) that transformed values and intentions to implement risk mitigation behaviours on 'other beaches' (i.e. 'looking for rips' each time participants visited a new beach).

Conclusion

This presentation will present various novel projects that are underway within SLSA that serve to better engage and protect beachgoers and members within the SLS movement with examples within mental health of members (particularly within our most vulnerable cohort – adolescent members) and relationship building approaches to safety education where interactions between beachgoers and lifeguards promote relational learning opportunities that spill over to other people or contexts. Social connections are fundamental to the promotion of recovery and resilience within communities. Understanding how positive social connection is manifested through various aspects of SLSAs is crucial to ensure the longevity of the movement.

Drowning prevention on New Year's Eve at Copacabana beach preserving millions of lives

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Introduction

According to official numbers from Rio de Janeiro city hall, the estimated audience at Copacabana Beach during New Year's Eve was between 1 and 2 million people. They are attracted by concerts, fireworks, and religious manifests. This celebration is considered one of the biggest beach New Year's Eve parties. The scenario of low visibility, high temperature and humidity, crowds of people on the beach (on sand and into boats), ingestion of alcoholic beverages and religious beliefs which encourage sinking in the water increase the risk of drowning.

Objective

Develop a plan for rescue and drowning prevention. Methods: the numbers of incidents carried out on Copacabana beach during New Year's Eve was published on an informative report by Tactical Operational Plan of General Staff of the Military Department of Rio de Janeiro Firefighter Station (CBMERJ)¹, by Operations Management System (SisGeO)² and at the official website of Rio de Janeiro city hall³. Copacabana is a balneary beach with 4 km length (2.5 miles) and the party occurs between 9pm to 4am. The operation plan used ten jet skis, three inflatable rescue boats, two firefighting boats with a medical and diving team, one multi-mission aircraft, six quadricycles, four pick-ups and three ambulances. A total of 268 persons were involved, including 123 lifeguards, forty specialized soldiers, fifty rescuers and assistants, thirty doctors and nurses, twenty-five officers, staffing twenty-nine rescue posts along the beach and two command posts. It was estimated that 2.4 million people were protected by 5,330 actions: 87.90% (4,685) reactive prevention, 1.31% (70) missing children found, 1.99% (106) ocean rescue, 8.8% (469) pre-hospital care, and no ship or boat fires, and zero deaths.

Conclusions

The resources used in the planning and implementation of Operation New Year's Eve 2022/2023 were enough to achieve success, and the final goal with no deaths from drowning in Brazil's largest beach New Year's Eve party in an aquatic environment.



RESEARCH

Twenty years of collecting drowning data in Australia: A tool for research, advocacy and policy

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Background

The World Health Organization recommends quality drowning data collection as one strategy to improve evidence and enhance prevention efforts (1). Collection of drowning data can be used to identify key risk factors, evaluate progress, and inform National priorities for drowning prevention (1). Royal Life Saving – Australia has been collecting unintentional fatal drowning data in the National Fatal Drowning Database for 20 years (2002/03 to 2021/22), sourced from the National Coronial Information System (NCIS) and triangulated with daily media reports.

Methods

A total population retrospective epidemiological study of unintentional drowning deaths in Australia from 2002/03 to 2021/22. Drowning data is primarily sourced from the NCIS and includes all deaths ruled by the coroner as a drowning as the primary or contributory cause of death, not just ICD coding. This includes drowning as a result of transport and flood-related incidents. Drowning which is deemed to be intentional (suicide, homicide, assault, infanticide) are excluded. Descriptive statistics, chi square, relative risk and age-adjusted rates per 100,000 population over the 20-year period will be presented.

Results

Between 2002/03 and 2021/22, a total of 5692 unintentional drowning deaths were recorded in Australia, an average of 284 people each year. Males were overrepresented (79%), with adults aged 25-34 years accounting for the largest proportion of deaths (15%) and school-aged children 5-14 years the lowest (5%). Deaths among children aged 0-4 years decreased over time, while deaths among older people (65+) increased. Rivers were the leading location for drowning (26%), followed by beaches (18%) with swimming the leading activity prior to drowning (23%). Deaths associated with non-aquatic transport doubled over the 20-year period while drowning when bathing decreased by 50%.

Conclusion

Collection of fatal drowning data over a 20-year period has allowed for identification of key priority areas for targeted drowning prevention efforts that have helped to reduce drowning in some areas. This data has also informed the development of Australian Water Safety Strategies (2).

Learning outcomes

The collation of drowning data supports evidence-informed research, advocacy, supporting policy change and provides a strong evidence base for developing National Water Safety Plans and priorities for drowning prevention.

The burden of fatal drowning in California, 2005–2019

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Objective

Characterize risk factors for fatal drowning in California to inform priorities for prevention, policy, and future research.

Methods

This retrospective population-based epidemiological review of death certificate data evaluated fatal drowning events in California from 2005–2019. Unintentional, intentional, and undetermined drowning deaths and rates were described by person (age, sex, race) and event-based variables (region and body of water).

Results

California's fatal drowning rate was 1.48 per 100,000 population (n= 9,237). The intentional rate increased 89% during the study period. Highest rates occurred in the less populated northern regions, among older adults (75-84 years: 2.54 per 100,000 population; 85+: 3.47 per 100,000 population) and non-Hispanic American Indian or Alaska Native persons (2.84 /100,000 population). Male drowning deaths occurred at 2.7 times the rate of females; drowning deaths occurred mainly in swimming pools (27%), rivers/canals (22.4%), and coastal waters (20.2%).

Conclusions

California's overall fatal drowning rate was similar to the rest of the U.S. but differed among sub-populations. These divergences from national data, along with regional differences in drowning population and event-related characteristics, underscore the need for state and regional level analyses to inform drowning prevention policy, programs, and future research.

A retrospective analysis of the circumstantial factors contributing to drowning incidents reported in the South African media

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Background

The first consensus guidelines for the uniform reporting of drowning were published in 2003, and specifically call for the precipitating factor to be described. However descriptions of precipitating factors are still lacking in substance and not included in core surveillance datasets. Media reports offer a rich source of information on drowning context and circumstantial factors. The study aimed to describe the circumstantial factors contributing to fatal drowning incidents reported in the South African media between January 2017 and March 2021.

Methods

Lifesaving South Africa (LSA) head office administrators have collated reports submitted directly to LSA or published in the news media on both fatal and non-fatal drowning incidents in South Africa since 2016. We conducted a retrospective descriptive study of the database between January 2017 and March 2021. The analysis was restricted to known fatal drowning incidents as we were unable to confirm the outcome of all initially non-fatal drowning incidents.

Results

There were 767 fatal drowning incidents reported during this period. Two thirds (66%) of reported incidents occurred during spring and summer, and the majority (79%) occurred in coastal provinces. Weekends and public holidays accounted for the highest frequency of reported incidents. Forty percent of reported fatal drowning victims were children 15 years or younger, and 82% of victims were male. The victim's activity at the time of drowning was reported in only 80% of cases. Approximately half (48%) of fatal drowning victims were swimming, 17% drowned following accidental entry into the water and 11% were boating or sailing at the time of the incident. A third of accidental entries resulting in a fatal drowning involved the victim attempting to cross a river, stream or canal.

Conclusions

Understanding the activity immediately preceding the drowning event allows for more context appropriate design of prevention interventions. There were high rates of missingness in the data analyses in this study, particularly in the primary outcome of activity prior to drowning incident. Notwithstanding this limitation, the study findings add value in that they identify common, context-specific precipitating factors and activities that may present opportunities for effective prevention interventions.

Exposure: a major knowledge gap in drowning epidemiology

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Background

Drowning data is generally expressed as population or age-specific population rate, but these rates are not specific to the actual population at risk (the exposed population). Exposure data is necessary to quantify the actual drowning risk and to effectively prioritise prevention strategies. Among the recent proliferation of descriptive drowning studies, many identify lack of exposure data as a limitation. Evidence supporting presumed drowning risk factors from study designs without exposure measures is weak and unreliable. This study aims to: (1) identify typologies of drowning exposure measurement reported in the literature; (2) consider their strengths and limitations and potential for wider application; (3) identify potential methodological improvements and implications for policy development.

Methods

A literature search was undertaken for studies of exposure measurement for drowning that reported drowning rates by exposed population. The range of study methods used was examined and grouped into types and subtypes with examples. The strengths and limitations of these methods were assessed, including establishing criteria to categorise specificity and scale-ability.

Results

Exposure measurement methods identified were: direct observation[1] (person-time exposure in water); registrations[2] (e.g. boats; private pools); visitations to waterways[3]; international travellers[4] (tourist drowning); representative population surveys (water activities)[5]; representative household surveys (e.g. safe-water supply) [6]; aerial photography (home swimming pools)[7]; population proximal to inland waterways[8]. The studies used relevant specific categories of drowning mortality data to determine exposure specific drowning rates. While contributing to the knowledge base, exposure methods were generally limited by lack of specificity and by multiple assumptions in applying to mortality data.

Conclusions

Drowning exposure studies are scarce and face many methodological difficulties. They basically fall into two categories: (1) focus on person-based water activities (direct observation and surveys); (2) use proxy and often untested measures of exposure. Refinements and testing of existing measures would enhance reliability, though improving specificity could be resource intensive. New monitoring technologies such as drones have the potential to complement existing exposure study methods. To better inform intervention priorities and policy development, drowning prevention research strategies and funding bodies should support study designs that properly account for exposure measurement.

Trends in drowning deaths in Spain between 2015 and 2022

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Background

Currently, there is no official register of drowning deaths in Spain that publishes up-to-date data. Official data on drowning deaths are published at least two years after an incident occurs, which in many cases makes it very difficult to carry out preventive actions adapted to reality or to raise social awareness of the problem of this type of death in our country.

For this reason, in 2015 the Royal Spanish Lifesaving Federation launched the National Drowning Report, which compiles information and publishes its data on a daily basis and produces a report with the aim of:

- Provide accurate, immediate and systematic information on drowning deaths that occur in Spain.
- To know the existing differences in drowning deaths in Spain according to different parameters (age, sex, facility, existence of surveillance, place, date...).
- To analyse the evolution of drowning deaths in Spanish aquatic areas between 2015 and 2022.

Methods

Through the creation of Google alerts and other sources, information is collected daily from digital and written press on drownings in our country. The data collected are classified and analysed according to the following parameters: age, date, time, sex, nationality, facility, place of the event, existence of surveillance service, activity carried out, victim's factors and public or private space.

The information collected is used to produce a report that is published monthly and an overall annual report.

Results

Between 2015 and 2022 at least 3,138 people have lost their lives by drowning in Spain, which is almost 400 people per year.

There are large differences depending on the different parameters analysed (age, sex, date among others).

Conclusions

The data collected highlight the need for the implementation of the State Aquatic Safety Strategy and other state initiatives aimed at reducing the number of drowning deaths in Spain.

In-depth study on drownings in Finland 2021

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The objective of the study was to gain a comprehensive view of drownings in Finland, which is how and why people drown. This information is needed to better plan and measure drowning prevention and to simply inform the public. The drowning rate in Finland has been higher than in other Nordic countries.

The study was carried out by using the powers and legal framework of accident investigation. It was agreed that whenever a drowning occurs, the relevant authorities notify the Safety Investigation Authority, Finland (SIAF). The investigators thus had access to the available data – including that from the autopsy.

The notification and investigation process functioned well resulting to a total of 165 accidental drownings in the database. All of them were comprehensively analyzed and categorized. In addition, many photos were received to illustrate the circumstances and the properties of the accident site. The result was a hundred-page investigation report describing the phenomena of accidental drownings.

The results of the study shed light on how drownings occur when people go swimming, end up in water when ashore and risks related to the usage of typical small rowing boats. Some cases also indicated the risks of thin ice in winter conditions. Personal data obtained showed the age distribution of the victims and their blood alcohol level. The investigation resulted in a package of information that was warmly received by organizations involved in safety work. The facts were also well presented in the news media and in the social media. The visibility of the investigation was relatively high, partly due to the idea to publish a short description of each separate drownings case one by one while the investigation was still on-going.

The investigation also resulted in a couple of recommendations. However, the main value of the study probably comes from the data itself - which can be widely used and reused for years to come. To what extent the significantly lower number of drownings in 2022 compared to 2021 is even partly the result of the safety study and the wide publicity it obtained is difficult to assess.

Understanding the burden and circumstances of fatal drowning in Ghana: Results from a nationally representative study

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Background

Drowning death rates in Africa are estimated to be among the highest globally; however, the full burden of drowning is unknown due to limited data. This study in Ghana used a unique approach to collect nationally representative data on the burden and circumstances of drowning.

Methods

All districts in Ghana were categorized into three strata: coastal (districts with ocean coastline), inland water (districts that border or contain major lakes or rivers), or dry (districts that do not have a coastline or major lake/river but may contain small lakes/streams, dams, wells, etc.). Fifty-two districts (covering approximately 28% of the total population) were randomly selected from the three strata using proportional to population size sampling. Trained data collectors identified all drowning cases that occurred during 01/January/2019–31/December/2021 in each district by abstracting data from administrative sources and contacting community health workers and gatekeepers. Data collectors conducted structured interviews with friends/family/witnesses of people who drowned to collect data on the circumstances of the drownings.

Results

1,163 fatal drowning cases were identified in 52 study districts during the three-year study period. After weighting to account for the sampling strategy, we calculated a national fatal drowning rate for Ghana of 4.4/100,000 population/year. This estimate is substantially higher than existing estimates for drowning in Ghana (1.7–2.4/100,000 population/year). Drowning rates varied widely by district from 0.0–26.3/100,000 population/year. Adults 20–24 years (5.2/100,000 population/year) and 40–44 years (4.3/100,000 population/year) and young children 0–4 years (4.1/100,000 population/year) were at highest risk. Rates among males (7.4/100,000 population/year) were nearly five times higher than among females (1.4/100,000 population/year). Fatal drowning most frequently occurred in rivers (31%) and the ocean (18%). The most common activities were swimming (35%), followed by boating (15%). Young children most frequently drowned in water/septic tanks (20%) and pits (19%).

Conclusion

Drowning is a major cause of premature death in Ghana and existing estimates do not capture the full burden. Safer swimming and boating, and environmental modifications that prevent unintended water access could help prevent drowning.

The burden of unintentional drowning in China from 1990 to 2019: findings from the Global Burden of Disease 2019 study

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Background

Drowning is an important contributor to the burden of death in China. Exposure to open water is a risk factor for drowning, but few studies quantify its impact on drowning. The purpose of this study was to provide an up-to-date analysis of unintentional drowning environmental risk in China, including impact of exposure to open water.

Methods

We used Chinese provincial data from the GBD Study 2019 to describe the burden of unintentional drowning in 33 provinces in China and changes from 1990 to 2019. We included provincial outdoor open water resource data into the analysis to explore the relationship between outdoor open water resources and drowning burden using K-median clustering analysis.

Results

Between 1990 and 2019, the unintentional drowning incidence, mortality and DALY rates declined by 31.2%, 68.6% and 74.9% respectively, with differences by age, sex and province. In 2019, the DALY rate for drowning was relatively higher in children under 20 year, the elderly over 80 years than other age group and relatively higher in males. Drowning incidence rate among females is higher than that of males, but there was no statistical significance. Provincial differences in unintentional drowning burden show a positive relationship to the availability and size of outdoor open water.

Conclusions

As expected availability of water increases drowning risk. There is a need to address drowning environmental risk among children and the elderly. Localized water safety plans which consider unique drowning burden and environmental risk factors are needed in China to ensure a sustained decline of unintentional drowning.

Indonesia: Vulnerability to fatal unintentional drowning

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Background

There is a dearth of information outlining fatal unintentional drowning in Indonesia, the world's largest archipelagic and fourth most populous country, where high numbers of hydrometeorological disasters occur annually.¹ This study aimed to identify high-risk populations and risk factors for drowning in Indonesia between 2005 and 2019, to inform drowning preventive efforts.

Methods

This total population retrospective cohort study analysed unintentional drowning data sourced from The Global Burden of Disease (GBD) 2019 study, to generate estimates of mortality rates by gender, age group, and province within Indonesia between 2005 and 2019.

Results

Males in Indonesia were 1.81 (95% CI: 1.79 - 1.84) times more likely than females to unintentionally drown. The highest rate of mortality across the 15-year period was identified among the under-5 male populations, with average annual mortality rates of 9.67/100,000. Indonesian children aged under 5 years and individuals aged 70 years and more were 3.67 (95% CI: 3.63 - 3.72) times and 2.5 (95% CI: 2.45 - 2.56) times more likely to fatally drown in comparison to the working-age populations of 15-49 years of age, respectively. Distributions of drowning deaths vary depending on region, with mortality higher in Kalimantan, Papua, Sulawesi, Maluku, Nusa Tenggara, and Sumatra, where water transportation serves as one of the main methods of commuting between islands and rural areas, underlying the need to further investigate the link between unintentional drowning, water-transport safety regulations, occupational safety and health, and rural development across Indonesia.

Conclusions

Drowning is a public health problem in Indonesia, especially for male children. Being male, aged under 5 and 70 plus years, and residing in Kalimantan, Papua, Sulawesi, Maluku, Nusa Tenggara, and Sumatra were associated with increased risk of fatal drowning events. Drowning in Indonesia urgently requires national and localized prevention strategies targeted at high-risk groups identified in the study.

Assessment of Nepali media reports exploring areas of action for drowning prevention in Nepal

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Background

The global burden of 235,000 fatal drownings is comprised disproportionately high (over 90%) share of Low- and middle- income countries. This amount is often deemed to be an underestimate due to a lack of quality data and information. Like in many LMICs, drowning is not yet on Nepal's national health agenda and lacks reliable data. Media reports can serve as alternative source of information.

Methods

This study of published narratives describes the magnitude of the problem, provides evidence for developing preventive measures and prehospital care services. Google search was performed to find media reports for all equivalent Nepali terms corresponding to "drowning" or "drowning death".

Results

Altogether 112 incidents were reported with information on 177 cases of drowning, from 51 (out of 77) districts, occurred in one year. Media reports narrated deaths (84.2%), missing persons (9%) and the persons recovered or under treatment (6.7%). Of the total reported cases, 43.1% were children (<15yr) and 27.7% were females. Most incidents occurred in natural rivers/streams (65.5%) followed by lakes/ponds/dams (16.9%), and 11.4% of drowning cases occurred in ditches near homes or stored household water. Only 28.8% of drowning cases resulted from accidental contact with water and 58.8% resulted from conscious contacts i.e. bathing, swimming or crossing river; 4.5% were suicidal jumps. Search and Rescue attempts were made for 54.1% incidents covering 84 persons; of them 57 were found alive or unconscious. Among them, 78.9% died either on the way or during treatment. No reports mentioned whether CPR was performed before sending them for treatment.

Conclusion

Lack of supervision and access to water were reasons behind child drowning while lack of safety precautions were the reasons for adult drownings. The distance between the drowning site and hospital is not clearly reported, however, there might have been delays due longer distances. Timely CPR may have saved more lives. Although media reports provide an incomplete account of the drowning situation, our study clearly implies the need for water safety education and CPR skills among populations. There is also an opportunity to improve the reporting of drowning incidents involving journalists.

The epidemiology of accidental drowning in the Cayman Islands: recommendations for implementing drowning prevention strategies to reduce the incidence of drowning deaths

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Introduction

The Cayman Islands is regarded as a top tourism destination, popular for its diving sites and picturesque beaches, attracting 1-2 million tourists every year¹. Water-related tourism in the Cayman Islands, however, is not without risk. The World Health Organization (WHO) lists drowning as the third leading cause of “unintentional injury death” worldwide². In addition, near-drowning patients are exposed to aspiration that may result in pneumonia with life-threatening consequences³. Despite drowning deaths being regularly reported in local Caymanian media, no epidemiological data has been reported for the Cayman Islands^{4,5}. Therefore, it is imperative to perform an analysis of Cayman Islands data in order to make appropriate recommendations.

Methods

Retrospective data was collected on the number of water-related deaths from 2012-2022 inquest as the legal categories of “Death by Misadventure” and “Death by Natural Causes” by the Cayman Islands Coroner’s Court. Statistical analysis was performed to compare the incidence in the Cayman Islands with several comparable regions.

Results

A total of 84 water related deaths occurred. Out of the 84 water-related deaths, 64 were categorized as misadventure and 20 were categorized as natural causes. Males accounted for 90% of drowning deaths and individuals who were 60+ years of age were the largest group affected, accounting for almost half of all drowning deaths. Risk of dying by drowning in the Cayman Islands was on average 3 times higher than the Non-Latin Caribbean⁵ (RR=3.21) and 5 times higher than Central America, Mexico, and Latin Caribbean⁵ (RR=5.01).

Conclusion

In this study, the number of drowning deaths in the Cayman Islands was considerably high. This study aims to increase public awareness and propose a self-sustainable national program with drowning prevention strategies to reduce the incidence of drowning deaths in the Cayman Islands. There is a gap in lifeguard regulations in the Cayman Islands which may be a contributing factor for these results. Mandating lifeguard presence in Ecuador and Costa Rica dramatically reduced the incidence of drowning deaths⁵⁻⁷. We propose several legislations including introducing professional lifeguard training courses, mandating availability of trained lifeguards, and increasing availability of local water safety courses.

Fatal Drowning Profile for South Africa: 2016 - 2021

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Background

Fatal drownings are prevalent in low-and-middle-income countries, and Africa is no exception to the high drowning rate. Drowning data is essential in designing and developing a drowning prevention strategy for South Africa. An epidemiological review of drownings covering all regions in South Africa has been lacking due to the absence of data. This research study aimed to provide a South African fatal drowning profile from 2016 to 2021.

Methods

An ethics application was approved for the study, and the South African Police Services granted consent to use their data; all identifiable information was removed. Data only included fatal reported drowning for the period 2016 to 2021 for all regions in South Africa

Results

The highest number of annual drownings occurred in 2021, with 1526 fatalities. The average drowning mortality rate is 2.54 per 100,000 population. Children 14 years and younger accounted for 58% of all fatal drownings from 2016 to 2021. Males represent 81% of fatal drownings. The black ethnic group accounted for the highest number of drowning fatalities at 82% representation. Fifty percent of drownings occurred in freshwater. The province with the highest incidence of drownings was the KwaZulu-Natal province.

Conclusion

This study provides a detailed synopsis of where drownings are most likely to occur and who the persons affected. This information aids in designing and developing a drowning prevention strategy with interventions to reduce the incidence of drownings. The study also highlights the need for a drowning information system in South Africa to monitor drownings more closely.

Development of a multicentre collaborative Utstein-style drowning database

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Background

There is a need for more evidence-based protocols for treating drowning injury. Utstein-style guidelines were developed by consensus among experts to standardize research reporting of resuscitation from drowning so that data on the clinical course of submersion injury is recorded in a consistent manner (1). However, due to the large number of recommended variables and potentially poor availability of some variables, there are not many studies using the guidelines (2). Registries of cardiac arrest patients, trauma patients, and extracorporeal life support patients have all been used to improve the evidence base in drowning (3-6). However, these registries may not include enough information critical to understanding the unique situation of drowning (5). With the number of drowning cases treated at any one hospital too small to address many clinical questions, a multicentre registry of drowning patients following Utstein-style guidelines is urgently required.

Description

In 2023, an overview of the Utstein-style data collection protocol for two hospitals in Australia was published (7). This presentation will further discuss the process of piloting a multicentre expansion of the project with one hospital in the USA. We will overview the process of developing a REDCap form that can be used for abstracting data in various locations and with varied backgrounds. Additionally, we will discuss the process of standardizing data collection between study sites with existing submersion registries containing similar, but not identical variables. We will also gauge interest in expanding the project to additional study sites internationally.

Lessons learned

We will discuss the challenges faced and potential resolutions, highlighting project-wide hurdles (e.g. legal issues with data sharing) in addition to variable-specific issues (e.g. unit differences between countries) that we encountered.

Conclusions

The development of an International Utstein-style drowning registry can be used by collaborators around the world to address knowledge gaps in hospital and pre-hospital care. We hope to develop further collaborators for multicentre research to help improve the effectiveness of clinical treatment of drowning injury and further our understanding of factors affecting care and outcomes.

Critical care drowning admissions in Southwest England 2009–2020, a retrospective study

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Aim

In the United Kingdom (UK), 600 deaths per annum are attributable to drowning (1). Despite this there is scarce critical care data on drowning patients globally, particularly on patient centred outcomes such as functional status. We seek to describe drowning cases admitted to critical care units with a focus on functional outcomes. We seek to add to the canon in the under investigated topic of non fatal drowning and drowning burden.

Materials and Methods

Medical records for critical care admissions following a drowning event were retrospectively reviewed across six hospitals in Southwest England for cases presenting in the period between 2009 and 2020 as part of an anaesthetic trainee research network. Data was collected according to the Utstein international consensus guidelines on drowning (2).

Results

Forty-nine patients were included, 36 males and 13 females, including seven children. Median submersion duration was brief at 2.5 min on average. 20 cases were in cardiac arrest when rescued, with 5 being successfully resuscitated with CPR. At discharge 22 patients had preserved functional status, 10 patients had a reduced functional status. 17 patients died in hospital. 30% of victims had unrecordably low initial temperatures.

Conclusion

This data is notable for being the first such from the UK, and also for highlighting the functional burden of non-fatal drowning. Admission to critical care following drowning is uncommon and associated with high rates of mortality and poor functional outcomes. We find that 31% of those who survived a drowning event subsequently required an increased level of assistance with their activities of daily living. In this cohort, 82% of cases had one of the following known risk factors: alcohol usage, male sex or epilepsy.

Understanding and learning from childhood drownings in England: How the National Child Mortality Database works in partnership to use its statutory basis and multi-agency data collection system to inform national policy.

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Background

NCMD collects data on all children in England who die before their 18th birthday. The data is collected from Child Death Overview Panels (CDOPs) who have a statutory duty to perform a multi-agency review of all deaths in their area as part of the child death review (CDR) process. In parallel, a national alert system was implemented to notify NCMD of any issues needing further action. Several alerts were received on drownings and NCMD therefore prioritised production of a thematic report to include a focus on deaths of children due to drowning, due to be published in July 2023.

Methods

There is a statutory requirement to provide notification data to NCMD within 48 hours of the death occurring. Then, a comprehensive, multi-agency dataset is gathered by CDOPs including both qualitative and quantitative data. The data is analysed, and findings discussed with an expert working group to assist with interpretation and make recommendations.

Results

The full analysis was published in July 2023 and will be presented at the conference. This data relates to 84 children in England who died by drowning between 1 April 2019 and 31 March 2022 (1). This includes data relating to the characteristics of children who die by drowning and an analysis of the locations, circumstances and learning identified for these deaths together with details of how the learning and recommendations have been taken forward.

Conclusions

The statutory basis of NCMD and the CDR process provides a unique opportunity to collect a complete dataset at population level. The qualitative and multi-agency nature of the dataset allows for detailed thematic analysis of the circumstances in which child drownings occur allowing for robust identification of learning to inform policy and drowning prevention strategies. The collaborative partnerships formed by NCMD ensure that national recommendations on drowning prevention are appropriate and fed into the Royal Life Saving Society UK established All Party Parliamentary Group on Water Safety.

Digitalizing a Lifesaving Federation - all about Apps and Systems

Dirk Bissinger

Deutsche Lebens-Rettungs-Gesellschaft (DLRG), Bad Nenndorf, Germany

Digitalization is the key topic in the 21st century. Data has become the new "gold" and all across the globe, digitalization affects our daily life with different means. Even so it may not be the primary focus of any Lifesaving Federation, there are several good reasons to move into this field and generate capabilities, skills and knowledge. Topics covered and discussed are ranging from data acquisition, managing a headquarter, (local) clubs and members, generating and handling certificates, providing online trainings (E-Learning, blended learning), all kinds of virtual meetings to finally also create and distribute very specific apps. As communication is key, the service of e-mail, shared data, online meetings and easy collaboration with any data required is key as well. Overall, this requires a proper planning of the IT landscape and the systems introduced and maintained - ranging from inhouse solutions to services you need to run the overall project.

This presentation depicts the journey of the Deutsche-Lebens-Rettungs-Gesellschaft (DLRG) from a national perspective but also looks into the effects and advantages for a local club. As the journey started already some years ago, it is a chance to share lessons learned and successes.

Beside the actual status quo, this includes a perspective into the increasing opportunities for the upcoming years and may help other federations to start or join a similar journey. Additionally, this journey allows the federations to deliver additional value to their members and participants of the connected activities.

Examining the feasibility and utility of big data and Artificial Intelligence (AI) for drowning risk reduction/drowning risk forecasting in Aotearoa, New Zealand

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Background

Drowning is a major public health issue globally, resulting in hundreds of thousands of deaths each year. While knowledge is increasing about drowning demographics and risk factors, little research utilises multiple datasets and linked administrative data to supplement information from the drowning incident. In New Zealand, 93 people died in preventable drowning incidents in 2022. A further 157 were hospitalised due to non-fatal drowning. Although New Zealand has some of the best drowning data in the world, with access to fatality, hospitalisation and Accident Compensation Corporation (ACC) data, there is opportunity to harness technological advances and improve insights further. Thus, the rise of big data and artificial intelligence (AI) technologies has the potential to revolutionize our understanding of drowning.

Methods

This conference presentation will examine how various sources of big data, including administrative data (such as postcode, income, socio-economic status, education level), environmental data (such as air and water temperature, wave height and rainfall), health records (such as hospitalisation and ACC data), and sentiment analysis from social media platforms such as Instagram, Twitter and Facebook, can be analysed using a variety of analytical and statistical methodologies to gain new insights into the risk factors and causes of drowning. This includes the ability to more accurately forecast high-risk times for drowning and at-risk populations.

Results

In New Zealand, the Integrated Data Infrastructure (IDI) has enabled the aggregation of a vast amount of data from various sources, providing a unique opportunity to analyse and understand the causes, patterns, and impacts of drowning in the country. This presentation will show how the IDI can be utilized in combination with AI techniques to better analyse drowning trends and inform evidence-based prevention strategies. The model is still under development however, initial results suggest predictive correlations between environmental factors, activities, demographics and income.

Conclusions

The presentation will show how AI can be used to develop predictive models to identify high-risk individuals and communities to create more targeted intervention strategies. Being able to predict who is more likely to drown, when, where and how will help identify more effective drowning prevention strategies.

Measuring the cost of fatal and non-fatal drowning in Canada: A proposed methodological approach

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Background

Cost of injury studies provide valuable data for communicating with decision-makers and assessing the cost-effectiveness of preventative interventions. Previous estimates of the cost of unintentional drowning in Canada (1), while useful, do not account for variances in a country as geographically vast and diverse as Canada, such as environmental factors (e.g. coastal versus inland bodies of water) and access to emergency response and healthcare services. Our objective was to improve on existing methodologies to develop an approach that provides a more robust estimate of the cost of drowning in Canada.

Methods

Logic models were developed for unintentional drowning incidents reflecting four different geographic settings (i.e., urban, semi-rural, rural and remote). The logic models also considered three potential outcomes of drowning: non-hospitalized injuries, hospitalized injuries, and deaths. The data required to quantify costs and available sources for these data were mapped to each logic model to present a proposed methodology for the Canadian context.

Results

In developing logic models by geographic setting, we identified key variables in the post-drowning event period that affect cost: the responders, such as search and rescue, and response, including dive recovery, the type of transportation to care (e.g., air transport from remote settings), and the necessary healthcare pathways.

Conclusions

Response following drowning incidents is unique compared to other injuries. Thus, estimating the cost of drowning injuries requires a unique approach. Our proposed methodology builds on established approaches to take into account a variety of geographic settings, response pathways, and injury outcomes following a drowning event. This methodological work contributes to the international literature on measuring the burden of drowning, which may benefit other researchers considering costing studies in their jurisdiction. In collaboration with the Drowning Prevention Research Centre Canada, we plan to complete a study using this methodology that will result in a more comprehensive estimate of the costs of drowning in Canada.

Identifying the gaps in care seeking in response to a drowning event in rural areas, West Bengal, India

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Background

Drowning is a medical emergency that rarely receives immediate treatment in a resource-constrained health system settings. In rural West Bengal, less than 5% of child drowning cases receive any medical attention. The objective of this study is to document the post-drowning patient care journey for children under 18 years of age in the Sundarbans region of West Bengal.

Methods

We conducted a qualitative inquiry using the patient journey mapping approach, in-depth interviews (IDI), and a rapid assessment of primary health care facilities. We purposively selected a rural population in the Sundarbans with high drowning mortality rates. A chronological plot of the patient's journey was created and confirmed with respondents at the end of each interview. A detailed journey map was drawn for each injured patient based on interview transcripts and notes. Analysis was conducted using NVivo 12, employing a combination of inductive and deductive coding. Similar codes were categorized into sub-themes and one of the major themes of the 'three delays' framework (1).

Results

We conducted interviews with 20 drowning cases, sixteen resulting in fatality. The age range of the injured children was 1 to 15 years, with 12 of them being girls. The injured children were retrieved from the water body within a time frame of 10 minutes to 3 hours. Only two cases were taken to hospital, two received attention from a doctor at the drowning site, and 17 were attended to by a local healer. There was no apparent delay in the decision to seek care, as drowning was universally recognized as an emergency. The primary barrier to accessing care was the physical distance to a medical facility. Once at the facility, access to care was immediate, but the adequacy remained unclear. A health care facility assessment is currently underway. Assessment of the facility emphasized its inadequacy to address drowning emergencies.

Conclusions

Barriers to timely access significantly affect the care pathways for drowning cases. We propose using the modified 3-delays framework to analyze delays. There is a pressing need to strengthen pre-hospital care, establish effective referral linkage systems, secure financial support, and integrate responses to drowning.

Title: Burden of treatment cost for fatal and non-fatal drowning in Bangladesh: Findings from a national population-based survey

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Background

Drowning is a global public health problem, with significant burden in low- and middle-income countries. In Bangladesh, drowning data is limited regarding health seeking behavior as well as out of pocket expenditure for treatment. This study aimed to quantify drowning related health seeking and economic burden in Bangladesh.

Methods

In 2016 a countrywide cross-sectional survey was conducted using pretested semi-structured questionnaire based on socio-demographic characteristics with a total 70,000 households and 299,216 populations, which was taken from 16 randomly selected districts in Bangladesh. Multistage cluster sampling method considering probability-proportional-to-size strategy used in the surveys to obtain desired sample. 64 data collectors, 16 supervisors and two field managers were employed supervision and monitoring data collection along with the investigators. Data was collected through tablets using a customized data entry program.

Results

A total of 35 fatal and 788 non-fatal cases were identified during the study period. Among these cases, 11(31.40%) for fatal drowning and 677(85.70%) for non-fatal drowning sought some form of healthcare treatment. Of them, 6 (54.5%) fatal cases received treatment from drug seller and 433(64.0%) non-fatal drowning cases from registered doctor. Considering healthcare facility, 5(45.5%) fatal received treatment from UHC and 405(59.8%) non-fatal from Pharmacy/medicine shopkeepers. Mode of transport for 6(54.50%) was ambulance and for 420 (62.04%) was motorized vehicles for both fatal and non-fatal victims. Most of the victims 6(54.50%) and 378(55.83%) were transported to the healthcare within one hour, which is golden hour of drowning. A total of 3 (27.27%) and 56 (8.27%) medians were hospitalized for 1-2 days with median treatment cost \$ 118, \$ 31.25 for fatal and for non-fatal respectively. Among this individuals, 33.3% fatal and 25% non-fatal were a source of family incomes, and borrowing money or treatment were 18% and 5%.

Conclusions

Drowning is a significant public health problem in Bangladesh. The dependence of the population on unqualified informal health care providers, low utilization of government health care facilities and ambulances for transportation post-drowning is a cause for concern. Investment in drowning prevention program will reduce economic burden and loss of lives due to drowning.

A qualitative study of the circumstances and context of drowning in Ghana

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Background

Drowning is the third leading cause of unintentional injury death globally, and most of these deaths occur in low- and middle-income countries(1, 2). Contextually relevant information on drowning is critical to designing effective prevention strategies (3,4). As part of a larger study of the burden and circumstances of drowning in Ghana, this qualitative analysis sought to identify the context and circumstances of drowning, attitudes and beliefs about drowning, and potential drowning prevention interventions for Ghana.

Method

Eight focus group discussions (FGDs) with 64 participants were conducted in December 2022 among key groups and communities in Ghana that are impacted by drowning. Key groups included: coastal and inland fisherfolk, mining communities, frequent boat transport users, and government agencies. Discussions were translated, transcribed, and analyzed to identify themes (5).

Results

Participants identified alcohol consumption, lack of or limited use of lifejackets, lack of or poor swimming ability, and limited education on swimming as key factors that contribute to drowning in Ghana. Weather was also discussed as a contributor to drowning incidents. Specifically, unpredictable wind patterns and currents were identified as important factors in drowning among fisherfolk, and flash flooding was identified as a key issue affecting communities across the country. Sociocultural beliefs (e.g., witchcraft, curse) were frequently identified as contributors to drowning during FGDs. Participants suggested several strategies that they felt could reduce drowning in Ghana including: increasing public awareness of drowning risks, improving supervision of children, building bridges across water bodies, increasing lifejacket use, fencing bodies of water, improving boating regulations, addressing traditional beliefs associated with drowning, and improving safe rescue skills among professional and lay rescuers.

Conclusion

Drowning in Ghana is complex. Incorporating traditional beliefs and practices can improve tailored prevention strategies. The results of this study will inform the development and implementation of drowning prevention programs, policies, and plans to mitigate drowning risk in Ghana.

Burden of drowning in WHO's European Region - Epidemiology and opportunities for scaling up intersectoral prevention

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In the World Health Organization (WHO) European Region, drowning kills almost 20,000 people each year. The burden of drowning is highly varied across the 53 member states, ranging from a low of 0.3 / 100,000 population in Iceland and Luxembourg to a high of 6.7 / 100,000 population in Latvia. In all regional countries drowning is a top 10 leading causes of death for children and young people aged 1-24 years of age, whilst the highest rates of fatal drowning are in those persons aged 75+, however reflective of the largely recreational nature of drowning in EURO, the region has the highest rate of drowning in middle aged males 30-49 years, of any WHO region.

Whilst WHO technical guidance and the United Nations General Assembly resolution on drowning prevention calls for member states to develop data driven and evidence based drowning prevention strategies, these only exist in four countries and in no country were specific policies for the prevention of alcohol associated drowning (31% PAF), environmentally associated drowning (52% PAF), occupational drowning or relevant to the context of refugee/ migration crisis identified. Across the region, policies for WHO recommended drowning prevention interventions exist for pool fencing (n=6), rescue and resuscitation (n=12), disaster management (n=27), waterways (n=8), flotation device (n=3), swim skills (n=6), and watercraft safety (n=13) and other preventative activities (n=6).

This presentation will highlight ongoing challenges of drowning prevention in WHO's so called "safest" region, along with opportunities for scaling up prevention, commensurate to the burden and preventability of drowning.

The link between medical conditions and fatal drownings in Canada: a 10-year cross-sectional analysis

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Background

Drowning accounts for hundreds of preventable deaths in Canada every year, but the impact of pre-existing medical conditions on the likelihood of death from drowning is not known. We aimed to describe the prevalence of pre-existing medical conditions among people who fatally drowned in Canada and evaluate the risk of fatal drowning among people with common pre-existing medical conditions.

Methods

We reviewed all Canadian unintentional fatal drownings (2007–2016) in the Drowning Prevention Research Centre Canada's database. For each fatal drowning we established whether the person had pre-existing medical conditions and whether those conditions contributed to the drowning. We calculated relative risk (RR) of fatal drowning stratified by age and sex for each pre-existing medical condition using data from the Canadian Chronic Disease Surveillance System.

Results

During 2007–2016, 4288 people fatally drowned unintentionally in Canada, of whom one-third had a pre-existing medical condition. A pre-existing medical condition contributed to drowning in 43.6% (n = 616) of cases. Fatal drowning occurred more frequently in people with ischemic heart disease (RR 2.7, 95% confidence interval [CI] 2.5–3.0) and seizure disorders (RR 6.3, 95% CI 5.4–7.3) but less frequently in people with respiratory disease (RR 0.12, 95% CI 0.10–0.15). Females aged 20–34 years with a seizure disorder had a 23 times greater risk than their age- and sex-matched cohort (RR 23, 95% CI 14–39). In general, fatal drowning occurred more often while people were bathing (RR 5.9, 95% CI 4.8–7.0) or alone (RR 1.99, 95% CI 1.32–2.97) and less often in males (RR 0.92, 95% CI 0.88–0.95) or in those who had used alcohol (RR 0.72, 95% CI 0.65–0.80), among those with pre-existing medical conditions.

Interpretation

The risk of fatal drowning is increased in the presence of some pre-existing medical conditions. Tailored interventions aimed at preventing drowning based on pre-existing medical conditions and age are needed. Initial prevention strategies should focus on seizure disorders and bathtub drownings.

Crèche mother: case stories of some unsung heroes who have saved the lives of drowned children by cardio pulmonary resuscitation in rural Bangladesh

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Background

Every day forty Bangladeshi children under five drown. Studies show most drownings occur between 9 a.m. and 1 p.m. In three upazilas of two districts in Bangladesh, Project Bhasa was implemented to prevent drowning. Under this project, the Anchal or Crèche, which is administered by an Anchal maa (Crèche Mother) and her assistant, is specifically meant to prevent drowning to 20-25 young toddlers in that community. The 1040 Anchal maa and the assistant are not only protecting the children from drowning but also some of them are saving some lives of drowned children by giving Cardio Pulmonary Resuscitation. They availed this expertise by first responder training which is associated with the project.

Description

Zannati, Marium, Yasin, Robiul, and Zidan are some of the names who are living their second life because of some Anchal Maas. All of them are below five years and they sank into the nearby water bodies. All of them were rescued and they were unconscious. But five Anchal maas executed Cardiopulmonary Resuscitation as a first responder. As a result, these five toddlers are still in their mother's lap. The community calls the Anchal maa as the second mother as they protect the toddlers from drowning and come forward as a fairy when any drowning occurs.

Lessons Learned

None of these Anchal maa is highly educated, but this training made them confident to perform as first responders. As the design of the projects, all staff gets the first responder training. They did not have a second thought to react when the situation demanded their expertise. For the community, they became a role model, spokespersons, and sometimes opinion leaders. Their act as an Anchal maa has made them empowered.

Conclusion

Anybody may learn CPR and perform it if they are motivated to do so, regardless of their background, gender, or socioeconomic class. While Anchal Maas and her assistant aren't in the role of attempting to save people from drowning by teaching them how to swim they are skilled enough to be a life savior when drowned one rescued. They are the unsung heroes.

Water Safety Implementation Project: First steps to a Drowning Prevention Implementation Framework

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Background

Drowning is a global and preventable public health issue (1). In drowning prevention, practitioners come from diverse backgrounds (e.g. lifeguards, swim teachers, fishers) (2) with varying capacity for implementation and evaluation of public health interventions. Whilst implementation science has been used in clinical and community settings (3), its application in drowning prevention is new. The 'Water Safety Implementation Project (WSIP)' is developing a conceptual implementation framework suitable for drowning prevention interventions in high-income countries (HICs). The research aims to support practitioners to develop and implement evidence-informed drowning prevention interventions. This paper showcases WSIP Phase 1.

Description

Phase 1 was a systematic review of the peer-reviewed literature across eight databases for English-language studies published between 2002 and 2021 describing implementation of primary drowning prevention interventions in HICs. The Preferred Reporting Items for Systematic Review and Meta-Analyses guidelines (4) and MetaQAT quality appraisal framework (5) were applied. Outcome measures included: intervention, evaluation and implementation design. The Expert Recommendations for Implementing Change strategies and concepts were used to assess implementation. Semi-structured interviews with practitioners and researchers will elicit perspectives on current drowning prevention implementation to triangulate review findings.

Lessons learned

We found the drowning prevention literature provides recommendations and guidelines for research and intervention development without describing specific interventions or implementation (n=89). Of papers that described intervention and implementation (n=71), most focused on beach safety, CPR and swimming lessons. Descriptions of implementation strategies and concepts were inconsistent and lacked detail. Implementation strategies that adapt and tailor context; train stakeholders; and engage target groups were most frequently described. Themes from interview findings will be presented.

Conclusion

Initial findings suggest implementation practices in drowning prevention interventions are inconsistent. Outcomes will support recommendations to address gaps in implementation within drowning prevention in HICs and identify appropriate mechanisms for dissemination of findings from similar interventions. Subsequent project phases will engage experts to develop a drowning prevention implementation framework and tools to support practitioners to apply implementation strategies to enhance evidence informed interventions.

Human centred approach to drowning prevention among children aged 1-3 years, West Bengal, India

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Background

In the Indian Sundarbans, children aged 1-3 years are at highest risk of drowning deaths reported in this age group occurring within 50 meters of their home (1). The objective of our research was to co-design with communities a physical barrier drowning prevention intervention and implementation strategy for 1-3-year-olds.

Methods

To identify a suite of contextually relevant physical barriers we used a participatory process underpinned by design thinking methodology using the five stages of Empathise, Define (the problem), Ideate (the solution), Prototype, and Test. These included multiple rounds of in-depth interviews and community consultations. The ideated solutions were evaluated against the APPEASE criteria (2) which considers the affordability, practicability, effectiveness and cost-effectiveness, acceptability, side-effects/ safety. Draft prototypes of these solutions will be tested.

Results

The community identified the challenges with exposure to water around the households and suggested use of pond fences. Challenges around sustainability and cost were considered. In May- June 2023, across 8 administrative blocks or rural Sundarbans, 100 pond fences were installed by local craftspeople for households with children aged 1-3 years. These fences were strategically designed to limit a child's access to water, considering the specific needs and accessibility of each household. Primarily bamboo and fishnet were used for fencing, and the average cost of each fence was USD 120. Data collection for APPEASE criteria is underway.

Conclusions

This collaborative effort underscores the significance of tailored, community-driven solutions in addressing critical public health challenges.

Priorities to advance water safety and drowning prevention among high-risk and yet hard to reach communities in Uganda: A community needs assessment

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Introduction

Uganda has among the world's highest drowning death rate of 502 per 100,000 cases(1) affecting particularly children and young adults. This burden is disproportionately shared among high risk and yet hard to reach communities who are living by lake shores. Factors highlighted to contribute to the high rates of drowning include; lack of safety measures at water sources, lack of water safety education and training, and lack of emergency response services(2). We conducted a water safety and drowning prevention needs assessment in Namayingo District, Uganda, so as to develop culturally acceptable and sustainable interventions with community ownership.

Methods

We conducted a community-based participatory needs assessment from the 19th to 25th October, 2022. We conducted Key Informant interviews with the local leadership of Namayingo districts and Focus Group Discussions with the residents living near the shores of Lake Victoria and the Fishing community. The selection of the participants was done by the district leadership headed by the Chairperson in consideration of having all the six (6) Sub counties and three (3) town councils represented.

Results

Main findings highlighted the need for training community first responders with a major focus on the island sub-counties where the burden of drowning was greater. The training requirements included safety, fire safety, aquatic rescue and care of the drowning victims before taking them to hospital. To ensure sustainability, the water safety and drowning prevention training should also be extended to the Uganda Police Marine Unit/fire brigade community policy initiatives. Other key strategies highlighted to improve water safety included the introduction of life jacket loaner schemes to help raise funds to enable trained Community First Responders carry out their roles effectively in the community.

Conclusion

Training for community first responders was identified as a priority action for Water safety and drowning prevention. Innovations like life jacket loaner schemes were highlighted as one of the sustainable ways for the community to acquire water safety equipment.

Indonesian drowning prevention interventions, a review: Protecting vulnerable populations across the nation

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Background

Drowning is a public health challenge in Indonesia, especially for males and those aged under 5 and 70 plus years, who are associated with increased risk of fatal drowning events.¹ However, there is limited information on unintentional drowning preventive efforts to reduce the risk of drowning among vulnerable populations in Indonesia.² This study aimed to investigate the epidemiology and risk factors of unintentional drowning and explore existing prevention strategies in Indonesia within a socio-ecological health promotion framework.

Methods

A scoping review, guided by PRISMA-ScR, was conducted to locate peer-reviewed studies and government reports/policy documents published until May 2023, in English or Indonesian language, using MEDLINE (Ovid), CINAHL, Informit, PsycINFO (ProQuest), Scopus, SafetyLit, BioMed Central and Google Scholar, Indonesian journal databases (Sinta, Garuda) and government agencies websites. Unintentional drowning deaths screened included unintentional, disaster-related, and water transport-related drowning deaths.

Results

This review identified a paucity of information on unintentional, water transport-related and disaster-related drowning rates, risk factors and prevention in Indonesia. No studies on drowning risk and prevention targeted children under five and elderly populations. This review observed an over-reliance on individual-focused preventive measures, particularly health information/education on first aid for drowning victims, despite the evidence on the importance of comprehensive multi-strategy approaches. This leaves the research area of community participation and advocacy in creating safe environments, and development, implementation and evaluation of water-safety policy instruments relatively neglected.

Conclusions

Limited information on drowning rates, risk factors, and drowning prevention initiatives in Indonesia exists, highlighting the need for; improving drowning surveillance to ensure the availability and reliability of drowning data; strengthening research to understand the risk factors for drowning; and advancing delivery of drowning prevention programs. Further policy development and research focusing on health promotion strategies that reflect a socio-ecological approach to drowning prevention in Indonesia is imperative.

Drowning Prevention in Malaysia: A journey from Global Report on Drowning to hosting WCDP 2015 till WCDP 2023

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Background

The Global Report on Drowning have listed few evidence-based interventions that are effective at preventing drowning which includes development of national water safety policies teaching and school-age children basic swimming skills which led the journey of drowning prevention in Malaysia.

Description

Leveraging from the Global Report on Drowning in 2014, led to hosting the WCDP in 2015 led by private organization LSSM. Subsequently in 2016, the government announce the formation of Water Activity Safety Council of Malaysia a multi sectoral council to drive drowning prevention. Taking the lead from proven interventions on drowning prevention, Safe Kids Malaysia UPM initiated swimming classes for children (new learners) during school holidays as a pilot program and has proven successful in terms of children ability to swim within the 10 days. In 2023, Ministry of Youth and Sports Malaysia announced it will run complimentary swimming classes for children from the economically challenged community using the government existing resources and facilities in high prone drowning areas. This is a good, targeted intervention at large scale and is expected to create an impact in long run nationally.

Lesson learned

For complimentary swimming classes to take off, run well and sustainable, the stakeholder who is initiating and driving it must own the facility and resource person to deliver it directly instead of seconding it to others or hoping / expecting other partners support in gratis. To initiate the intensive swimming classes during school holidays when children are free from school time and parents are free to transport them for the classes. Also drowning incidents in Malaysia tend to spike during school holidays when children are free and have the time to go to the water body (beach, waterfall, river, ponds and swimming pool). Having swimming classes during the same free period time could contribute to keep children safely with us during the swimming classes.

Conclusion

Global Report on Drowning led to hosting of WCDP 2015 which led to formation of Water Safety Council in Malaysia. Implementing proven interventions, by beginning with pilot and later scaling it to national level should be the way forward in any initiatives.

A Study on the Successful Method and Response of Drowning Prevention in Korea

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The purpose of this study is to inform the results of Korea's efforts to reduce drowning accidents and the characteristics of drowning incidents and to contribute to drowning prevention in low-income countries by identifying various drowning prevention measures. Comparing the current status of drowned people in Korea and around the world, the number of drowned people in Korea was 2,761 in 1983 and 1,843 in 1991, but after the enactment of Korea's Water Leisure Safety Act in 2000, it decreased by more than 83% to 646 in 2011 and 462 in 2021. Globally, the number of drowned people fell by 45 percent to 531,956 in 1990 and 295,210 in 2019, while the number of drowned people in Korea dropped from 1,490 in 1990 to 470 in 2019, the second highest in the world after Singapore at 69 percent. So far, Korea's efforts to reduce drowning show the result of improving Koreans' awareness of drowning prevention, deploying water safety personnel, and strengthening lifesaving education, which is mandatory in elementary educational institutions, to middle and high schools. Despite these efforts, 147 people drowned in water during from 2017 to 2021 occurred intensively in rivers or rivers (40.1%) and valleys (26.5%) in July (38.1%) and August (49.7%). By cause of the incident, there were 49 people in their 50s or older and 54 people in their 10s to 20s by age group, including inexperienced swimming (31.3%), safety carelessness (29.3%), and drunk swimming (17.0%). To make efforts and preparations for drowning prevention, the Korea Lifesaving Association and KLA's national branches will step up educational activities to strengthen underwater lifesaving education and safety awareness of drowning prevention with the South Korean government's efforts. Based on this experience of drowning prevention, Korea Lifesaving Association in South Korea hopes to contribute to preventing drowning in Thailand by selecting Thailand among the southeast Asian countries with the most frequent drowning incidents.

Social cognition predictors of drowning preventive behaviours: A meta-analysis

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Background

Scholars have sought to investigate the factors which precipitate unintentional drowning with the ultimate goal of creating evidence-based behaviour change strategies. One key avenue of research has been the investigation of the beliefs and cognitions which predict people's engagement in behaviours which exacerbate or reduce their risk of drowning. However, despite the value of individual studies, to date there is yet to be an empirical synthesis of the evidence regarding the social cognition predictors of unintentional drowning related behaviours. Therefore, we aim to conduct a meta-analysis of studies examining the determinants of drowning preventive behaviours (e.g., lifejacket wear, supervision of children, limiting alcohol). Specifically, the study aims to meta-analyze correlations among constructs (e.g., attitude, risk perception, self-efficacy) from key social cognition theories (e.g., theory of planned behaviour) and use them to test theory predictions and effects of salient moderators.

Methods

A systematic search of Web of Science, SCOPUS, Embase, PsycINFO, PubMed, and Medline databases identified 6753 potential studies of which 52 provided correlations between at least one theory construct and intention or behaviour for drowning preventive behaviours. Theory predictions are tested using meta-analytic structural equation modelling. Studies are also coded for candidate moderators of model effects (e.g., age, gender, country-type, publication status, study design, length of follow-up, behaviour type, and type of assessment), with the proposed models estimated at each level of the moderators.

Results

Results are expected to support theory predictions with attitude, subjective norm, risk perception, and perceived behavioural control predicting behaviour mediated by intention; and perceived behavioural control and intention directly predicting behaviour. Model effects hold when controlling for past behaviour, supporting the sufficiency of the theory in this behavioural domain. Few moderator effects are expected on relations between theory constructs.

Conclusion

Findings identify important social cognition determinants of drowning preventive behaviours, highlighting potential processes by which they relate to behaviour. The tested model signposts potentially modifiable targets for behavioural interventions aimed at fostering safe behaviours around water, ultimately saving lives.

An in-depth study of drowning among children under 5 years of age in Thailand

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Background

Drowning is the leading cause of death among children under 15 in Thailand. Children under 5 years of age died from drowning as the second highest number after the 5-9 years old group. The objectives of this study were 1) to understand the in-depth causes of drowning among children under the age below 5 years old, 2) to identify risk factors, and 3) to provide recommendations on measures to prevent drowning incident.

Method

In-depth phone interviews with community leaders and staff of sub-district health promotion hospitals were conducted using an interview form and snowball sampling technique. Case study data were collected from May to August, 2021, which consisted of 40 cases of children under 5 years old who died from drowning. There were 41 children who died in 26 provinces from all 5 regions of Thailand. Data analysis and presentation uses content analysis to reflect the narrative and sentimental statements of those who perceive or experience the event. The Haddon Matrix was used to analyze the risk factors.

Results

Children in both age groups (aged 0-2 years, 3-4 years) have similar family characteristics, with the main caregivers being the father and mother (50.0%, 59.1%), poor families (50.0%, 54.5%) and caregivers had primary education (50.0%, 36.4%). Risk factors for children in both age groups were supervisor performs other tasks/chores (negligence) (66.7%, 59.1%) and leaving the child alone (16.7%, 40.9%). The water sources in which drowning incident occurred, children aged 0-2 years were household containers such as buckets and water jars (33.3%), while children aged 3-4 years were water sources far from home such as public pools (21.8%).

Conclusion

From the study, it was found that young children drowning in a body of water within the house or not far from the house. It often occurs when caregivers carelessly. Therefore, families have an important role to prevention and rescue. Including communities and relevant agencies should set relevant policies as follows: 1) establishing a safe play area for children 2) public relations and campaigning to raise awareness 3) CPR training to parents/caregivers and 4) investigation of all child drowning cases.

Analysis on fatal child drowning in-depth survey in 3 provinces of China, 2022

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Background

Drowning is the leading cause of death among children aged 1-14 in China, but available knowledge about epidemiology of fatal child drowning is scattered in China.[1] This study explored the characteristics of fatal child drowning in China through the in-depth survey and provided evidence for the prevention in the future.

Methods

3 provinces with all 259 counties in the east, west, and south of China were selected as the research sites. Based on National Mortality Surveillance System (NMSS) [2], drowning deaths with ICD-10 coding of W65-W74, X36-X39, V90, V92, X71, X92 and Y21 among children aged 0-17 in research sites in 2022 were included in the in-depth retrospective survey. Household and telephone surveys were used in this study with structured questionnaire.

Results

In 2022, there were 1,310 drowning deaths of children aged 0-17 in three provinces of China. Excluding denied access and invalid information, 648 cases were investigated. Among 648 child drowning deaths, 84.72% was unintentional, and 8.8% was suicide. The proportion of suicidal drowning was 22.45% in 15-17 aged group. The main bodies of water where child drowned were water storage containers at home(50%) in the <1 year old group, public water storage facilities(47.33%) in the 1-4 year old group, public water storage facilities(43.31%) and open natural waters(43.31%) in the 5-9 year old group, and open natural waters(64.91%,70.41%) in the 10-14 and 15-17 year old groups. Among all drowning deaths, only 3.24% Drowned children mastered swimming skills. The proportion of drinking before drowning was 9.18% among children aged 15-17, whereas the average was 3.7%. There were 73.92% drowned children without adult caregivers when drowning. 42.44% drowned children were rescued at the drowning scene, but only 15.64% of them received CPR within 10 minutes.

Conclusions

Younger children should be concerned about drowning prevention associated with water storage containers in and around the home, and older children should be concerned about open water drowning prevention as well as suicidal drowning and alcohol consumption risk factor. Enhanced parental care water safety skills, and safe rescue and resuscitation training are priority areas for future child drowning prevention.

Scuba diving fatalities in Australia – an overview

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Background

Because scuba diving is conducted in a hostile environment injuries and deaths are inevitable. With its long coastline and mix of temperate and tropical waters, scuba diving is a popular recreational activity in Australia for both residents and international tourists. Formal reporting of scuba deaths began in 1965 and has continued since, being arguably the most comprehensive collection of reports internationally. The Australasian Diving Safety Foundation (ADSF) maintains a database of all known scuba, snorkelling and surface-supplied breathing apparatus deaths.

Methods

The ADSF database, media reports and the National Coronial Information System were searched to identify scuba diving deaths. Diving activity was estimated from Australian Sporting Surveys and the corresponding fatality rate was calculated using ADSF fatality data. Deaths from 2001-2018 were examined for continued or emerging trends.

Results

There were 456 recorded scuba deaths in Australia from 1965 to 2021. Annual deaths rose steadily until 1991 and then stabilised to an average of nine per year since 2000. with the age of victims increasing significantly over time. It was estimated that approximately 85,000 Australian residents are active divers who do around 1.5 million dives per year. The fatality rate was estimated to be 0.46 deaths per 100,000 dives (8.49 per 100,000 divers).

From 2000-2018, there were 164 scuba deaths, including 125 males and 39 females with an average age of 46 years. 37% were overweight and 42% obese with the prevalence of obesity rising over time. At least 44% were inexperienced divers, 20 of whom were undergoing open water training or a scuba experience. At least 37% were disabled by primary drowning, 26% by a cardiac event and 13% by cerebral arterial gas embolism (CAGE). Pre-existing medical conditions, predominantly cardiac disease, likely contributed to half of these deaths with inexperience and poor buddy systems being other major contributors.

Conclusions

Advancing age, obesity and the associated cardiac disease have become increasingly prevalent in scuba fatalities and the need for appropriate assessment of fitness to dive is evident. Poor buddy monitoring and lack of positive buoyancy in an emergency remain problems to be addressed by further education and practice.

Swimming out of your depth: Tourist drowning in Australia from 2008 to 2018

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Objective

Australia is a popular travel destination for international visitors. Common reasons to visit Australia include holiday/vacation, visiting friends/relatives, business, and study. Despite purpose of travel, international visitors have been found to be at a higher risk of injury or death when travelling to unfamiliar locations. This study therefore reviews international visitor drowning deaths in Australia and analyses drowning by visitor type.

Methods

A total population retrospective study exploring drowning deaths of international visitors was conducted between 2008-2018. Data were extracted from the Royal Life Saving National Fatal Drowning Database, the original data source being the Australian National Coronial Information System (NCIS). Only deaths where unintentional drowning was determined as the primary or contributory cause of death are included in the database and in this study. Visitors were categorised into four sub-groups: overseas tourists, international students, working holiday makers and work-related visitors. Descriptive statistics, non-parametric tests and relative risk (RR) were calculated.

Results

201 international visitors drowned in Australia, 7% of all drowning deaths; a crude drowning rate of 0.27/100,000 visitors vs. 0.95/100,000 for residents (RR=0.19 [95% CI:0.16-0.22]). Most deaths were males (79%) and people aged 18-34 years (50%). Visitors frequently drowned at beaches (33%), and when swimming (41%). Thirty-five percent recorded a pre-existing medical condition. Alcohol was present (BAC \geq 0.05%) in 10.9% of deaths. Queensland (72.0%) and Western Australia (70.3%) recorded the highest proportion of overseas tourist deaths. Overseas tourists on holiday were the most likely to drown compared to the other visitor sub-groups (64.2%, $p < 0.001$), half (50.4%) of which were aged \geq 55 years.

Conclusion

International visitors represent a small but increasing proportion of people drowning in Australia. The circumstances of which visitors drown varies by travel purpose, age, country of origin, location of drowning and activity. Visitors have unique safety needs, and a broad one-size fits all prevention approach may not be effective for reducing drowning among this diverse population.

Drowning Prevention Solutions for Iranian Nomadic Tribes during their Seasonal Migrations

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In this article we are going to discuss about the Drowning Preventions solutions regards to one of the major tribes in Iran. The name of the tribe is "Bakhtiaris".

Historian researchers shows Bakhtiaris originally was in Chaharmahal Province, then expended in a couple other near provinces during the last thousands of years. Now all of the clans still have very similar cultures including lifestyle, beliefs and habits.

Bakhtiaris have animal husbandry lives and therefore they need to have sufficient food for their animals. For six months there are good sources of food in their local environments, but in the next six months because of the low temperature and snowfall all of them have struggle to feed their animals, and therefore all of them must do seasonal migrations toward the South where have lots of natural sources which could feed them and their animals. Usually their migrations start sometimes in October and lasts till February or even March, and then they returned back to their original regions. The movement of tribe first start from their original locations toward South and then to South centre and also East which ended in North to middle part of the Khouzestan Province. Then stay in their destinations for few months, and finally return back. During these seasonal migrations, they have to pass many small and big rivers and sometimes variability of the river's conditions can cause drowning to them.

This article is based on my own research, and few other sources that mostly are related to the Bakhtiari Tribe culture and migrations details.

This article is going to concentrate and explain the below subjects:

- 1) Introduction the Tribe's cultures, and also their seasonal migrations & movements.
- 2) Explains the causes and the number of the drowned people and the animals, and the in relation between.
- 3) Present and describe some plans and solutions which could decrease number.
- 4) Descriptions about the challenges, strengths and weaknesses about the plans and the procedures.
- 5) And also, the benefits of this research for the other ILS members with similar situations and migrant tribes.

Impacts of the COVID-19 pandemic on aquatic-related activities and water safety knowledge within the general Victorian population

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Background

The COVID-19 pandemic had numerous impacts on the livelihood of people in Victoria, Australia; and in 2020/21, Victoria witnessed a two-decade high in the number of fatal drownings¹. Water safety messaging is one approach to drowning prevention, however, anecdotally can often be perceived as 'preaching to the converted', as many recipients claim to already understand water safety or have involvement in aquatic-related settings. It can therefore be difficult to ascertain water safety knowledge and aquatic-related abilities and preferences within the general population; and thus, provide more targeted prevention efforts at those groups deemed most vulnerable to drowning.

Methods

From 2018/19 to 2022/23, an online survey was conducted annually through social research data collection agency I-view (Ipsos Observer), and gathered information on aquatic-related behaviours, visitation patterns and knowledge of water safety messaging; and how these were impacted in pre-, during- and post-pandemic years. Respondents were selected via a random sampling process, including quotas placed on location, gender and age according to population distribution and demographics.

Results

Overall, 3,649 participants completed the survey over the five years. When compared to pre-pandemic years, there were changes to both aquatic recreation preferences and water safety messaging channel preferences. Pre- and during the pandemic, there was high participation in swimming, whereas post-pandemic, preferences for water-based activities including fishing, boating and watercraft increased. Post-pandemic, messaging via free-to-air television decreased, and there were also observed decreases in prompted water safety message recall from pre- to post-pandemic.

Conclusions

By understanding the aquatic activities, behaviours and attitudes within the general population, as well as how these may have changed since pre-pandemic times, it can be understood both where to target drowning prevention efforts in Victoria, such as, increasing relevant messaging for fishing, boating and watercraft, instead of primarily swimming; and how best to reach audiences to promote these messages. This survey could also act as a precedent for other Australian states and high-income countries to assess water safety knowledge and aquatic preferences and abilities within the general population.

Defining and characterising the leading environmental risk factors in UK drownings: An expert-led consensus statement using a modified Delphi method

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Background

Successful drowning prevention measures must be specific to drowning circumstances and causal factors (1). Identifying risk factors is a critical step in the World Health Organization's Drowning Prevention Implementation Guide (2). Whilst demographic risk factors (i.e., age and sex) are well-researched, the role played by characteristics of the environment (environmental risk factors; ERFs) remains unclear (3). Although not yet determined, it seems plausible that ERFs will differ depending on location (coastal vs. inland) and intent (unintentional vs. intentional drowning). If so, targeted prevention measures should account for these differences. The present study was designed to produce expert-led consensus on the role of ERFs in United Kingdom (UK) drownings, with the ultimate aim to inform prevention strategies and reduce drowning incidence.

Methods

A three-step modified Delphi method was used. Fifteen drowning prevention experts voted on 831 statements informed by published research and the UK's Water Incident Database. Statements were divided into 4 categories: coastal, inland, unintentional, and intentional drownings. In Round 1 experts voted to "agree", "disagree", or "neither" on statements and identified leading natural and man-made ERFs for each category. Statements required 80% agreement to be accepted. In Round 2 experts voted to "support" or "change" their views on statements that were unaccepted in Round 1. In Round 3 experts met to discuss voting against key remaining statements.

Results

A total of 102, 78 and 16 statements reached consensus in Rounds 1, 2 and 3 respectively. Cold water, rip/adverse currents and heat waves/spikes in air temperature were all leading natural ERFs for coastal, inland, and unintentional drownings. Cliffs and viewpoints were leading natural ERFs for intentional drownings. The leading man-made ERFs included alcohol outlets for all categories, reservoirs for inland and unintentional drownings and bridges for intentional drownings.

Conclusion

Consensus was reached on 196 statements, enabling the development of a clear definition for ERFs in UK drownings and characterisation of leading ERFs in coastal, inland, unintentional, and intentional drownings. This evidence can now be used to ensure that UK drowning prevention measures are specifically targeted based on the leading ERFs for different drowning circumstances.

Investigating spatial variation in drowning incidence across the United Kingdom: a geospatial cross-sectional

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Introduction

Globally, drowning is the third leading cause of unintentional injury death, accounting for 7% of all injury-related deaths. Limited research has considered using Geographic Information Systems (GIS) to identify hot-spots (clusters) of drowning events with even less if any research conducted at a nationwide scale. While geospatial methods have a long history of use in public health their application to injury data, especially drowning incidence, is still relatively novel and underutilised. Therefore, this study aimed to examine the spatial clustering in UK drowning incidents.

Methods

Data were obtained from the recently validated Water Incident Database (WAID) (1/1/2012–31/12/19). We examined spatial clustering of intentional and unintentional drownings using a density-based spatial clustering of applications with the noise method (DBSCAN). Intentional and unintentional events were delineated to establish thresholds for cluster identification for moderate, high and very high priority areas respectively, all within a 500-metre radius (i.e., 5-7 minute walk) of the water network.

Results

We identified 2 very high priority (minPts 8), 5 high priority (minPts 6) and 21 moderate priority (minimum points [minPts] 4) areas for unintentional drowning. In this study, 'very high priority' for unintentional drownings translates to on average, at least 1 drowning event per year. This study also identified 4 very high priority (minPts 16), 16 high priority (minPts 8) and 36 moderate priority (minPts 4) areas for intentional drownings. Collectively our findings highlight key differences in patterns of intentional and unintentional drownings representing a potential gap between the traditional focus of drowning prevention aimed at preventing unintentional drowning and a lack of focus on the prevention of intentional drowning.

Conclusion

Our findings serve to identify priority spatial locations which provide important foundations for drowning prevention interventions. Currently, at a population-level of intervention, public health and injury prevention fails to acknowledge the wider structural, environmental or economic determinants of spatial variation in drowning incidents; our study fills this important research gap. Importantly, we also differentiate between intentional and unintentional hot-spots. Prevention efforts should now consider the wider determinants of drowning in these areas, including accounting for the evident spatial patterns in drowning events.

Alcohol outlets, crimes, and drowning: a geospatial study of England and Wales

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Background

Drowning causes >370,000 deaths annually. The World Health Organisation (WHO) and United Nations emphasise the need to improve quality and understanding of drowning data to inform water safety policy. Alcohol consumption elevates drowning risk [1, 2] and proximity to alcohol selling outlets is associated with more hazardous drinking and crime [3]. We audited the UK drowning database against WHO quality criteria before assessing the availability of alcohol sales and frequency of crimes in locations in which people drowned.

Methods

Anonymised fatal drowning data covering 2012-2019 (n=5,051) were obtained. A two-phase database audit was conducted to verify data quality and allow onward analysis. Secondary data describing the coordinates and nature of alcohol outlets and street-level crimes in England and Wales were accessed through public sources. Euclidian 'buffers' with radii of 125, 250, and 500 m were created around the coordinates of each drowning event, before spatial joins created datasets including details about each fatality alongside the number of on-premises and off-premises alcohol outlets, and number of crimes within the surrounding buffers. Multinomial logistic regression assessed changes in the likelihood of a drowning representing a particular 'type' as the number of alcohol outlets or crimes increased. To ensure consistent geographical coverage, this analysis covered drownings occurring within England and Wales (n=3,499).

Results

Audits indicated 84% completeness for 111,122 potential database field entries, whilst good agreement (79-80%) was recorded when blinded auditors compared dummy entries with 'true' database records. The presence of on-premises and off-premises alcohol outlets and street-level crimes were associated with differences in the likelihood of drownings conforming to a given 'type'. For example, greater presence of alcohol outlets was associated with increased likelihood of a drowning being linked to alcohol intoxication (implicated in ~16% of deaths), whilst more crime in the area was associated with increased probability of a drowning being because of crime as opposed to an accident. Other relationships were identified, including differences between male and female victims.

Conclusion

The UK database is rigorous, transparent, and effective; meeting WHO data requirements. Different drowning circumstances reflect differences in the presence of alcohol outlets and crimes at the location.

Identifying risk factors for fatal UK drownings: establishing an evidence base to inform key steps of the WHO drowning prevention implementation guide

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Background

Drowning is a significant cause of unintentional and intentional death in the United Kingdom (UK). In 2021 there were a total of 616 drowning deaths; 42% comprised accidents and 32% comprised suspected suicides (1). Whilst the UK invests significant resource in to drowning prevention, the risk factors for drownings are nuanced and consequently it is difficult to establish causative links between events. Hence targeted interventions are needed to advance drowning prevention through data collection and well-designed studies; critical steps on the 2017 World Health Organisation's (WHO) drowning prevention implementation guide (2). We describe our data informed approach across a multidisciplinary research team to developing the evidence base to 'analyse existing data and improve data collection' and 'identify risk factors' specific to fatal UK drownings.

Method

We undertook a six-step process including i) data audit of fatal data from the UK Water Incident Database (WAID); ii) Establishing risk factors at the individual level; iii) Establishing research programmes to identify environmental risk factors (ERFs) iv) Development of research methods to undertake geospatial analysis to identify drowning hotspots v) Develop research methods to verify individual and ERFs at hotspot locations vi) Report key findings to stakeholders.

Results

Our programme of work revealed i) WAID is a rigorous transparent database suitable for onward research (3) although recommendations for improvements were made; ii) Individual level risk factors confirmed males comprised ~74% of drowning cases with the majority in the 19-35 years age category (iii). Suspected unintentional and intentional drownings comprised 44% and 35% (i.e., suicides) of cases respectively; 3) Distinct ERFs were identified by location (inland vs coastal) and intent; iv) Hotspots for intervention were identified according to moderate, high and very high-priority drowning clusters; v) Site visits and secondary data analysis specific to drowning hotspots verified individual and ERFs vi) Stakeholder feedback indicated the potential for evidence informed change to drowning prevention strategy and policy in accordance with these findings.

Conclusion

We adopted a six-step approach to enable change to the UK's approach to collating drowning data, informing prevention and enabling adherence to the 2017 WHO drowning prevention implementation guide.



SWIMMING

Pedagogical tools for aquatic literacy development

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The Aquatic Literacy for all Children project (ALFAC) was born from the recognition that the Aquatic Literacy (AL) development is probably the major challenge for the aquatic professionals. AL involves aquatic skills, knowledge and psychosocial domains to ensure drowning prevention, motor development and a long live involvement. A European consortium in the field of learn-to-swim agreed to map the AL of 6 to 12 years-old children and build pedagogical tools to support the instructors teaching. While some care exists when implementing aquatic programs on the learn-to-swim context, most still fail not having a holistic approach to the individual (Mekkaoui et al., 2022). It is now necessary to build an aquatic pedagogical toolkit, ensuring a multi-cultural approach, to fully develop children and raise the level of AL across Europe.

After AL mapping, a large number of friendly-user pedagogical exercise situations, videos and interactive materials were built to conduct instructors intervention, especially in the weaker domains. Evaluation tools were also included to allow appreciation of children's improvement while ensuring the aquatic safety and motor development. Those tools were initially disseminated through a small aquatic instructors sample in each country followed by a questionnaire to evaluate its feasibility and relevance. Then smooth changes were made to make each tool more relevant to different settings.

ALFAC sees instructors as active persons in tools redefinition. The final ALFAC issue is to create an on-line tool that supports instructors practice on drowning prevention and children's motor development, in the three domains of the AL. The strength of these tools is that they allow sharing of best practices from several countries hoping that can raise the level of AL in children across Europe and enabling them to enjoy the aquatic environment safely throughout their lives.

National Swimming and Water Safety Framework & Benchmarks: A structured and consistent understanding of swimming and water safety education in Australia.

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Background

The National Swimming and Water Safety Framework was developed in 1999 and endorsed by the Australian Water Safety Council who prescribed that every Australian child must be given the opportunity to acquire and maintain a minimum standard of water safety competency.

Following a National Symposium on Swimming and Water S

afety Education in 2017, a review and revision of the Framework and Benchmark was undertaken and the new version was launched publicly in 2020.

Description

The overarching aim of the National Swimming and Water Safety Framework is to enable individuals to develop the skills, knowledge, understanding, attitudes, and behaviours required to lead safe and active lives in, on and around a range of aquatic environments.

To achieve this aim, the Framework sets out to support a structured and consistent understanding of swimming and water safety education across Australia and guide those responsible for developing, providing, or selecting a swimming and water safety program.

The Framework is intended for those who influence the learning opportunities and experiences of individuals in developing swimming and water safety capabilities. This includes Government, the Education sector, swim schools, swim teachers, parents and individuals.

The Australian Water Safety Council have prescribed three National Benchmarks for Swimming and Water Safety. The National Benchmarks are a set of skills that are to be achieved at the ages of 6 years, 12 years and 17 years. These benchmarks provide a measure regardless of the program, delivery agent or lesson format. They allow for the ability to compare children of a similar age and to compare different systems or the same system over time.

Conclusions

The Swimming and Water Safety Framework provides guidance for best practice, well-balanced and holistic program development and ensures that water safety, personal survival, rescue and lifesaving skills are key elements of quality curriculum, shifting the focus from the competitive aspect of swimming skills.

The National Benchmarks together with the Framework, provides clear development milestones and measuring points for students to be assessed against. This is vital to understanding the achievement levels of children, identifying gaps in provision and skill attainment and where intervention is required.

Basic Aquatic Skills and the German Prüfungsordnung – how to improve swimming and lifesaving skills on scientific basis as well as on nationwide cross-organizational cooperation

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The DLRG describes three to four training levels in its swimming education:

1. Familiarisation with water, 2. Basic skills, 3. Safe Swimming Skills, 4. (Competent swimmers)

Familiarisation with water includes perceptions and adaptations to the physical properties and effects of water. If fear-free and purposeful movements succeed, learners are accustomed to water. This is a prerequisite for the solid acquisition of basic swimming skills like breathing, diving, gliding, jumping, hovering, positional changes and later techniques, necessary for the development of propulsive movements in the water.

Safe swimming in deep water is understood as fulfilling the requirements of the bronze swimming badge (Deutsche Prüfungsordnung – DPO - Code of examination and certification)*. This includes, for example, jumps into deep water and leaving the water independently without aids after a swimming distance of 200m. Building on this, a competent swimmer could be able to fulfil the requirements of a lifeguard badge.

The training levels with Safe Swimming Skills as the core element can be understood as standards of modern, methodically structured swimming lessons in our association and around Germany.

Challenge

The level of training in swimming is declining in Germany. Empirically, a complex set of causes is held responsible for this. One explanation is that too little attention is paid to the basic skills in training and that a swimming technique is taught far too quickly. In this respect, it is important to reflect the competencies that we expect from a technical point of view in the examination requirements of the DPO.

Goal

Accordingly, there is a future need for a greater focus on basic skills training. Its aim is to enable learners to experience and use the resistance and environmental conditions in the water as much as possible for their own controlled movements. As didactic learning goals, the basic skills are not interchangeable. In the further acquisition of competencies, there is a constant need to return to these elementary movement sequences, which should determine the lessons in a methodically varied way. Failure to develop basic skills is difficult to compensate for in further training and leads to a delay in the learning process.

Developing a framework for Lifelong Involvement in Water Safety Activities.

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Background

Athlete Development frameworks focusing solely on long term sporting development are used worldwide. Water Safety Ireland have adopted the Lifelong Involvement in Sport and Physical Activity (LISPA) framework because it recognises that not everyone wishes to participate in formal sporting activities (1). LISPA acknowledges the necessity to ensure children develop physical literacy skills in a fun and structured environment. Without these, many will drop out of physical activities due to feelings of incompetence. Swimming and lifesaving teachers encounter children at an age where the development of these skills is crucial.

The LISPA framework recognises different activity levels but it does not outline clear pathways for these. WSI has started to address this shortfall by outlining how people with varying levels of interest can remain involved.

Description

Lifesaving pathways for all levels of interest, including sport, employment, volunteerism and everyday activities are outlined. These can be pursued regardless of age, socioeconomic background or preferred levels of physical engagement.

Defined pathways utilise existing WSI qualifications and highlight lifesaving as a crucial life skill within this extended framework.

This extended framework aims to ensure:

- Teachers follow best practice with regard to the development of basic literacy skills.
- WSI volunteers are better informed to advise participants about suitable pathways, thus encouraging adherence.
- Involvement in WSI is viewed as a lifelong pursuit.
- Volunteerism is positively viewed alongside commercial activities.
- Guidance with regard to advertising and education.
- The content of awards is relevant
- The adoption of a water safety perspective to everyday living.

Conclusions

This is the first attempt to outline a variety of lifestyle pathways within WSI. The focus on the development of early literacy skills increases the likelihood that people will adhere to some form of physical activity. This will contribute to the fight against sedentary lifestyles by outlining ways in which people can remain active in aspects of life saving. Activities taking place in open water is a positive for those without swimming pool access.

It is anticipated that the extended framework will encourage ongoing involvement within WSI by defining clear pathways for engagement.

Creating Sustainable National Drowning Prevention Program Through Integration into Public School Curriculum

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Background

In line with the 10 Year National Program on Child Drowning Prevention, the Ministry of Education and Training developed a strong policy for a child drowning prevention program in their school systems. It aims to reduce drowning cases by 10%, with at least 80% of students learning water safety skills and 50% of students aged 6-15 learning survival swim by 2025.

Description

Since 2021, the Global Health Advocacy Incubator partnered with the Ministry of Education and Training to adapt the manual guidelines for survival swimming and water safety education for primary and secondary school curriculums. The Ministry released a Circular making it mandatory that all school systems adopt these guidelines by October 2023. It includes the compulsory criteria for "Zero Drowning Cases" at school, water safety curriculum in primary and secondary schools, the launch of survival swim programs based on the local infrastructure conditions and geographic features and requires a solid investment from all school and local authorities for the interventions. Using the nationally standardized training curriculum for water safety education for physical education teachers and school health staffs, at least 600 physical education teachers were trained over the last three years. The ministerial guidelines for first aid of common injuries and drowning were also developed and made available as both online and offline resources. School-based communication campaigns were undertaken annually in close partnership with local authorities and were prioritized in the highest burden areas.

Lessons learned

Strong direction from the ministerial level to the local level is key to sustainability. Standardized guidelines and capacity building for water safety education should be developed from global best practices and adapted to the local context to ensure effective implementation. The integration of child drowning into the safe school movement, as well as routine monitoring of child drowning and safe school performance will be key in evaluation. School based communication campaigns should target high risk areas, especially before summer vacation.

Conclusions

Integration of drowning prevention into the school system is necessary for sustainability of infrastructure and to meet safe school goals. Further investment is required with public and private resource mobilization.

Survival Swim Learning: Role of Gender, Age and Practice among Vietnamese children aged 6-15

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Objective

Drowning is a major cause of mortality in Viet Nam, particularly among children under 15. This study aimed to assess the effectiveness of the survival swim program using direct pre and post comparisons with and without adjustment for age, gender, and number of practices.

Methods

A survival swim program was implemented in 12 provinces for children aged 6-15 years. 14,460 children enrolled in the program during 2019-2022 and their swimming ability was assessed at baseline. The children then underwent 16 swim lessons, which focused on basic water safety knowledge, ability for flotation in 90 seconds and swim within 25 meters. The final swim ability was assessed on the last day of the child's participation. The effectiveness of the survival swim program was measured using direct pre and post comparisons with and without adjustment for age, gender, and number of practices.

Results

The pass rate was 93,7% among the 14,460 children who participated in the survival swim program. The swimming ability varied by age, gender, and attendance. Normally, the older children demonstrated greater proficiency, students aged 6-8 had the lowest passed rate on skills tests than in older grades, with an approximate passed rate of 48%. According to the trend, the best swimming ability is in the middle age group, especially the students aged 9-12(84,9% and 72,1%). Additionally, there was a strong association between practice and accelerated swimming ability. Students attended at least nine sessions and the more sessions they attend, the higher the pass rate, up to 85.6% if they attend all 16 lessons. The completion and pass rates of boys are higher than that of girls.

Conclusion

The survival swim program was effective in building swimming skills in children aged 6-15 years. The study's findings support the implementation of survival swim programs as part of drowning prevention solutions in Viet Nam and other regions with highest burden of drowning.

Impact of Swim Lessons on Unsupported Water Competency Among Young Children

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Background

Drowning is the leading cause of death among children aged 1 to 4 years in the United States. Learning to swim in addition to other interventions could help prevent drowning. Children aged ≥ 1 year may be able to attain some water competency components. The objectives of this project were to 1) pilot developmentally appropriate swim lessons in under-served communities among young children; 2) assess if children aged 1 to 5 years could demonstrate unsupported (i.e., no support by an adult or flotation) levels of water competency; and 3) examine the impact of different levels and numbers of swim lessons on water competency development.

Method

Two levels of swim lessons were offered: 1) Parent and Child Aquatics (PCA) for children aged 1 to 3 years where caregivers were paired with their children or 2) Preschool Aquatics (PSA) for children aged 3 to 5 years without caregivers in the water. Nine components of water competency were assessed through direct observation during the first and last lesson using a validated instrument. Each component consisted of ordinal behavioral levels, where unsupported skill was the most advanced level. Children participated in 12-18 lessons over 3 sessions. Additionally, improvements in five of the nine components were assessed in children who received only 4-8 lessons.

Results

Children in the PCA group showed significant improvements in 2 of 9 components while PSA children showed improvements in 8 of 9 components. PSA participants showed increased improvements in the observed components compared to PCA participants of the same age. Although significant improvements in water competency components were observed, most children did not demonstrate unsupported competency levels. Children who completed 12-18 lessons showed greater improvements in the five swim skills observed compared to children who received only 4-8 lessons.

Conclusions

There were greater improvements in swim skill attainment with 12-18 lessons compared to 4-8 lessons among PCA and PSA participants. Most children were not able to perform most water competency components at unsupported levels at the post-test assessment.

Retention of swimming skills among SwimSafe graduates in rural communities of Bangladesh.

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Background

Drowning is the leading cause of death among children in Bangladesh. A survival swimming program (called 'SwimSafe') for children aged 4-10 years prevented drowning effectively in rural Bangladesh. Children who were able to swim 25 metres, float for 30 seconds, and learn land-based reach and throw rescue became SwimSafe graduates (SSGs). However, the long-term effectiveness of this training has never been assessed. The objectives of this study were to assess the survival swimming ability and practices of SSGs about 10 years since graduation.

Methods

SwimSafe provided training to over 77,000 children aged 4-10 years, between 2006 and 2012. A total of 3,603 SSGs were randomly selected for the study. Data on socio-demographic characteristics, participation in the program, and engagement in survival swimming since graduation, were collected. Additionally, observations were conducted to assess retention of skills. Data collection occurred between August and October 2022.

Results

Overall, 3,603 SSGs participated in the study - 1,815 males (50.4%), and 1,788 females (49.6%). Over 50% (n=2,005) of the SSGs were between 18 and 20 years old and 34.0% (n=1,225) were over 20 years old. On an average, SSGs learned survival swimming in 18.7 (\pm 8.1) days.

Majority of the SSGs (88.4%; n=3,185) were able to swim 25 meters, about 90.0% (n=3,231) could float 30 seconds, and about 88.0% (n=3,159) and 72.0% (n=2,589) could demonstrate reach and throw rescue, respectively. Of those who were unable to swim 25 meters, 86.1% (n=360) swam 11 to 20 meters. Among those who were not able to float for 30 seconds, 57.0% (n=212) were able to float for 11 to 20 seconds. Overall, 61% (n=2,182) of SSGs retained all four survival swimming skills. In all categories, the proportion of retention of skills was higher among males than females.

About 70.0% (n=2,534) of SSGs rarely practiced swimming since graduation. A little over 25.0% (n=989) had trained others.

Conclusions

Majority of the participants retained survival swimming skills, indicating long-term effectiveness of the program and the need for scale-up. However, without practice, some skills may decline over time. In this program, this was especially the case for rescue skills, particularly, throw rescue.

Effectiveness of swimming lessons in Poland

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The work attempts to define the definition of individual water competences, which can become a way to create universal tests. These tests should be common and easy to implement and apply in a uniform way in the formal education system in Poland. Pilot studies will be carried out in cross-sectional studies of school-age children of Polish and Ukrainian children residing as migrants in Poland. The results of the study will be compared and correlated with financial effectiveness. The tests will be carried out in open waters in the period May - September 2023 as a common alternative to the crisis situation related to the closure of swimming pools in Poland as a consequence of difficulties in their maintenance.

The analyzed tests were constructed based on the international ILS guidelines for safety on water and education and contain several basic levels.

Teaching water competences in the study will be arranged in a purposeful process. It will be a set of tests of simulated crisis events divided into specific levels of difficulty. The performance of individual tests confirms the percentage of the student's competence level. The use of unified testing in accordance with the ILS guidelines allows for reliable comparison of the obtained data and determination of the level of individual aquatic motor skills. Currently, a consultation process is underway in Poland related to the change in the law regarding fitness tests diagnosing the fitness status of the Polish population. A verified definition of this competence will allow for its implementation into existing legal acts and the possibility of monitoring and analyzing the effectiveness of the use of educational programs in the field of swimming lessons.

It will also be possible to monitor the effectiveness of the use of public funds for purposes related to the implementation of the UN resolution in the area of universal swimming lessons.

This goal is particularly important because every year the Polish government implements a program of general swimming lessons for over 360,000 students. Specifying the process of evaluating its effectiveness, both in terms of teaching and finances, will allow for the optimization of this investment.

Perceptions and awareness of factors affecting floating capability in water: an international survey of adults and swimming teachers

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Background

Back floating is a key self-rescue skill. Studies indicate differences in floating capability between people (1,2), which may be attributed to physiological, behavioural, and environmental factors that differ according to the individual and dynamic task and environmental constraints experienced (3,4). Accordingly, floating capability may impact self-rescue competence. It is unknown if people are attuned to factors affecting their floating capability, therefore, we investigated their perceptions and awareness.

Methods

This was a 25-minute online cross-sectional survey of 1,305 respondents from the United Kingdom, New Zealand, Australia, the United States, Canada, and Ireland. Adults ($n = 852$; 36.0 ± 11.4 years) and swimming teachers ($n = 453$; 38.2 ± 15.4 years) answered ~40 closed and open questions. Differences in perceptions and awareness between groups are reported descriptively as percentages and odds ratios from logistic regressions. Open-ended questions were analysed thematically.

Results

Virtually all respondents understood the concept of floating, but less than half of adults and only half of swimming teachers perceived the unmodifiable component affecting floating capability. Adults did not appear well attuned to differences in floatation based on biological sex and age but were somewhat more familiar with the influence of body type. Most adults had not been educated about factors affecting their floating capability but were confident or very confident of being able to self-rescue.

Conclusion

The findings indicate the need to better attune people to their floating capability and how it differs individually and depending on the task and environmental demands experienced. Attuning people to the unmodifiable factors affecting their floating capability in water could influence behavioural decisions to prevent drowning from occurring. For instance, the necessity to self-rescue may be avoided. Optimising the modifiable component of floating capability may also increase the viability of self-rescue during a drowning situation, to maximise the chances of survival.

Menstrual health: a neglected health issue among female community swimming instructors in Bangladesh, need policy intervention

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Background

Preventing drowning requires survival swimming. Through Project Bhasa, community swimming instructors (CSIs) teach survival swimming skills to 6 to 10-year-old children in two districts of Bangladesh. These sessions occur annually between April and October. In the initial phase of the intervention, from 2017 to 2019, 359 CSIs were hired, 284 of whom were women (79%). 46 of 52 CSIs (88%) were female in the second phase's first year (2022).

Description

The Standard Operating Procedure (SOP) of CSI training advises female CSIs not to enter the water on the first day of menstruation. This guidance has had a significant impact on the project's success. Menstruation canceled at least 284 instructor days and 46 in the first year of the second phase of swimming lessons per month. The SOP does not address training during menstruation in female swimming, even though Project Bhasa phase one advised a more inclusive approach. The World Health Organization's recent drowning prevention guideline doesn't mention menstruation or how to handle it during training. While Bangladesh has guidelines and policies for menstrual health and hygiene practices, but there are no strategies for entering water during menstruation.

Lessons learned

Menstruation among female CSIs was mentioned as a challenge in project implementation in the first phase of the Project Bhasa completion report. The lack of guidelines for entering the water during menstruation makes teaching swimming difficult. Skipping training during menstruation hinders project success. To address this issue, clear guidelines on managing menstruation during training sessions should be included in every SOP and menstrual health and hygiene guidelines.

Conclusion

Modern medical science has developed menstrual hygiene products that can be safely used in water. Those can be adopted by ensuring access to the necessary products and support, leading to better menstrual health outcomes for menstruating individuals. It is important to note that menstruation is not a disability, and policies should be developed to incorporate these products in guidelines with appropriate training. It is essential to acknowledge menstrual health in every Standard Operating Procedure (SOP) and guideline.

Can you get in safely? Water entry knowledge, attitudes, and behaviours

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In high income countries, jumping and diving into water are a small but persistent cause of death and serious injury especially among male youth and young adults. In the 10 years from 2009-2018, 15 fatal incidents from jumping/diving into water were reported in New Zealand (Water Safety New Zealand, 2019). Of these, all victims were male, and most were aged between 15-24 years (60%). Although water entries maintain a high media profile, little is known about what entry competencies and underlying water safety knowledge youth bring to this practice.

The purpose of the study was to explore safe water entry competence to ascertain:

1. Safety perceptions and practices of young adults entering the water;
2. Actual water entry competencies of young adults, with a specific focus on feet first and headfirst entry; and
3. Water entry knowledge, attitudes, and behaviours of young adults

Undergraduates enrolled in aquatics (N= 76) completed a survey before attempting 7 jumping and diving entry tasks. While safety attitudes and self-reported behaviours were generally good, considerable variation in practical entry competence was evident. Most completed a deepwater compact jump (87%) and PFD jump (88%) with ease. Many completed a crouch dive (57%) and standing dive (53%) into deep water with ease, but only 33% completed a standing dive from a block/bulkhead (<1m height) with ease.

Shortcomings of participants' perceptions and practices of safe entry into water identified in this study illustrate the need to place greater emphasis on this aspect of water safety education. The disparity between participants' preconceived ideas of personal competency of getting into the water and their performance of actual entry tasks provide evidence of the importance to promote teaching strategies that incorporate experience of simulated entry scenarios. This approach would enable youth to be forewarned about potential dangers and to more effectively manage the life-threatening challenges associated with getting into the water. Targeted interventions that focus on males, the risks of jumping or diving into water from a height, and linking actual personal competency with perceptions are recommended.

Assisting adults to understand actual water competence.

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Background

Adults (25+ years) are becoming increasingly more at risk of drowning in New Zealand, now comprising almost all (91%) of all fatal drowning in New Zealand for the five years to 2022[1], predominantly (89%) in open water settings. Older adults (65+ years) now comprise over one-fifth (21%) of all drowning.

Reality gaps between perceived and actual water competence have been identified in adults[2]. Adults have underestimated the risk and overestimated their competency, especially in open water, providing a plausible explanation of why many adults drown. Although older adults were less likely than two younger age groups to estimate themselves as proficient swimmers (46%, vs. 66% and 73%), there was little change of safer risk perceptions or attitudes[3].

Adults' perceived water competence was measured against their actual water competence in closed and open water environments². Despite most adults (98%) unable to swim more than 100 m in open water, more than half (59%) perceived themselves as good swimmers, and more than quarter (27%) thought they could swim more than 200 m.

Method

A pilot project was undertaken to provide adults with the opportunity to test their water competence in a pool, before open water environments. Pre- and post-testing recorded perceived competence which was then measured against their actual competence.

Results

Although a very small sample size, most adults were unaware of their inability to submerge and exit the water and demonstrated lower swimming competency than expected.

Conclusion

Adults were provided with strategies to ensure they are safer when undertaking open water activities. This initiative could also be shared more widely by implementing region or nationwide, providing an opportunity to reach a difficult-to-reach age group.

Development of test battery for actual and perceived aquatic motor competence through 10 isolated tasks

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International cooperation is needed to compare actual and perceived aquatic skills in an aligned and evidence-based assessment tool. Inspired by the work of Stallman et al. (2017), the PSPWC (Pictorial Scale of Perceived Water Competence) and the ABAS (Assessment of Basic Aquatic Skills). The ALFAC team has selected 10 isolated skills: (1) entry in the water, (2) exiting the water, (3) breathing, (4) treading water, (5) floating on the back, (6) propulsion on the back, (7) propulsion on the belly, (8) submersion, (9) rotation in horizontal body position, (10) rotation in vertical body position. Data on isolated skills in seven countries will be presented at the conference.

In this respect, the ecological validity in the selection and development was crucial, stimulating pleasure and confidence to children discovering the aquatic environment in a fun and safe manner. Skills are supported by a realistic illustration to explain to the child what to do in the water. These pictures are used for the perceived aquatic competence; this data is gathered before the performance in the pool. This aligned tool has a playful approach using analogy learning. Special attention is given to the reality of different technical conditions in swimming pools by choosing the same material to create a conforming environment in the EU partner countries. For example, to tackle the variability in the height of the edge, a small platform construction of fixed and floating mats (with straps to use as help) is used. To avoid the ceiling effect, a 5-point Likert scale instead of 3 in the PSPWC or 4 in the short version of PSPWC gives is. For entry and exit of the water, 5 different options were offered with a link to the practice in water recreation. Those skills of the PSPWC that were difficult to understand were made easier and more fun. As researchers, we want to help facilitate competent and confident movers in the exciting and diverse water environment. The test battery of the isolated skills has to be integrated into the complete holistic tool of ALFAC.

The 3Ss for Water Competence of the SAFER IN WATER PROGRAM - Parents' perceptions of the effectiveness of the distinctive features of this water safety program.

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Water competence is defined as a comprehensive and inclusive construct that integrates a broad spectrum of physical, cognitive and affective attributes, all contributing to increased safety in, on, and around water.

Swimming programs focused solely on the acquisition of "swimming skills" might not be sufficient to prevent drowning. Safer in Water program (SIW) was developed in Portugal 13 years ago in order to fill the gap identified in traditional learn-to-swim programs. SIW focuses on learning how the body interacts with water when immersed and submerged, on identifying hazardous behaviors and conditions in aquatic environments and coping with risks, combined with the acquisition of motor skills to tread water, swim, float, roll and turn, and safe entry into and exit off the water.

SIW applies 3 concepts considered essential for the development of water competence^{1,2}: "Saving", "Swimming" and "Skills".

- Saving – concept incorporating the "prevent and respect" components of SIW, including water competences 1, 8, 11, 14 and 15.
- Swimming – This includes water competences 2, 3, 4 and 5.
- Skills – concept regarding the "water safety training", meaning water competences 6,7, 8, 9, 10, 12 and 13.

Currently, in Portugal five hundred students, between 4 months and twelve years old, are enrolled in SIW per year. As a first step to evaluate the impact of SIW in children's safer interactions with water, we invited all caregivers of enrolled students in the current school year (2022/23) to participate in a short survey aimed at identifying their perceptions of their children water competences and. Whenever possible both parents participated to analyze potential differences of parents' perceptions and attitudes towards supervision related to gender or other personal characteristics. The results were compared with the actual competences of each child. Parents recognized that they have increased their water safety knowledge since enrolment. Also, they reported that their children have coped adequately in dangerous real-life situations. A detailed analysis of the survey will be presented. The results of this first study provide a first glimpse of the potential impact of an alternative learn-to-swim program focused on the acquisition of water competence rather than "just" "swimming skills".

Preventing drowning of 4 to 6 years old children in France: implementation of the Aquatic Skills program.

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1649 drownings happened in 2018, according to the results of the French DROWNING 2018 survey, a 36% raise compared to 1441 drownings in 2015. Children under 6 years old amount to 28% of these drownings. This trend can be explained by the frequency and length of heat waves, more backyard pools being built, Covid 19 forcing public swimming pools to close for 2 years, and no swimming classes being offered to children from 4 to 6 in those swimming pools. The French education and sport ministries acknowledged this situation and decided in 2019 to launch a drowning prevention campaign.

Description

The main implement of this campaign is the launch of the Aquatic skills program which goal is for children from 4 to 6 to develop safe water skills when bathing alone.

This program aims to develop those skills by bringing together as many children as possible in (blue classes) or out (blue camps) of school hours, for eight periods of 40 minutes, in a deep end pool with no flotation gear.

The goal is for children to discover the feeling of their floating body. A training campaign aimed at swimming instructors as well as school teachers is key to ensuring the efficiency of the program.

Results

There has been 1480 drownings in 2021, a 10% decrease compared to the numbers of 2018, especially for children under 6 years old (22% of all drowning in 2021 versus 28% in 2018). Lifelong swimming instructors trained in the specificity of the program realize its relevance and its efficiency and reevaluate their past approach of teaching swimming.

As of December 2022, 100000 children had attended a blue class or camp and 1000 swimming instructors had been trained. The results that we plan to present will be based on the quantitative survey of the number of children trained, as well as semi-directive interviews of professionals having taken part in the program.

Conclusions

The impact of the implementation of the Aquatic Skills program on water safety will be assessed over the next years. Its success will rely on the training of every swimming instructor in France.

Inter- and intra-rater reliability of two aquatic skill assessment tools: Competent/not yet competent and rae (refuse, assisted, effective, efficient)

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Background

Drowning is recognised as a neglected public health issue [1, 2]. Learning to swim, as recommended by the World Health Organisation, is one of the important layers of protection identified for drowning prevention [1, 2]. However, the lack of clear communication surrounding what aquatic skills constitutes swimming, in regard to drowning prevention, makes establishing the reliability of learn-to-swim assessments difficult [3-5]. Identifying what aquatic skill(s) are essential, and the absence of a gold or industry standard exacerbate this difficulty [6].

Methods

This study investigated the reliability of two assessment tools: 1. competent/ not yet competent and 2. RAEE (Refuse, Assisted, Effective, Efficient) on five aquatic skills (crouch dive, feet first scull, sidestroke, compact jump and clothed swim aligned with water safety and survival [7]). Experienced AUSTSWIM (teachers swimming and water safety) raters (n=12) viewed videos (in randomised order) of each of the five skills, performed by adult volunteers (aged 18-34), across three assessment sessions.

Results

Percentage agreement and weighted kappa (Fleiss's Multi-rater Kappa) were utilised to determine inter-rater reliability. Chi squares (kappa) with 95% confidence intervals was used to explore intra-rater reliability. The highest strength of agreement for either assessment tool was recorded in the first session. Using competent/not yet competent assessment, the compact jump had 'almost perfect' agreement. Using RAEE assessment, the crouch dive and compact jump task had 'fair' agreement. The inter-rater strength of agreement using the RAEE assessment tool decreased considerably to 'poor' agreement for all task for sessions two and three.

Conclusion

Results showed that regardless of the assessment approach taken, both inter and intra – rater reliability was limited when assessing water safety skills. Lack of consensus relating to what constitutes proficiency in performing water safety skills as well as a lack of familiarity with assessment criteria was found. A clear understanding of assessment complexities, including an established foundation of what makes the performance of the skill efficient was missing. Improvement of inter- and intra rater reliability within the aquatics industry is required in order to accurately measure the impact of swimming and water safety instruction as a drowning prevention tool.

Water competence programmes for Asian ethnicities in Tamaki Makaurau, Auckland

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Background

Tamaki Makaurau, Auckland continues to grow as Aotearoa New Zealand's (NZ) most ethnically diverse region. Almost one-half of the 1.6m residents were born overseas and almost one quarter (23%) identify with one or more Asian ethnic groups. Many new New Zealanders arrive with little water safety education or experience[1]. One quarter (26%) of Auckland's preventable drownings between 2017-2022 were categorised as Asian[2]). Asians are most at risk participating in activities such as rock fishing, crab fishing or exploring our waterways.

Description

Language and culture are barriers to educating Asian ethnicities in water safety. Drowning Prevention Auckland (DPA) has a staff member of Chinese ethnicity who is able to engage well with these Asian communities and has developed specific engagement strategies. These methods include using the WeChat platform, utilising established ethnic community organisations along with national and local government organisations such as NZ Police and Auckland Regional Migrant Services (Belong Aotearoa) to assist with the communication and engagement. Our engagement with people new to NZ in Tamaki Makaurau is derived from Te Titriti o Waitangi (Treaty of Waitangi) and its three guiding principles; Partnership, Participation, and Protection, used to bridge inequity gaps between Māori and non-Māori in Aotearoa NZ. Partnering with our Asian communities enables them to participate in drowning prevention which protects and keeps them safer in and around water.

Lessons Learned

In 2021 DPA evaluated a number of its Asian water competence programmes to assess any changes of attitudes, behaviours, and knowledge resulting from these initiatives. The purpose was to identify their effectiveness and develop recommendations to help improve them moving forward.

The addition of DPA on the WeChat messaging tool launched in September 20

21 has broadened our reach into the Asian community through the use of a monthly water safety newsletter translated in Chinese Mandarin.

Conclusion

The ability to have specific bespoke water competency programmes delivered by Asian for Asian and engaging with Asian community leaders has meant we are able to provide equity and inclusion when it comes to water safety education.

Embracing Diversity: Providing Training for Indigenous and CALD Communities

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Aboriginal and Torres Strait Islander people are 1.7 times more likely to drown than non-indigenous populations (Royal Life Saving Australia, 2020). Indigenous peoples have a historical and understandable distrust of Western-style institutions; especially those involving children (Hunt, 2013). Culturally and Linguistically Diverse (CALD) communities have a range of issues when approaching swimming and water safety which differ greatly from the Indigenous perception. As 30% of fatal drownings in Australia are migrants, it is important for to address the issue in a culturally appropriate way (Royal Life Saving Australia, 2021).

Since 2012, AUSTSWIM has partnered with Indigenous communities in New South Wales to create a program to train swimming teachers to ensure their communities have appropriate water safety and swimming education. The curriculum includes theoretical and practical components, covering water safety and survival skills, basic swimming techniques, and rescue skills. The program is delivered by AUSTSWIM Trainers with experience working with indigenous communities and who are sensitive to cultural considerations.

Following on from this in 2015, AUSTSWIM created the Embracing Diversity program delivered to many AUSTSWIM Teachers to ensure they are sensitive and respectful to the unique perspectives and experiences of CALD communities. Through this program, participants gain essential skills to enhance the quality of engagement with CALD communities to ensure their safety in and around water.

“Vamos a Aprender,” A New Water Safety Education Model to Better Serve the Urban Poor in Northern California

Pete DeQuincy

East Bay Regional Park District, Oakland, USA

Background

“Vamos a Aprender” - “Let’s Learn,” was developed to provide free accessible and equitable water safety education for park patrons in both English and Spanish at waterfront facilities, which consists largely of Latinx, Asian, and socioeconomically challenged non-swimmers.

Description

Since the program’s inception in 2015, the East Bay Regional Park District’s Lifeguard Services’ bilingual lifeguards have actively solicited 7-15 year-old children and their families to participate in a free 45-minute training. The training starts with participants learning how to correctly fit and don an appropriately sized life jacket, which they are required to wear throughout the entire training. Participants learn how to float, move, turnover, change directions, and perform reaching and throwing assists. Parents are required to be present while their child or children participate(s) in the training. A reoccurring emphasis on personal water safety, parental supervision, and the importance of knowing when to enter or not to enter the water is messaged throughout the program. At the completion, participants receive a free life jacket.

Lessons Learned

While the free life jackets were popular, we found they are not necessary for families to participate, significantly reducing the cost of running the program. Additionally, we have seen increased use of the life jacket loaner program and an increase in families bringing their own life jackets to aquatic facilities, demonstrating an increased awareness of the importance of life jackets. Challenges we have faced include supply chain shortages of life jackets, even before the pandemic, availability of program funding, reduced access to aquatic facilities due to blue-green algae blooms and drought, and staff struggling with expanding the role of the lifeguard beyond rescuer and into water safety educator.

Conclusions

The program’s greatest success has come from reframing the traditional model of developing programs and hoping patrons will participate to actively engaging patrons by asking them to participate in immediately occurring free water safety education programs. Moving forward, we are excited to apply the “Vamos a Aprender” program model into water safety camps for non-swimmers and a free daily swim lesson at several high visitation swim facilities.

Learnings in delivering swimming and water safety lessons and water familiarisation to newly arrived Australians

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Background

In Victoria, culturally and linguistically diverse (CALD) communities are an at-risk group for drowning. Between 2012/13 and 2021/22, 42% of drowning deaths in Victoria, Australia were people from CALD communities, making this demographic almost two-and-a-half (2.42) times more likely to drown than their Australian-born counterparts¹. There are many reasons why CALD communities are overrepresented in drowning statistics, including a lack of feasible, community-led approaches to water safety and swimming education.

Description

A pool program aimed at teaching swimming and water safety was delivered over five days to students attending an English Language School. At the time, there was a high representation of children from Afghanistan. The program aligned with recommendations for community engagement, including through consultation with participants' parents and schoolteachers, to better tailor lessons within socio-cultural parameters, such as educating male and female students in separate pools to align with socio-cultural attitudes and beliefs.

Lessons learned

Effectively engaging CALD communities by working within community engagement frameworks to teach swimming and water safety aimed to improve participants' attitudes and behaviour towards aquatic activities. At program summation, some participants demonstrated improved swimming and water safety skills, indicating that the program facilitated water familiarisation for some children inexperienced in aquatic activity. Most of these improvements were recorded among male participants, with notable increases recorded for water entry and exit, reach rescues and water safety knowledge. Findings demonstrate more efforts may need to be focused on female participants to ensure they receive similar benefits from such programs.

Conclusions

Provision of swimming and water safety education to CALD communities requires tailoring to meet specific cultural needs of participants, through incorporating community consultation from the initial stages, and understanding the various social and cultural impacts on participant swimming ability and development. Future programs tailored to CALD communities should consider implementing water familiarisation activities as a stepping stone to engagement with structured swimming and water safety education.

He Puna Waiora: Creating a Kaupapa Māori Water Safety Programme for Whānau

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Māori traditional and contemporary knowledge systems reveal our intimate connection to water and is an intrinsic part of our health and wellbeing. Despite this cultural connection to water, Māori have disproportionately high rates of drowning in Aotearoa, New Zealand. In 2021, Māori accounted for 31% of the national drowning fatalities despite comprising only 17% of the population. Water Safety New Zealand initiated the Water Skills for Life Programme in 2017, a nationwide water survival skills programme aimed to increase children's competencies and knowledge of water safety. While WSNZ provides these various initiatives, these remain untested for Māori and furthermore, a national Māori water safety programme ceases to exist. We are Tangaroa Ara Rau, a collective of Māori water safety experts with the primary focus of strengthening people's connection to the water for wellness.

The aims of this research were:

1. to develop Māori water safety pūkenga (skills and competencies) with Māori water safety experts in conjunction with whānau Māori (Māori families) and communities;
2. to co-design an overarching dedicated Māori water safety programme (named He Puna Waiora) aimed at whānau;
3. to test whether He Puna Waiora improves pūkenga for whānau in two different regions to examine its effectiveness for translation into other communities and;
4. to create a body of evidence required to advocate for policy change for a cost-free water safety programme for whānau.

The overarching methodological approach was kaupapa Māori theory and praxis (an approach for, by, and with Māori). A number of methods were employed to meet the four objectives of this study. These included: whakatika waka (development of standard operating procedures and ethics); mahia te mahi (practical water activities); noho (traditional marae stay); team wānanga (research team discussion); an interrupted time series study that included a pre-baseline test, baseline test, post-test and retention test; He Puna Waiora wānanga (implementing the programme); and a 1-Day Fun Day (to disseminate the findings). Seven Māori whānau were recruited from two regions in Aotearoa to take part in this study.

In this presentation we will present the key findings and results from our study.

An Impact Analysis of the Lifesaving South Africa #WaterSmart Programme delivered in Schools. A qualitative perspective

DHAYA SEWDUTH

Lifesaving South Africa, Durban, South Africa

Lifesaving South Africa (LSA), a registered sport federation and non-profit organisation has been providing lifeguarding training and qualifications as well as voluntary duties for almost 113 years of its existence. A key component of its community service is to provide water safety education as well as drowning prevention education to school children and communities and who face increased at risk of drowning tragedies.

Since 2016, LSA has rolled out the #WaterSmart Programme in structured teaching and assessments within the Life Skills Orientation Subject in the Curriculum. To date, the programme has been taught to almost a million school children and community members at over 2300 sites. The model involves training unemployed lifeguards who serve as the facilitators and presenters of the programmes in the classroom. The facilitation of the lessons run from 2-4 hours (dependent on the grade) and in some limited contexts, extend to providing survival swimming classes if there is a pool accessible to the learners.

While there is anecdotal information of the success of the programme, usually through the feedback from the participants, the programme has recognised that there is a need to measure the impact of the learning among the beneficiaries of the sessions. To this end a monitoring exercise will be implemented in the fourth term of the school programme, Learners from the previous year will be interviewed to assess what they have learned and applied. This monitoring exercise will involve about 20 learners at two schools as a pilot to much bigger research in 2024. The #Watersmart facilitators will conduct the focus group interviews to gather responses from the learners on what they have remembered from the lessons and to what extent they may have shared their learnings with other learners, family members or community members.

Systematic Review of the assessment tools for aquatic literacy in 6-12 years-old children

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Children and young people are particularly affected by drowning, while their early involvement in physical activity, specifically in aquatic activities is a key factor in their future physical life journey. According to Stallman et al. (2017), the challenge to tackling this phenomenon is to develop children's water competencies, considered as a set of motor skills, attitudes, and knowledge related to behaviours in, on, and around the water environment (1). Thus, diagnostics in the motor, psychological, social and cognitive dimensions are necessary to guide interventions at the local or national level. The aim of this study was to identify the batterie of published tests to assess the level of these intertwined dimensions and which structure the concept of aquatic literacy.

Our methodology consisted in performing a systematic review to identify studies using tests in 6-12-year-old children to assess aquatic literacy (AL) dimensions mentioned as motor, psychological, social, and cognitive. SPIDER (2) method was used to define the research question and the PRISMA checklist searched for articles in five databases. The strength of the evidence and the risk of bias were assessed.

Concerning the aquatic literacy domains, the most numerous evaluations were found in the motor domain area, and fewer articles were presented in the cognitive field. Results showed a relatively poor number of studies with motor tests (n=21) and fewer of which were validated. Studies did not agree on which educational approach was more beneficial than another. The subject of "how to educate" the students to prevent drowning and include youngsters between the ages of 6 and 12 in extended physical activities might be clarified with the development of pedagogical instruments for promotion and evaluation based on the AL theoretical framework.

A combined task test to assess the motor dimension of aquatic literacy in the ALFAC project: the ‘Parcours’.

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Background

The use of large-scale aquatic skills tests is an interesting way of identifying the strengths and weaknesses of aquatic training curricula. Stallman et al.’s (2017) model describes the fundamental aquatic skills (FAS) to be mastered in isolation. However, the use of combined tests, in which children perform different tasks unassisted, is extremely important in assessing their ability to cope with different scenarios that can lead to drowning accidents. The aim of this presentation is to present the test developed in the Aquatic Literacy For All Children (ALFAC) project.

Methods

The ALFAC consortium from 7 different countries developed a combined test that integrates the FAS while measuring children’s ability to process visual and auditory information, and to make important decisions that affect their safety while swimming. A content validation test and traditional validation procedures (validity, sensitivity, reproducibility and inter-rater reliability) were carried out.

Results

Validation procedures have led to the creation of a two-part test to be performed while fully clothed. The first 15 meters are standardized and assess (1) the ability to enter the water, (2) to tread water, (3) to swim on the belly, (4) to swim underwater, and (5) to swim on the back. The second part of the test is progressive, depending on the choices made by the child to continue the course in 15-metre increments. During these 15 meters, the child is free to swim as long as he or she does not use the wall or the water line at any time. The child can choose to swim 15, 30, 45 or 60 meters. At the end of the test, the child must step out of the water using a mat attached to the edge of the pool and float on the surface.

Conclusions

The ‘parcours’ seems to be very informative about the ability to link FAS, to process information while swimming and to make relevant decisions. It allows to complete the data collected during the isolated task tests to assess the motor skills domain.

What makes a child at-risk of not meeting swimming and water safety benchmarks?

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Background

Many children in Victoria, Australia, finish primary school at the age of 12 without achieving the national aquatic benchmarks. Whilst there has been significant investment and commitment by government to enhance children's swimming and water safety education in Victoria, there is little research on why children are not meeting benchmarks and what can be done to improve this. Accordingly, this multi-phase study aimed to explore the relationship between demographic, personal and background factors and their effect on aquatic competencies.

Methods

In phase one, a systematic review identified key demographic, personal and background factors impacting children's aquatic competence. In phase two, primary school children from grades 5 and 6 completed aquatic competency assessments at pre- and post-program. Validated and reliable child and parent surveys were also administered to collect demographic information, perceived swimming ability of children, and aquatic knowledge. Aquatic programs differed in length between one and ten days, and covered swimming and water safety skills and knowledge. Pre- and post-program assessments were considered alongside demographic information to determine those factors potentially impacting aquatic competency.

Results

Seventeen factors impacting children's aquatic competency were identified in the systematic review. Results from phase two indicated some factors were associated with achieving aquatic benchmarks overall, including: parent education level, child experiences of a negative prior aquatic experience, frequency of swimming at open and closed aquatic environments, child gender, presence of a pool at home, and parent awareness of their child's water safety knowledge. Undertaking an aquatic program significantly increased the aquatic competencies of children in line with benchmarks. Tailoring content, subsidising costs, co-designing programs with communities, and utilising evidence-based recommendations were also key program delivery recommendations to improve aquatic competency among at-risk children.

Conclusions

Findings assist in identifying children likely at-risk of limited aquatic competency and how appropriate interventions can be implemented early, to ensure aquatic standards are met. This information is useful for practitioners and schools to identify tailored solutions to maximise aquatic competency of children, which could impact drowning rates, and for providing a needs-based-analysis to assist government in determining funding requirements to support every child to meet aquatic benchmarks.

Swimming Skills of Children in Finland after COVID-19

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The Finnish Swimming Teaching and Lifesaving Federation, the University of Jyväskylä and the Finnish National Board of Education conducted a study during the spring 2022 to investigate the swimming skills of sixth-grade students and assess the impacts of the COVID-19 pandemic (1).

This study represents a continuation of previous national surveys conducted in 2000, 2004, 2006, 2011, and 2016 (2, 3, 4, 5, 6). It was carried out using an electronic survey, with a sample size proportional to the number of students in various regions of Finland. The study encompassed 1,798 sixth-grade students, including 856 girls, 783 boys, and 159 individuals who identified as non-binary or preferred not to disclose their gender.

Among the sixth-grade students, 55% reported the ability to swim at least 200 meters, including 50 meters on their back, meeting the criteria for the Nordic swimming ability definition. Notably, gender differences emerged for the first time, with 60% of boys, 51% of girls, and 40% of students with non-binary identities meeting the swimming ability definition. These figures represent a significant decline from the 2016 levels when 76% of students met the criteria. In the 2022 study, 2-5% of students, depending on their gender, reported that they could not swim at all, compared to only 1% in 2016.

The COVID-19 pandemic had a profound impact on swimming in schools, with half of the schools unable to organize swimming lessons due to pandemic-related restrictions. Additionally, leisure-time visits to swimming pools were restricted, particularly affecting students with the poorest swimming skills, who often discontinued swimming during the pandemic.

While the reduction in swimming lessons in schools may partially account for the decline in students' swimming skills, it does not explain the gender disparities observed. There exists a noticeable skill gap among sixth-graders, which could pose increased safety risks in the future. Addressing this gap will require allocating resources, such as increasing the number of swimming lessons, and minimizing the barriers that students perceived in taking part in the swimming lessons. Furthermore, further research is essential to elucidate the reasons behind the gender-based differences in swimming skills.

Content validity of a new aquatic skill assessment tool: rae (refuse, assist, effective, efficient)

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Background

Learning to swim is identified as one of the important steps required for the prevention of drowning, recognised by the World Health Organisation as a global public health issue[1-3]. However, the assessment of 'swimming' in the context of preventing drowning is complex. Programs incorporate a range of components including, water safety, survival and/or aquatic competency [4-6], and swimming assessments reflect these variations. In Australia, up to 80% of swim schools do not provide essential water safety and survival oriented aquatic skills and knowledge in their programs, and are more likely to teach swimming skills (e.g. freestyle 87%, backstroke 83%) than water safety skills (e.g. treading water 53%, survival backstroke 46%) [4]. Establishing the content validity of any swimming assessment tool is essential, and a first step to more consistent approaches to learn-to-swim assessments.

Methods

This study investigated the content validity of the RAEE (Refuse, Assist, Effective, Efficient) assessment tool using AUSTSWIM experts (n=23) as participants, the Australian Water Safety Council's (AWSC) benchmark program (Swim and Survive Active Award Level 4, 2016 version), and a cross-sectional questionnaire to evaluate the relevance and usefulness of the RAEE assessment tool in assessing aquatic skills.

Results

Awareness of the existence of the AWSC was high (96%), however only 64% were aware of the benchmark. While two thirds of participants (74%) used the Swim and Survive program, only half (52%) used the program assessment guide. Half of participants (52 %) reported being unfamiliar with all/some/most of the aquatic skills included within the program. The RAEE assessment tool was found to be relevant (77 % SD ± 8) and useful (73 % SD ± 5) for use in assessing the benchmark level for swimming and water safety.

Conclusion

The unfamiliarity amongst the participants of all skills included in the AWSC's benchmark, which specifically incorporates water safety and self-rescue items, highlights several issues. These include, communication (terminology surrounding swimming and water safety), assessment (pedagogical approach, program design/use, assessment methods/tools) as well as knowledge and understanding of aquatic skills, specifically those relating to water safety skills. Further research to explore this is needed.

Measure the safe exit, one of the water competence, in water safe education for Japanese college students.

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The purpose of this paper is to explore the real and perceived capacity of young adults to safely exit the water and ascertain what safety knowledge about exiting the water is promoted.

College-aged non-sports Japanese students (N = 62) completed a pretest survey of self-estimated capacity to exit the water under varied conditions. Participants were then tested in shallow water, deep water (flush edge), and deep water with a ledge (0.30 m) when fresh, after a 5-min swim in swimwear, in clothing, and while wearing a buoyancy vest.

Participants were Japanese young adults (N = 62) with a proven swimming capacity who were enrolled in an undergraduate Bachelor of non-Sports degree programs. Of these, 40 were male (64%) and 22 were female (36%), 80% were 19–20 years of age, 17% were 21–22 years of age, and the remaining 3% were 23 years and older. Before the commencement of an aquatics education program that focused on water safety, participants completed a pretest survey that was designed to provide a measure of self-estimated water competency and estimates of their capacity to exit the water under various conditions. Practical testing of exit skills was completed during 1.5 hr aquatics sessions/1 times per week over a 3-week period during the summer term (April–July 2021) in an indoor 50 m pool (water temperature 25 °C). Appropriate lifeguard supervision and safety equipment were available at all times. Ethics clearance for the study was obtained from Keio University Ethics Committee.

All participants were able to exit shallow and deep water when not fatigued, after a swim when wearing clothing or a buoyancy vest, but many failed to exit deep water over a 0.30 m ledge after swimming in clothing or in a buoyancy vest. Significantly more females than males found exiting deep water difficult. Most participants (especially males) underestimated the demands of exiting deep water. The value of situational learning via exposure to exiting difficulties in simulated pool practices is discussed.

Incorporating swimming and water safety content in a pre-service physical and health education teacher training program

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Background

Physical and Health Education (PHE) classes are an ideal environment to promote swimming and water safety skills and knowledge for Kindergarten to Grade 12 (K-12) public school students (1). PHE classes are available to all students regardless of socioeconomic status (2), creating an equitable environment for those who may otherwise not be able to participate in fee-based community programs. However, a recent global review of swimming and water safety in K-12 programs revealed few schools incorporate aquatic content, citing numerous barriers including lack of teacher confidence and water competence (3).

Aim

The aim of this study was to evaluate the effectiveness of a pre-service teacher education aquatics course on teacher: 1) water competence, 2) water safety knowledge, 3) confidence to facilitate aquatic activities in a supervised environment, and 4) likelihood of incorporating swimming and water safety content in K-12 PHE curriculum.

Methods

Participants were pre-service teachers registered in an undergraduate aquatic PHE course during the Winter 2023 term at Memorial University of Newfoundland, Canada. Participants in this course received instruction on strokes (front crawl, back crawl, breast stroke, butterfly), aquatic fitness, aquatic sports/activities (e.g., water polo, underwater hockey, artistic swimming), and water safety (e.g., PFD safety, alcohol and boating, ice safety). Participants understood this course was not a replacement for swim instructor or lifeguarding certification. N = 18 students completed a mixed-methods questionnaire on their experience in their aquatics course. Descriptive statistics were used to explore the extent to which participants' water competence, confidence, and likelihood of incorporating aquatic activities in K-12 curriculum was impacted. Thematic analysis of qualitative responses was completed to further understand participant experience.

Results/Conclusions

Results indicate participant water competence and confidence, and likelihood of incorporating swimming and water safety content in K-12 curriculum increased through participation in an undergraduate aquatics PHE course, suggesting pre-service teacher education may be a viable first step for increasing K-12 student exposure to swimming and water safety content through PHE classes.

A Unique Partnership: High School Work Experience as a Swim to Survive Instructor in Prince Albert, Saskatchewan, Canada

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Background

In Prince Albert, the Saskatchewan Rivers Public School Division and the City of Prince Albert have had a swimming lesson program for school children since 2009. High school students, the instructors of the program, have learned valuable leadership and instructional skills through a work experience credit. Over 4100 Grade 4 and 5 students have participated in the program and over 70 high school students have earned this credit.

Description

The instructors teach the Swim to Survive standard to Grade 4 and 5 students from schools of with underprivileged children. The program combined traditional in-water lessons with dry-land activities in a gymnasium. Elementary school teachers were provided optional lesson plans surrounding water and ice safety. All lessons were planned and led by the high school instructors. As part of the work experience credit the instructors had a variety of experiences and s surrounding swimming lessons, teaching, research, and the Lifesaving Society. Participating in these activities led to a greater understanding of their role as instructors and how they can make meaningful impacts across the drowning prevention sector.

Lessons Learned

The number of students who completed the Swim to Survive Standard in 2022 (25%) compared to 2023 (44%) demonstrates that the continuation of this program is a success. These metrics lead future programming and provides information about children's swimming ability within Prince Albert. Participation from teachers varied – whether it impacted swimmers ability or retention of Water Smart messages is unclear. The educational curriculum for the province has limited references and resources surround water and ice safety, although a variety of other topics have many resources (railway safety, farm safety, bicycle safety, etc.). This program produced a variety of classroom appropriate materials that related to water safety. Instructors reflected on their experience in their final essays.

Conclusion

The unique partnership between a high school and a swimming pool can go a long way. By combining existing framework this program has offered a learning experience to students across elementary and high school. It has resulted in unprecedented lifeguard retention and the development of future leaders across various sectors who value water safety.

Teaching WISE(Water Insight, Safety and Education): Using Insights and Applications to teach water safety to TY's.

Ciara Gleeson

Water Safety Ireland, Galway, Ireland

Background

As an island nation, everyone lives near an inland or coastal waterway. Everyone is at risk of drowning if they do not have the necessary attitudes and behaviours when engaging with aquatic activities. In 2022, Water Safety Ireland created the WISE programme developed specifically for Transition Year Secondary School students, 15-18 years old. It builds on the lessons learned in our PAWS programme, to equip students to make the right decisions to keep themselves, and others, safe on, in, or near water.

Description

WISE involves a series of 8 lessons that provide a solid introduction to water safety, with a focus on risk assessment and water safety strategies, from specific water-based activities to hazards and the potential of unforeseen accidents. All lessons look at different environments and highlight potential dangers so students can better assess the risks, and their ability to determine the safest course of action. All lessons are broken into two sections 'Insights' and 'Applications'. Insights offer valuable information and advice about a chosen topic. Applications are designed to provoke class discussion, assessing risk, ability and other relevant factors while applying the Insights they have learned.

Lessons Learned

The author speaks to the teaching method of encouraging risk assessment analysis as a successful form of delivering ws education to 15–17-year-olds. The author speaks to the lessons learned in modifying the delivery of content to include decision-making and risk-analysis skills. The author speaks to the greater accessibility nationwide of WSI's first fully online ws programme.

Conclusions

WISE provides a comprehensive insight into potential dangers at home, in fresh water and in coastal waters. It informs of the correct response in an emergency situation, implementing non-contact rescue techniques and understanding the role of emergency personnel. The programme adopts Insights and Applications to encourage students to determine the safest course of action in all aquatic based emergency situations.

www.teachwise.ie

Swimming classes for Teachers in primary School as a measure to ensure all children leave primary School when they can swim and survive, a case of Kampala City schools in Uganda.

George William Mukasa

Lifesaving association Uganda, Kampala, Uganda

Training Teachers in all primary schools and classes has reduced over reliance on school swimming coaches and increased by bonding between pupils and their class teachers after a result of some primary schools in Kampala we have worked with as lifesaving association Uganda to train all teachers to monitor all their pupils and ensure each of them attends swimming classes, this will ensure they all leave primary School when they can swim and survive and hence reduce drowning statistics in Uganda and also making water safety. everyone's concern at school. The project was started last year with two schools in Kampala Uganda and there is tremendous improvement unlike before when we had elite Coaches teaching the pupils and alot of absenteeism which has reduced with the two schools on the first ever pilot project. Swimming Education and Training approaches in LMICs has to be revised to ensure reducing phobia and increasing bonding between teachers and pupils for better progressive reports and results in the line of reducing infant and child drowning in day care and primary schools.

Swimming and lifesaving training the Norwegian Curriculum Didactical recommendations based on drowning statistics in Norway in the period 1988-2020.

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Background

Targeted swimming training is the cornerstone of self-rescue and lifesaving. By studying the statistics, one can find the circumstances and the part of the population where drowning occurs. This can provide a basis for didactic recommendations and appropriate placement of resources for effective training in a drowning prevention perspective. The greatest learning results are achieved in authentic learning environments. However, Norway lacks a national and quality-assured register for drowning statistics, and official figures are registered by voluntary organizations based on media reports and surveys from the voluntary sector. This challenges the didactic choices

Methods

An investigation of 3,886 fatal drowning incidents in Norway between 1988 and 2020 was made using the data base from Norwegian People's Aid (1988-2015) (unpublished) and from the Society for Sea Rescue (2016-2020)(1) Data is collected through media coverage and follow-up of individual incidents in the coroner's reports. The data also forms the basis for Norway's official reporting of fatal drowning accidents. Analysis of means, incidence rates and longitudinal development of fatal drowning incidents according to gender, age and cause of drowning.

Results

Our data currently represent the most comprehensive analysis of fatal drowning incidents in Norway. An overwhelming majority of fatal drownings occur outdoors near shore, boats, docks, or other nearby rescue options. Despite declining drowning incidents overall, historically male adults are the group with the highest percentage of fatal drownings (2). Our data represent the currently most comprehensive analysis of fatal drowning incidents in Norway. Despite declining drowning incidents in general, historically, male adults are the group with the highest percent of fatal drownings.

Conclusions

Analyzes of non-fatal drowning incidents, the circumstances surrounding and cause of drowning according to gender, age and nationality are needed to complete the picture. Underreporting is likely.

Water Safety Education for Public Schools in Japan – 9 Years of Water Safety Education and Life Saving in Public Schools

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Introduction

Japan experienced the Great East Earthquake on March 11, 2011. Twelve years have passed since the disaster, and everyday life is returning to a familiarity with the rich waterside environment. However, we must not forget that many lives were lost due to the tsunami. To make use of the lessons learned, including water safety education in the curriculum is important.

Background

Japanese curriculum standards indicate the importance of water safety education. In particular, “Tips on Preventing Swimming Accidents” is required to be implemented. However, the implementation of these lessons varies; teaching methods and specific content have not yet been examined. In Japan, the differences in curricular standards and educational sites for water safety education are significant.

Description

The purpose of this study was to present specific water safety education that can be implemented in the Japanese educational system, based on a report on the implementation of water safety education that includes lifesaving (Japanese name: Ocean Education for Life). The study was conducted during regular classes at public elementary and junior high schools over a nine-year period from 2014 to 2022.

Lessons learned

According to Japanese educational standards, we have found from the practice of “Ocean Education for Life” that repeated learning of self-rescue and preventive hazard avoidance behavior in the waterfront environment could be implemented in 9 years of public education (6 years of elementary school and 3 years of junior high school). We also interviewed school administrators regarding “Ocean Education for Life” and found that there is a common understanding of water safety education in public schools.

Conclusions

It is hoped that this study will lead to the widespread implementation of water safety education in Japan that incorporates the lifesaving component, thereby saving the lives of children who might otherwise be lost due to drowning.

Success of Childhood Survival Swim and Water Safety Education Interventions in Viet Nam and Lesson Learned for Low and Middle Income Countries

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Background

Drowning is a silent epidemic claiming more than 2,000 children each year in Viet Na. In 2018, Bloomberg Philanthropies, Global Health Advocacy Incubator announced its partnership with Viet Nam Government for preventing child drowning through pilot of the world-class, evidence-based survival swim and water safety program for children between 6 -15 years of age in the highest burden provinces with unique geographic features and challenges.

Description

The program is informed by global best practices with solid leadership from Governmental ministries, multisector collaboration at both national, local levels. Local ownership is a primary focus in all stages of planning and implementation, the transfer of knowledge, skills amongst provinces and with experts is key to ensuring a scalable nationwide program model.

Over the last four years, 29,849 children have been trained on survival swim, 52,250 children have learned water safety skills education. The rate of children who can swim 25 meters and stay afloat in 90 seconds has doubled. The child drowning rate has dropped by nearly 30%. Preventive measures and knowledge among parents have increased three times over. Local co-funding for program interventions increased 5 times, amounting to approximately 1.9 million US dollars. The state budget allocations for child drowning significantly increased in intervention provinces compared to the rest of the country. In 2021, the Government passed the 10 Year National Program on Child Injury Prevention, highlighting survival swim and water safety education as the key solutions.

Lessons learned

Child Drowning Prevention shall be advocated for and integrated into the top policy agendas through the spectrum of Child Rights and SDGs. The Government direction and local ownership is critical to secure program sustainability and interventions tailored to local demand, geographic epidemiology features. The transfer of techniques is required, quality assurance system is needed to secure child safety. The program led by Government who encouraged pro-active partnership of civil societies, academic, private sectors.

Conclusions

Viet Nam's unique and successful interventions realized UN Drowning Prevention Resolution at country level, potentially be adapted to LMICs. A further impact and return investment study expected to conduct to advocate longer-term policies and budget sustainability.

Swim for Safety, Sri Lanka – Survival Swimming and Water Safety Education Among School Children

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Drowning is the leading cause of accidental injury death in children aged 1-14 years in Sri Lanka. To address this issue "Swim for Safety (SfS)", was recently introduced in Sri Lanka. The program is a survival swimming and water safety training program for school children, aged between 10-16 years. It is conducted by Sri Lanka Life Saving (SLLS) in collaboration with Life Saving Victoria (LSV).

Methods

The program consists of 12 lessons (one and a half hours each) conducted over 6-8 weeks. Children are taught the minimum skills essential to surviving an accidental fall into a deep open water body, safe entry and exit, rolling into deep water, rotation and floating on the water, sculling and treading water, and swimming in a controlled direction in any manner, danger identification in and around water, safe rescue of a victim and basic emergency response DRSA (Danger, Response, Send for help, Airway). The SfS team consists of trained swim teachers, community leaders, volunteer lifesavers, and assessors. A teachers' guide, assessor's guide, and ongoing supervision by experts in SLLS and LSV maintain the quality of the training. Participants are allocated to the program by convenience sampling with the permission of the Ministry of Education and the principals of each school selected. Children who have informed written consent, obtained from the parents and teachers are allowed to participate. Water safety knowledge and skills are evaluated by pre-test prior to the first lesson and post-test just after completing the twelfth lesson. A self-administered questionnaire is used to assess knowledge and the assessor evaluates the skills of each student using set criteria.

Results

Since January 2016 SfS has been delivered to over 5,000 children in eight of the nine provinces in Sri Lanka. The results demonstrate significant improvement in both the knowledge and skills of participants from pre- to post-test. Detailed results will be presented at the conference.

Conclusion

The success of the SfS program is an example of a sustainable drowning prevention intervention that aligns with the recommendations of the WHO and demonstrates community engagement and the value of a strong partnership model.

Developing technical resources to support implementation of basic swimming skills in low-resource settings: outcomes of a multi-country workshop

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Background

Basic swimming and water safety skills for school age children are recommended by the World Health Organization (WHO) as a key intervention for the prevention of drowning. Recent practical guidance published by the WHO provides a high-level synopsis of the processes, policies and documents required to implement this intervention. However, since relatively limited numbers of organisations have experience delivering this intervention in LMIC settings, more detailed guidance may be required to ensure safe and effective implementation. In September 2022, the Royal National Lifeboat Institution (RNLI), Panje Project and WHO convened a four day in-person workshop in Tanzania, to identify key safety critical aspects of the guidance, and develop technical resources to support implementation. The workshop was facilitated by the Royal Lifesaving Society Commonwealth (RLSSC), the Centre for Injury Prevention and Research Bangladesh (CIPRB) and Swim England.

Methods

A gap analysis was conducted on the WHO Practical Guidance publication, to identify areas where the guidance may benefit from further supportive detail in the form of links to further implementation resources, or best practice case studies etc.

17 participants (representing 13 countries) experienced in delivering basic swimming skills in low-resource settings were identified through RLSSC and RNLI networks. A pre-workshop questionnaire identified 'Site Identification and Auditing', 'Emergency Action Planning', 'Informed Consent' and 'Medical Screening' as safety critical topic areas requiring additional resources.

The facilitated in-person workshop was used to gain consensus on current practice, feasibility of adhering to the WHO guidelines in low-resource settings, understanding useful resources for new-starters, and developing draft materials. Resources were finalised through an online editing process, and consensus reached on final outputs. The workshop was evaluated through participant feedback forms.

Results

For each of the topic areas participants highlighted practice that requires specific adaptation for the low-resource setting, considering resource limitations, low literacy, training requirements and the physical environment (likely to be open water). Resources developed included site audit checklists, and an informed consent form that includes guidance on medical screening.

Review of the Darcey Sunshine Foundation Water Safety Programme for Grade R Children in the low-resource setting of the Western Cape province, South Africa.

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Background

Drowning prevention interventions that reflect the local context are important for low resource settings where resource prioritisation is critical. In South Africa, 40-60% of fatal drownings occur in children <15 years old.^{1,2} The Darcey Sunshine Foundation (TDSF) water safety program works in partnership with registered swim schools in the Western Cape province of South Africa, teaching water safety to children in Grade R (aged 5 turning 6 years old) from local preschools in underfunded communities.

Description

The TDSF water safety program runs annually and consists of five components: Partnership with pre-schools in low resource settings, a 10 week theory-based learning package, a 13 week (twice weekly) practical survival swim program in partnership with accredited swim schools including transport, swimming gear, nutrition and provision of education for parents and caregivers. The year ends with a day at the beach, teaching vital beach and ocean safety awareness. In 2023 there are 6 pre-schools and 250 children registered to receive the TDSF program, in partnership with 5 swimming schools. Formal assessments of competency are run by TDSF for each child after lesson 13 and lesson 26, assessing float, propulsion and confidence as well as attendance and new skills learned each week.

Lessons learned

In 2022 (n=113), end of year assessments indicated that 99% of children could comfortably maintain a star float with minimal assistance and 48% could maintain their star float for >10 seconds with no assistance. Just under a third (29%) of children could self-propel 5m across the pool and 94% of children reached a satisfactory level of confidence. Consequently, we have increased the number of lessons to twice weekly in the 2023 (3rd) iteration to target a higher mastery of survival swimming skills. In 2023 we are implementing an evaluation aimed at assessing the impact of individual programme components on children's understanding and skills, as well as caregiver perceptions on supervision.

Conclusion

Formal assessment and monitoring allows for continual quality improvement of programmes. The findings from our 2023 evaluation will be used to improve the approach, and provide practical guidance for similar programmes across other provinces in South Africa.

Swimdo voluntourism; a model for generating sustainable revenue for child drowning prevention programs in low- and-middle income countries

Agus Satria¹, Neal From²

1Swimdo, Gianyar, Indonesia. 2Swimdo, San Diego, USA

Voluntourism is a growing trend among tourists who are searching for an alternative travel experience. It can be very meaningful and mutually beneficial for both the volunteer and the host organization. In 2022, in an effort to ease dependence on grants and donors, and to create a sustainable source of funding, Swimdo implemented our first voluntourism programs. With the help of a UK-based volunteer recruiter, we developed a two-week volunteer program that was marketed to interested parties throughout the UK. Key features of the program were volunteer recruitment, program marketing, developing volunteer itinerary, and implementation. The majority of volunteers signed up for our 2-week offering. Included in this offering was an introduction to survival swimming and water safety training, basic swimming-related Bahasa language lessons, access to a local volunteer coordinator, cultural outings including local festivities and ceremonies, and local transport to and from the pool. Participants in the program helped our staff of local instructors implement our lesson plans in the pool. Through our initial voluntourism offering, we found that there is high demand for voluntourism opportunities in Indonesia and likely in other tropical destinations. People from high income countries are looking for opportunities to make their tourism valuable both to themselves and to the local communities they visit. These volunteers are willing to pay significant amounts of money to do so. Therefore, it is up to local NGOs to leverage this demand and create sustainable sources of income that are not dependent on the generosity of their donors or local governments. For marginalized tropical communities, the potential for sustainable voluntourism programs is great. When we utilize existing resources to create streams of sustainable and independent income for our programs, we become more self-sufficient. In doing so, Swimdo has created a replicable model that empowers child drowning prevention programs throughout LMICs to create their own voluntourism programs and thereby become less vulnerable to loss of funding or other funding related issues and ensures that marginalized communities will continue to have access to free or low-cost drowning prevention education into the future.

Uniting for Water Safety: The Global Rotary Club's Mission

Eve Fraser^{1,2}, Phil Waggott¹

1Global Water Safety & Drowning Prevention Rotary Club, Brisbane, Australia. 2Oz Swim Aquatics, Brisbane, Australia

Join us to discover the Global Water Safety & Drowning Prevention Rotary Club—a gathering of like-minded visionaries at the forefront of water safety from around the world. Our club comprises distinguished leaders from IFSTA, hailing from Australia, the UK, the USA, New Zealand, Africa, Indonesia and beyond. Together, we share a common belief—that we can effect change and create a safer future for all.

Born on UN Drowning Prevention Day in 2022, our club recently celebrated its first birthday with a string of remarkable projects in Africa, Thailand, Cambodia, and beyond. We are committed to uniting the vast reservoir of water safety and aquatic expertise under the Rotary umbrella, aiming to make water safety a global priority.

Our 10-minute talk will unveil the driving force behind our inception. Discover our core mission: to ensure that every child receives essential water safety education before leaving school. By harnessing the influential network of Rotary, we aim to open doors and forge pathways for collaboration with local Rotary clubs and providers worldwide.

Moreover, the Global Rotary Club welcomes individuals who are eager to give back, share their expertise, and contribute their time to provide sustainable solutions to common industry challenges. Our membership options range from full Rotarian to Friends of Rotary.

Our speaker, Phil Waggott, brings a wealth of knowledge and passion to our cause as a Charter member of our Club. With over 27 years of dedicated work in water safety advocacy, Phil's journey has taken him across continents, including the United Kingdom, New Zealand, Australia, and numerous other countries. Through his extensive experience, Phil has gained invaluable insights into the global issue of drowning. His contributions to the early intervention drowning prevention field, particularly in New Zealand and now Australia, provide a comprehensive understanding of this pressing concern, enriched by his exposure to various cultures and regions. Join us as we unite in our shared mission to create a safer world for future generations, we aim to make drowning a thing of the past.

Community Programs in Action

Natasha Hudoba¹, Georgia Brazenall²

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Background

Water safety programs have previously neglected some vulnerable, high-risk communities. Surf Life Saving South Australia (SLSSA) addresses this significant gap in services by delivering vital water safety programs to a variety of high-risk communities, ensuring programs are tailored to suit their cultural and diverse needs. These bespoke programs are carefully designed and delivered to create meaningful opportunities that enable everyone to be involved and engaged, and serve to reduce the drowning statistics of CALD and First Nations Australians, as well as assist with the settlement of new arrivals.

Description

These objectives are achieved through four key programs that target CALD and First Nations Australians, including Welcome to SA Shores, Smashing Water Safety for 6! Indigenous Surf Sports Programme, and Parnggi Yarluwar Porlar (Water Ocean Kids), which will be discussed in detail in order to share ideas and best practices.

Lessons Learned

When working with CALD, First Nation Australians, and New Australians, there cannot be a 'one size fits all' approach. It is important to co-design programs and work closely with community groups and their leaders to understand what we can do to reduce the barriers to participation, whether that be to deliver the program at a private pool, side by side with another popular sport, or deliver training and messages specific and relevant to the community.

Conclusion

Community Programs achieve greater success by collaborating with the local community and training key leaders who gain co-ownership of the programs which support their continued engagement and sustainability.

Development and Implementation of Effective ICT Teaching Materials for Water Safety Education

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1Seijogakuen, Tokyo, Japan. 2Japan Lifesaving Association, Tokyo, Japan

Background

There are 1,395 drowning accidents in Japan each year, of which 119 are children under junior high school age (1). The drowning accidents mainly occur in the sea and rivers in the summer season of July and August. In order to prevent drowning accidents, it is effective for children to know the rules for water safety, to predict dangers, and to prepare for emergency actions. On the other hand, the national curriculum standards for elementary and junior high schools state, "Be sure to teach the knowledge and skills for water safety" (2). However, almost all teachers do not have the knowledge and skills related to drowning prevention, the issue is who and how to teach it. Therefore, we developed "e-Lifesaving" which is ICT teaching material that enables proactive and interactive learning in 2019. In this study, we investigated the usage situation and usefulness of e-Lifesaving.

Methods

e-Lifesaving consists of four contents; pre-learning, thinking together, learning from videos, and a water safety quiz. New videos are added every year. e-Lifesaving has actually been operating since 2019. Also, in 2022, it was implemented as an educational program in line with the national curriculum standards at three model schools. In this research, the number of downloads of e-Lifesaving from the Web was investigated taking seasonal changes into account. In addition, we considered the usefulness of e-Lifesaving based on the results of implementation at three model schools.

Results

e-Lifesaving has been used by a total of over 100,000 people and 2 million page views up to February 2023, confirming that it is being used in many schools. It was thought that the use of ICT teaching materials increased children's water safety knowledge and confidence based on practical reports at three model schools.

Conclusion

In recent years, ICT education has been actively incorporated into school education, and its necessity and usefulness were confirmed in water safety education as well. In the future, e-lifesaving is expected to be used for disaster prevention education for Tsunami and floods that requires self-help and mutual assistance.

Digitising the Lifesaving South Africa's 'Watersmart' Programme to achieve scalability in promoting Water Safety and Drowning Prevention

D. Sewduth, Helen Herbert, Stephanie Khan

Lifesaving South Africa

Background

LifesavingSA (LSA) introduced the 'Watersmart' programme in South African Schools in 2016 in response to the lack of educational programmes in the Department of Basic Education. The experience until then is that various organisations, including LSA, addressed cohorts of learners in assembly talks with no link to assessments to test actual learning. The 'Watersmart' programme was written in the Lifeskills Orientation subject in the curriculum for an Education Department which features low on global literacy rankings (PIRLS Study 2016-2021 %age of Grade4 learners who cannot read for any meaning =81% of learners by 2021). The fatal drowning statistic in SA is just under 1500 per annum mirroring the global age demographic of children fatalities.

Programme Delivery and Impact

LSA developed the learning materials, assessments, posters, and workbooks for the 'Watersmart' Programme. It also trained and equipped 50 facilitators (from the ranks of unemployed lifeguards) to teach the lessons to primary school children. Since 2016, about 400 schools are engaged annually with just over 1 million learners and communities presented to.

Implementation Challenge and Resolution

Despite the massive roll out, LSA has realised that it cannot achieve scalability due to limited resources. The roll out mainly involves schools in disadvantaged communities and excluded privileged schools where drownings also occur. Hence the 'Watersmart' Learning Hub was developed. It redesigned the conventional content into four modules on a digital platform. The assessments are based on gamification principles. The design ensures low mobile data usage and can be accessed by anyone via a QR code. It has the potential of global application via language translation.

Swimming for Safety – The challenges and opportunities of open water swimming lessons in rural Vietnam.

Graham Buckley, Dao Le Thi Anh

Hue Help, Hue, Vietnam

The aim of this paper is to evaluate the effectiveness of using open water locations to teach survival swimming and water safety skills to primary school children in rural Vietnam. Vietnam has the highest number of child drowning cases in South-East Asia.

Hue Help's Swimming for Safety programme trains school teachers in Vietnam as swimming teachers, aiming to build capacity within the education system to implement the WHO's recommendation 3 on drowning prevention – teaching school aged children swimming and water safety skills. (1)

Working in partnership with local education authorities, the programme has trained over 600 teachers who have trained over 14,000 children across 6 provinces since beginning in 2011. Children are tested on swimming ability and water safety skills at the beginning, middle and end of an 18 lesson programme.

The programme operates primarily in open water sites (beaches, lakes, rivers, lagoons), using low cost equipment.

The following challenges have been noted in relation to open water implementation:

- Disruption – due to weather conditions;
- Community attitudes – some parents are initially concerned with the safety of open water sites;
- Site suitability – some areas are unsuitable due to water quality, depth, currents or human factors;
- Seasonal limitations - annual flooding and adverse weather allow only a short window where implementation is feasible.

Despite challenges, this open water model has taught significant numbers of children in survival swimming and water safety skills. There are no records of serious incidents throughout implementation, and pass rates are comparable to pool based programmes in Vietnam.

The programme now also works closely with the Vietnam Government's national drowning prevention programmes, providing technical support and advice.

By utilising open water, this programme has been able to bring swimming and water safety tuition to rural, low resource and vulnerable areas in Vietnam without the initial and ongoing financial burden of swimming pools. Carefully risk managed open water tuition should therefore be considered by implementors as a cost effective and sustainable option in rural areas in Vietnam, as well as other low resource contexts.

Water Safety Awareness Program: 20 years of success. Engaging with parents and swim schools to create a culture of water safety for under 5's.

Laura Withers

Royal Life Saving Society (Australia) Northern Territory Branch, Darwin, Australia

The Northern Territory covers 20% of the total land mass of Australia, however, contains only 1% of Australia's population. Sadly, the Northern Territory continues to have one of the highest drowning rates in Australia. The Water Safety Awareness Program was established in 2003 to reduce drownings in the Northern Territory of children under 5. The Program continues to be funded by the Northern Territory Government. The program is administered by Royal Life Saving Northern Territory and facilitated by registered swim school providers.

The Program consists of 5 sessions and targets four key messages.

- Supervision
- Restrict access
- Water familiarisation
- CPR awareness

The aim of this program is to provide vital water safety education and create a culture of water safety for children under 5.

This presentation will highlight the 20 years of the Water Safety Awareness Program and its effectiveness in creating greater awareness of water safety for children under 5.

Water Safety and Drowning Prevention in low income Countries with no policies

George William Mukasa

Lifesaving Association Uganda, Kampala, Uganda. ILS DPC Commission Member, Brussels, Belgium

Water Safety and Drowning prevention in Uganda has been under estimated and given support by the Government which has led to a number of people especially school going children taking on swimming lessons but without a school policy and Government policy on aquatic safety and drowning prevention interventions, this has been left to the hands of untrained school teachers and staff alongside self taught open water rescuers to stand in as swimming Coaches, lifeguards as well as rescuers during swimming lessons and disasters.

The swimming activities are carried out mainly in open water bodies with no clear risk assessments, which is about 60% and 40% of the swimming activity is structured through private swimming pools, School pools and Public hotel/leisure centres.

There are no Government swimming facilities and this means there is less formal regulation of swimming standards and drowning prevention interventions than how it would be with Government owned facilities and regulations. Lack of a Standard curriculum due to lack of Aquatic policies has led to several institutions running training and courses that have not closed the water safety gaps despite a few organisations and individuals coming up with drowning prevention initiatives

There is a lot desired to use the statistics and data that has been gathered by the Makerere School of Public health to implement the gaps identified as well as building capacity to ensure structured approaches to swimming and water safety in order to prevent drowning in Uganda which has one of the highest rates of drowning in the East African region.

Essential “beginning” strokes: meeting the individual needs of all beginners

Robert Keig Stallman^{1,2,3,4,5}, Torill Hindmarch²

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History has given us a variety of swimming strokes. A perennial question has been, “Which stroke should we teach first?” Current expert opinion is that there is no stroke which suits all as their “first” stroke. There are, however, several essential strokes which we call “beginner strokes”. Any one of these might serve as any given individual’s “very first stroke”. All of these provide some unique and essential function. In assigning strokes to this group of beginning strokes, the aim is both to give each learner a choice as well as to provide several choices, all of which provide some unique protection from risk. The simplest examples might be: “It is easier to breath when on the back: It is easier to see where you are going when on the front: Swimming on the side may provide us with the best of both”. Any one of these strokes should be the easiest for any given learner as well as increasing safety. This reasoning is the origin of the tradition that all learners should be provided with the means to propel themselves on the front, on the back and on the side. (1) Learners will always have a preference. They will also show a preference for either a symmetric stroke (breaststroke like) or a diagonal stroke (crawl like). Each learner is thus able to choose their very own “first” and “easiest” stroke (2). Note that none of these strokes are among the well-known so called “traditional” strokes. See the illustrations provided. Eventually, assimilating all of these “beginner strokes” establishes a firm platform which provides increased safety as well as providing an introduction to the intermediate and advanced strokes. When preceded by the “foundational skills” (e.g., breath control, buoyancy control, and more), this platform leads to an all-around foundation, providing optimal protection,(3) historically known as “watermanship”.

Improving floating competency of inexperienced water users in open sea and fresh water

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Sudden immersion into cold water evokes the cold shock response characterised by an inspiratory gasp, hyperventilation, hypertension and tachycardia. The consequent loss of control of breathing is a precursor to drowning and cardiac problems. The RNLI "Float to Live" campaign promotes floating until the cold shock response has subsided rather than swimming straight away and reports suggest it has saved lives. The aim of this study was to determine whether the RNLI "Float to Live" guidance would enable less experienced water users to float in open sea and fresh water and if any additional instructions were required.

The research protocol was approved by a research ethics committee. 25 volunteers (11 women, 14 men; mean [SD]: age 32.8 [10.4] y; BMI 25.9 [4.2] kg.m⁻²) who were not experienced water users, gave their informed written consent. In either still, open fresh (n = 22) or open sea water (n = 13), participants undertook three floats wearing swimming costumes only and one clothed float. All floats were for two minutes and conducted in the following order: 1) naïve (no instruction); 2) RNLI "how to float" video; 3) individual float coaching; 4) simulated accidental fall into water wearing summer clothing. Floating difficulty and confidence were recorded before and after each float; and floating competence, perceived exertion and floating "efficiency" were recorded during each float. The coaching given by the instructors and the instructions the participants thought helped them float were recorded. In both fresh water and sea water, participants' floating competence and confidence increased after viewing the RNLI video, and was further improved with individualised float coaching. The additional helpful instructions included: 1) "head back with ears submerged"; 2) "relax"; 3) "breathe normally"; 4) "it is OK if your legs sink"; 5) an accurate description of sculling for "active" floaters that needed it; 6) spread arms and legs for stability. The simulated fall with clothing did not impair floating competence.

In conclusion, the current RNLI float advice can be applied in realistic open water settings by less experienced water users. Additional content could be included to make the messaging even more effective.

MoveWell: Developing a games-centred approach to aquatics education

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Background

Despite numerous calls for aquatics education to be targeted towards drowning prevention, practitioners seem reluctant to heed this advice (1,2). Presumably due to policy, safety, and logistical concerns, aquatics education is still predominantly: (i) swimming pool based; (ii) swimming technique-focussed (rote repetition of strokes); and (iii) lacking in terms of social and emotional development. SportNZ have recently proposed 'MoveWell', a new teaching resource for physical education teachers that promotes an emotion-laden, games-centred approach to develop children's knowledge, attitudes and movement skills (3). Given New Zealand's grim drowning statistics, somewhat ironically aquatics education has not yet been included within the MoveWell resource. Our objective is to explain how an game-centred approach to aquatics education complements the MoveWell initiative and can thereby help to prevent drowning in Aotearoa (NZ) (4).

Description

MoveWell recognises the holistic educational value of children's play embedded within modifiable and progressive games. Importantly, MoveWell promotes self-awareness, social skills and problem-solving. The challenge for aquatics educators is how to adapt (or even 'let go' of) traditional 'technique-focussed' approaches to align their teaching better with MoveWell. Fortunately, the theoretical framework of ecological dynamics provides an ideal scaffold for this purpose (5). This project will develop a MoveWell aquatics module based upon motor learning principles. We will describe a variety of inclusive games (e.g., Figure 1) that target learning of core drowning prevention skills.

Lessons learned

An understanding of motor learning concepts such as representative learning design, functional movement variability and constraints manipulation empowers educators and learners to co-design engaging aquatics practice. Importantly, the flexible application of games allows for modification in terms of different locations (i.e., swimming pool, lake, beach, etc.), skill levels of learner (i.e., novice to advanced), ages, and a range of group sizes.

Conclusions

The 'gamification' of aquatic education can positively disrupt sterile and highly-structured teaching approaches yet still help children to develop foundational water safety skills. Our development of MoveWell into the aquatics space may offer valuable lessons for educators in other countries as part of the global drowning prevention effort.

Let the baby show the way. Treating the child as a subject not an object (1) by allowing child-initiated learning in aquatic spaces as a model for drowning prevention. Creating challenges through policy changes for teachers of baby swimming in the Norwegian Lifesaving Society.

Torill Hindmarch

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Background

Since 1979 babies in Norway were submerged to initiate a breath holding reflex. By 1986 some teachers noticed children in Learn-to-Swim classes were afraid despite attending baby swim classes. The mere sight of the pool elicited a traumatic reaction in some children. Observations revealed that though some babies did not cry at first, they later displayed symptoms of stress, fear and hysteria even ten years later when in the pool (2). By 1990 some teachers changed their methodology toward a gentler approach. Research into how babies think revealed that they are competent learners from birth (3) (4).

Description

By 2006 the practice of submerging babies was deleted from the NLS teaching curriculum. There was a shift towards an exploratory pedagogy with roots in Montessori philosophy (5), which encouraged parents to discover water together with their babies. A whole new repertoire of activities was developed by the NLS education committee facilitating good communication and meaningful exchanges between parents, babies and their peers. Play spaces in the pool stimulated the baby's curiosity and quiet corners gave room for reflection.

Lessons learned

Given opportunity, babies learned to control their head position and breathing at their own pace, sensing the wave patterns around the neck, during their water play. Through a gentle and delicate touch parents perceived the baby's intention and followed the baby's initiative, allowing the baby to experience feedback from the water which is valuable in developing aquatic skills(6).

Research in Sweden reported better understanding between parent and baby when focusing on create dialogues during swimming class (7).

Teachers included knowledge in water safety during the course and parents relearned basic survival skills together with their children .

Conclusion

Teachers in the NLS program report that children still achieve the goals expected and research in this area is ongoing. The negative effects of previous methods outweigh any short term advantages. Babies should be treated as human beings (8), with understanding and respect.

WHO research (9) shows that supervision is one of the best preventative actions for this age group, advice that should not be ignored.

The five-minute swimming lesson: knowing and applying the essence of drowning prevention in a single, short teaching encounter.

Shane Gould^{1,2}, Milton Nelms^{3,1}

1Shane Gould Swimming Project, Bicheno, Australia. 2Swedish Centre for Aquatic research, Lund, Australia. 3Swedish Centre for Aquatic Research, Lund, Sweden

Background

Typical swimming lessons, are often based on competitive stroking models, use linear and progressive formats and are taught in safe, predictable pools. When we worked outside of Australia, (in the USA, Europe, and developed Asian countries), we began to suspect that these models introduced future risk. We often had single, brief encounters to pass on knowledge and advice about swimming and water safety. These encounters were in a wide variety of weather, water clarity and sites - rivers, coastal mangrove swamps, lagoons, and surf beaches. Understanding how critical a single encounter might be, we designed an effective, novel, single lesson method that can be used in virtually any environment or set of conditions, including lack of common language.

Methods

By identifying patterns, in real world scenarios over 20 years, using our expert knowledge, we used the sensory and perceptual phenomena of aquatic interanimation as a base principle. The original exercises developed, retain land-based security such as the ocular and vestibular control systems and readily available air. It uses novel but instinctive manipulation of water rhythms for the water to lift the body, with less expenditure of energy while swimming.

Results

In the process, reasons for drowning were explained and understood. The importance of reading swimming environments was communicated. Self-reliance and agency, therefore sustainability, was established. The swimmers were able to learn a practical, calm but primitive ambulation in a few minutes. This concept works with swimmers from the earliest stages of physical independence to the elderly. A swimmer gained the understanding and experience to have the chance to save themselves in an unexpected or unplanned situation.

Conclusions

The essence of drowning prevention was identified in real world scenarios and a 5 minute lesson model was created. The principled method can save lives when used as a first step. It can be used in natural swimming environments in any country in the world, with minimal volunteer training needed to teach. It can also be applied to swimming in common pool environments.

Movement in water – more than swimming. Experiences from the Nelms Method – a nervous system-based activity and training program in the water for people with disabilities

Hilde Elise Hansen^{1,2}, Milton Nelms¹

1Swedish Center for Aquatic Research, Lund, Sweden. 2Swimclub Poseidon, Lund, Sweden

Nelms Method (NM) was a national based project in Sweden between 2019-2022, with funding from the National Heritage Foundation. The purpose of the NM program is to help disabled people to use the water to create new stimulating experiences and new challenges to movement, feelings, and perception, affecting the body and the nervous system in new ways. NM is also a way for people with disabilities to learn to swim.

Many people with disabilities have a preconceived view of what swimming is when they go to the water, usually based on traditional styles of swimming. For the project's target group, the goal may not be to swim a certain distance, nor to compete in swimming. So for many disabled people the traditional style of swimming is not necessarily the best way. NM can use new perceptions and feelings to change the relationship to the water to create unique swimming styles suited to the individual and their specific disabilities, which very often did not resemble traditional swimming. Accordingly, we changed our teaching methods and the exercises we used. Our target group needed to learn about the phenomenon of the body in the water by using experiential learning, so observation, adaption, curiosity and own experiences of the water was central. We adapted teaching styles and individual programs to prepare to address these issues during the training.

By using water/body phenomena for stimulation and learning NM also creates calmness, better understanding of the water environment, and better confidence, leading to better control of the water. We have educated 450 persons, and many of them had disabilities themselves. Approximately 1400 from the target group have been practicing the method during the project period.

After training NM the participants gained a completely different feeling and sensitivity to the water. They gained a greater awareness of what is happening in the water. For many this made it possible for them to learn to swim or to swim better.



POSTERS

Research based on the drowning prevention: causes, solutions, preventative measures formations, interventions, education, and partenariat.

Mady COMPAORE

Burkina Life Saving Federation, Ouagadougou, Burkina Faso

Burkina Faso, in West Africa, is facing a phenomenon called drowning. Drowning is the process of experiencing respiratory impairment from submersion or immersion in liquid. It is a preventable catastrophe injury death with a high reported incidence challenging the community particularly children. Drowning has caused over than 1000 death per year, and the principal cause is water. However, it is important to underlined that there is a high level of drowning cases not registered by the authorities. Rivers, pons, dams, lakes are the principal waterways of drowning. Downing is often caused by flooding during raining season, due to the crossing of rivers by people crossing in boats, the lack of infrastructures, swampy areas, swells and unfathomable areas. For instance, we have the flood of 01 September 2009 in Ouagadougou causing the death of several people, the 2016 flood in killed 8 people, and the flooding of the perkoa mine in 2022. The aim of the research is to assess the magnitude of the problem for the children in our country. In the study of this phenomenon we have found some solutions such as, provide a legislative law for the prevention of drowning, the installation of barriers to limit access to water bodies, teach the basics of swimming and water at schools, build municipal swimming pools, teach potential drowning witnesses, create a particular status for lifeguards that will create jobs for young people. We have also found some preventative measures like, avoid staying in flood-prone areas, avoid playing around water reservoirs, seek out international partners who are involved in rescue and humanitarian work. As a fact of intervention, recommend best practice in drowning prevention, recruiting and training potential witnesses in rescue in different localities of the country who could be communautaire rescuers, raise awareness of water-related hazards and risks on a permanent basis. Overall, we hold that the situation in our country in terms of drowning prevention should be more access during the rainy season. Furthermore, monitoring must be put in place at the dams, rivers, lakes and all the water resevoirs followed by awareness and sensitization permanent campaigns in rural areas, schools, universities, population in general.

Updating the evidence: drowning prevention interventions for adults and children

Justine E Leavy, Corie Gray, Nicola D’Orazio, Malena Della Bona, Gemma Crawford

Curtin University, Perth, Australia

Background

Historically, published evaluation of drowning prevention interventions has been limited. In 2015/16, systematic reviews focused on children [1] and adult [2] drowning prevention interventions were published which called for more robust interventions underpinned by evidence-informed approaches. This paper presents a recent update on the evidence for public health interventions that address fatal and non-fatal drowning in children (under 18 years) and adults.

Methods

A systematic review of peer-reviewed literature was undertaken across 15 databases for English-language studies published between 2011 and 2021 describing a primary drowning prevention intervention targeting an individual, and/or group and/or population level. We replicated steps used in previous reviews [1-3] consistent with the Preferred Reporting Items for Systematic Review and Meta-Analyses guidelines [4]. Articles were assessed using a purposively tailored quality appraisal checklist adapted from the MetaQAT framework [5]. Outcome measures included: drowning rates; water safety behaviour changes, or changes in behavioural intention or drowning awareness, knowledge, attitudes, water safety policy and legislation; changes to the environment; and water safety skills.

Results

Sixty articles were included (children n=38; adults n=22). Most studies (n=39) were conducted in high-income countries. Yearly trends in drowning prevention intervention publications were analysed. Studies targeted interventions at a population level (n =26), group level (n=30) and individual level (n=4). Studies identified a range of prevention strategies, categorised as behavioural (n=38) (e.g., swimming lessons), socio-ecological (n=11) (e.g., mandatory personal flotation devices) and mixed (n=11) (e.g., awareness campaign and barriers to water). Twenty-six studies described behaviour change theory or formative evaluation to inform design. A range of outcomes were described including changes in awareness, water safety knowledge, attitudes, water safety behaviours and skills, environmental, policy and regulation changes and drowning rates.

Conclusion

The reviews update the evidence base for public health interventions that address fatal and non-fatal drowning. Since 2015 there has been a modest increase in the number of interventions published; positive changes have also been identified in the way interventions are designed, delivered and evaluated. Findings reinforce global calls for multi-level, multi-strategy approaches to intervention design, implementation and evaluation aligned with contemporary health promotion and prevention approaches.

Situations and associated risk factors of child drowning during COVID-19 outbreak in Thailand

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Background

Drowning is one of the leading causes of child death in Thailand. Besides, the highest mortality numbers were found during biennial school holidays (March - May or October). This study was aimed at identifying trend and associated risk factors of child drowning during COVID-19 outbreak in Thailand (2020 - 2021).

Methods

We collected data of drowning death numbers, preventive control interventions during COVID-19 outbreak, and the period of school holidays or online study. We then compared this information with the data of pre-COVID-19 outbreak period. The analysis and synthesis were performed to attain the influence or factors associated with drowning during the COVID-19 epidemic situation.

Results

Current study found that a number of child drowning death cases did not change in the first year of the outbreak but a number of deaths were found increased in the second year of this epidemic period i.e., child drowning mortality rate was shown 5.0 per 100,000 children in 2019 and 2020, but was found increased to be 6.0 per 100,000 children in 2021. However, we found no change of death numbers (p -value >0.05) in comparison of 2 time points (pre- vs during COVID-19 epidemic). Remarkably, the city lockdown measure was legislated only for the first year of outbreak, but we found the second year revealed significantly higher death rate than a number of deaths in the first year (p -value <0.05). The associated risk factors of child drowning death may consist of long school holidays, Strictness of government regulations such as the city lockdown across kingdom, Unable to operate full scale of drowning prevention intervention because local staff must emphasise on COVID-19 prevention and including bodily fatigue from quarantine.

Conclusion

Drowning among children under 15 years in Thailand was found 18% increase (COVID-19 epidemic period) from baseline (2019). The major risk factors were i) children had to stay home for studying online classes respecting COVID-19 government policies e.g., city lockdown, Emergency decree, ii) staff at local area had to prioritise their missions to operate the outbreak, including prevention and control duties, and iii) fatigue of workload/quarantine as a consequence from outbreak.

Non-Fatal Drowning Research in Sri Lanka

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Background

The current political and economic crisis in the country has greatly impacted the growth of the country, with the government and the leaders of the country robbing the people of their freedom and human rights. Despite hardship and economic and financial constraints, the people of our country maintain their resolve. It's obvious, though, that this has had a profound effect on the emotional and physical well-being of our community.

Sri Lanka is known to have a vast community who have experienced or witnessed drowning around the country. Due to the two monsoons as well as the discrimination that has been received because of the varied political stand points, people tend to look for something to get away which most of the time involves water related activities such as going to the beach or swimming in a lake. There has been a dramatic increase in drowning deaths across the country due to the very little education about water safety that has been introduced to communities and the, changing environments.

About Research

The research study "Non-Fatal Drowning around Sri Lanka" was decided upon, to collect data from the communities of Sri Lanka, on how many of the population of the country have experienced drowning or know anyone who might have experienced drowning and to also determine how many have witnessed a drowning incident. We believe this survey would greatly help us in knowing the exact affect of the humanitarian services that we do and how they could be developed.

The data was collected through the member clubs that SLLS is affiliated to, using a 12-question survey (See Annex 01) that should be answered directly. This survey was brought together by the research team of SLLS and was distributed accordingly.

Up until now, we were able to collect a total number of 1,000 surveys, while introducing 1,000 participants from various provinces around the country, to the said survey.

We have no doubt of the effectiveness this survey would prove to our cause and hope to present the results of a total of 1,000 participants minimum, at the WCDP 2023.

Recreational boating-related fatalities in Canada, 2008-2017

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Background

Drowning and water-related injuries are a significant cause of mortality in Canada with almost 500 unintentional water-related deaths occurring each year. Approximately one-quarter of these deaths are boating-related. The objective of this study was to describe the epidemiology of fatal recreational boating-related incidents in Canada.

Methods

Data on water-related fatalities that occurred in Canada during 2008-2017 were obtained from the Drowning Prevention Research Centre Canada database. Cases were included if the deceased person was on the water for the purpose of leisure and using a human-powered watercraft, small powerboat, or other small pleasure craft. Data were analyzed to describe characteristics of the incidents based on demographics of the person who died, incident location, date and time, causes of the boating incident, and other environmental and personal factors that may have contributed. Rates were calculated per 100,000 population by year, age, sex, and province/territory.

Results

Recreational boating-related death rates in Canada decreased from 2008 to 2017; however, they continued to account for a substantial proportion (21%) of all water-related deaths in Canada. Boating deaths primarily occurred among adults and nine out of ten recreational boating-related fatalities occurred among males. Lakes (62%) were the most frequent type of body of water where boating deaths occurred. Death rates differed by province and territory with the highest rates found in the Yukon (3.0/100,00 per year), Northwest Territories (1.8/100,000 per year), and Newfoundland and Labrador (1.0/100,000 per year). Half (51%) of recreational boating-related deaths occurred during powerboat use. Canoes (23%) were the next most common type of watercraft used prior to a fatality. Poor weather conditions including rough water (34%) and high winds (17%) were frequent causes contributing to recreational boating-related deaths. Over one-third (36%) of individuals who were fatally injured in a recreational boating-related incident had consumed alcohol. Most (80%) individuals who died as the result of a recreational boating-related incident were not wearing a personal flotation device (PFD) at the time of the incident.

Conclusion

Recreational boating-related deaths are preventable. The results of this study can be used to inform policy- and decision-makers, boating safety organizations, and injury prevention messaging.

An outcome assessment of a community-based drowning prevention intervention for under-five children in low-and – middle-income country: A pathway for sustainability

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Background

Drowning is responsible for a large number of fatal drowning cases worldwide. Approximately 236,000 occur due to drowning globally with the majority of deaths occurring in low- and middle-income countries (WHO, 2018). According to the Bangladesh Health and Injury Survey (BHIS-2016), the fatal drowning rate of children aged 1-4 years was 71.1/100,000 in Bangladesh. A low-cost community-based child supervision model called Anchal was implemented from 2017-2019 by the Centre for Injury Prevention and Research Bangladesh (CIPRB), in collaboration with the Royal National Lifeboat Institution (RNLI) and The George Institute for Global Health (TGI) to reduce the rate of child drowning in the three sub-districts of the Barishal division, the most drowning-prone region of Bangladesh. The aim of the study was to assess the intervention's key achievements in terms of reach, successes, and challenges, of a community-based child supervision model resulting in the reduction of children drowning in Bangladesh.

Methods

An inbuilt three-year intervention's monitoring system data of enrolled participants, attendance, dropout, graduation, non-adherence to guidelines, and condition of program locations were used for the evaluation. To monitor Anchal intervention's reach and quality of service provision, there was an inbuilt monitoring system, and an intervention-specific Standard Operating Procedure (SOP). A real-time monitoring system was steered by REDCap software to monitor daily Anchal's intervention activities.

Results

Over the three-year project period, the project successfully enrolled 17,651 children in the Anchals while its aim was to enrol 10,000 children, representing 29.3% of the 1-5-year-old population in the intervention areas. Of these, 3,881 children graduated, 5,579 children dropped out, and 8,191 children were receiving supervision services. However, the project faced a dropout rate of 31.6% for both boys and girls. The average attendance was 16.5 days. One of the key challenges of the intervention was that younger child was less likely to stay in the centre for a longer period.

Conclusions

Enrolled children not attending the centres indicate children's vulnerability to drowning risks. Future interventions should find effective and culturally-competent drowning prevention strategies or measures for increasing child attendance, particularly for under two children in limited-resourced settings.

Title: Understanding drowning situation for policy planning in Bangladesh: Sharing experiences from a nationwide population-based survey

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Background

About 91% of the global drowning deaths occur in low- and middle- income countries including Bangladesh. Understanding epidemiological burden of drowning is prime to develop specific interventions in addressing the problem. Thus, we aimed at in-depth exploration of both fatal and non-fatal drowning in Bangladesh.

Methods

A nationwide cross-sectional house-to-house survey was conducted in 2016. A total of 299,216 populations from over 70,000 households were selected based on probability proportionate to size with separate urban and rural samples from 16 randomly selected districts in Bangladesh. Multistage cluster sampling method was applied to select desired number of households. 64 trained data collectors, 16 supervisors and two field managers carried out the enumerations through electronic data collection process. Descriptive and logistic regression analysis were used to derive rates and test the association between variables.

Results

Fatal and non-fatal drowning rate were 11.69(95%CI:08.41-16.27) and 263.46 (95%CI:245.07-282.05) per 100000/populations/year respectively. The highest rates of fatal and non-fatal drowning were observed in children 1–4 years at 66.58(95%CI:38.92–113.09) and 2469.32(95%CI:2263.0–2694.0) per 100,000/populations/year respectively. Both fatal and non-fatal drowning rates were significantly higher in rural areas (13.99, 95%CI:09.62-20.36 and 320.99, 95%CI:03.296.08) compared to urban areas (07.53,95%CI:3.82-14.86 and 158.84, 95%CI:136.06-184.06). Binary regression analysis showed that males were at higher risk of both fatal and non-fatal drowning than females. Children 1–4 years were 22.45 times (95%CI:2.95–170.75;p = 0.000) and 18.58 times (95%CI:0.67-128.12; p = 0.000) higher at risk of fatal and non-fatal drowning, respectively than 10-14 years. The poorest SES quintile had 6.08 times (95%CI:1.36-27.16;p=0.02) and 4.05 times (95%CI:0.87-18.81;p=0.07) higher risk of fatal and non-fatal drowning respectively than those compared to richest. Ponds are the most common place 63% of drowning in Bangladesh. About 60% of drowning took place in water within 20 m from victim's house. Almost all 94.0% drowning occurred during the daylight between 0600h and 1800h.

Conclusion

The study suggests that the magnitude of fatal and non-fatal drowning is very high in different part of Bangladesh. A national comprehensive effort for drowning prevention in Bangladesh is crucial in achieving several targets of the Sustainable Development Goals.

SOBRASA KIDS - Sport as a drowning prevention tool through playful and interactive activities.

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Introduction

In Brazil, in 2020 drowning was the 1st cause of death in children aged 1 to 4 years and the 2nd cause among the 5 to 9 years old¹. Drowning in Brazilian children occurs mostly in swimming pools and homes. Between 1996 and 2016, the State of Espírito Santo (4.016.356 habitants²) registered 3.639 drowning deaths². The city of Marataízes in Espírito Santo, (39.259 habitants³) registered 71 deaths (1996 a 2020²). SOBRASA KIDS is a drowning prevention program of Brazilian Lifesaving Society (SOBRASA) excellent tool to education and assess the level of knowledge about drowning through of the Marataízes Water Rescue Group - ES.

Methods

Playful games about drowning prevention are presented, educating children with risk assessment and perception. Some dynamics are separated by age and sex. The children and caregivers participated in a lecture. Caregivers completed an evaluation form using a multiple-choice questions. Children were subjected to a specific online pre-assessment using Google forms. Varied topics were covered in the questions from what to do to avoid child drowning to safety signs, most impacted locations for childhood drowning and the actions to take when witnessing a drowning event. The forms were filled out in January and July 2021 at beach and lagoon events and in 2022 at the beach.

Results

Caregivers (N=18) answered the questionnaire. 55.6% knew what to do to prevent a drowning event; 94.4% knew the meaning of the beach flag colors. Only 38.9% knew where most drowning deaths occur and 72.2% He got it right about what to do when they witness someone drowning. Children (N=17) answered 7 questions. Over a third (35.3%) of the participants chose that learning to swim is better to prevent child drowning than being supervised by an adult.

Conclusion

Lack of knowledge of where most drownings occur in Brazil was evident and some caregivers believe that knowing how to swim is enough to avoid drowning. Children have also some gaps in water safety and drowning prevention knowledge that program SOBRASA KIDS address. Important to study the knowledge retention of over time.

Developing non-technical skills in lifeguard teams – improving operational performance and safety

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Background

Non-technical skills are defined as the social (teamwork, leadership, communication), cognitive (situation awareness, decision-making, cognitive readiness, task management) and personal management (stress and fatigue management). These skills have been identified as necessary for safe and effective performance of teams operating in high-risk industries including aviation and healthcare¹.

The research examines the non-technical skills required by lifeguards and seeks to assess gaps in current training programs for lifeguards and frontline lifeguard team leaders (often referred to as Senior Lifeguards or Patrol Captains).

Method

Over 100 lifeguards completed questionnaires and interviews along with observations of performance during scenarios that form part of existing operational leadership training for RNLI beach lifeguards.

Results

Lifeguards were asked to identify core non-technical skills sets they considered important to their operational roles; they were also asked at what stage in their career progression these skills should be trained.

Lifeguards were further asked to identify what they perceived as barriers to the training and assessment of non-technical skills such as time available of courses, difficulties in developing fair assessments or lack of prioritisation.

Conclusions

Non-technical skills including leadership, communication and situational awareness are essential elements for high performing teams; this can become a matter of life or death with higher risk tasks such as search and rescue or the provision of casualty care².

Extensive work has been done with SAR helicopter pilots to use a behavioural markers system to identify positive and negative behaviours to support training and assessment³, more work needs to be done to develop a similar system to support lifeguard training.

Injury and Illness Surveillance of Lifesavers in Lifesaving Competitions

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Background

Lifesaving competitions are used to demonstrate the results of lifeguard training to improve their rescue skills. Because of the wide variety of lifesaving athletic events, various injuries and illness often occur. However, there have been no reports on the occurrence of sports injuries during lifesaving competitions. The purpose of this study was to clarify the characteristics of injuries occurring during lifesaving competitions and to provide basic data for injury prevention for lifesavers working to improve their rescue skills.

Method

The target competitions were six ocean lifesaving competitions held in Japan in 2022. Injuries were recorded based on the injury and illness surveillance consensus document developed by the Japanese society of clinical sports medicine and the Japanese society for athletic training. Injury records were compiled by the public first aid station set up at the official site, and injury reports were recorded by athletic trainers and sports doctor to first aid at competitions. The method of analysis was a simple tabulation of injury type, athletic event, injury, and injury classification.

Result

The total number of injuries and illness during the six tournaments was 126, with an average of 21.0 ± 11.3 injuries per competition. The injury types were trauma (70.0%), chronic injury (21.4%), and illness (8.5%). The top three injury types of events were beach flags (24.7%), beach sprints (13.1%), and board races (11.2%). The top three injury parts were posterior thigh (25.7%), posterior foot (17.1%), and shoulder (7.9%). In terms of injury classification, muscle/tendon injury (43.9%), wound (22.3%), and joint sprain / ligament injury (13.8%).

Conclusions

It is clear that injuries are not infrequent during lifesaving competitions. The most common type of injury was muscle trouble in the thighs during beach-type competitions, while the most common parts of injury was the foot because of the ocean competitions, and the most common injury types were wounds and joint sprains.

The development of competences for the care of drowned patients, using the flipped classroom, in a medical course

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Drowning is one of the worldwide leading causes of non-natural death. Reports from the WHO show alarming numbers, where drowning accounts for nearly 360,000 deaths a year (1). This was an exploratory and descriptive research aimed at understanding how medical students acquire skills on drowning management in a medical school in the State of Paraná, as well as discussing the form of educational approach to meet the needs of the population, proposing a method to acquire competencies in the care of these patients. A teaching program was used with the students of Faculdades Pequeno Príncipe, including active methodologies, inverted classroom and simulations. The application of the simulation scenario was based on the "SMART" method (Specific, Measurable, Attainable, Relevant, Time Based) (2) and the PEARLS (Promoting Excellence and Reflective Learning in Simulation) (3) health debriefing tool. After the simulation, there was an assessment involving an OSCE (Objective Structured Clinical Examination) (4) type station for all students.

For the educational approach, the active methodologies with a realistic simulation environment proved to be efficient for the acquisition of competences and the inverted classroom model, with high fidelity simulators, could be used for training, with effective results for the understanding of the theme and assistance to the victims, since this way it was possible to take advantage of the time in the classroom and it was also possible to keep the attention of the students, for a longer time.

The debriefing is important for finalizing the simulations and should be done in such a way that the students themselves make most of the observations and recommendations, thus stimulating the clinical reasoning to be worked on and executed. For this, the PEARLS method can be used, in which the analysis will be divided into the participant's self-assessment, focused facilitation and information supply.

First aid practices and health seeking behaviors of caregivers for non-fatal drowning in Bangladesh: Sharing experiences from a national population-based survey

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Background

Data on types of community first aid use and treatment provided for post drowning cases from many low-and middle-income countries, including Bangladesh, are lacking. Objective of the study was to understand types of first aid given and health seeking for post drowning cases in Bangladesh.

Methods

A nationwide a cross sectional survey was conducted in 2016 using a pretested structured questionnaire at household level. A total of 70,000 houses with 2,99,216 populations were selected from 16 randomly selected districts of Bangladesh. Face-to-face interviews were conducted by skilled data collectors through electronic data collection procedure. A multistage cluster sampling procedure considering probability-proportional-to-size strategy used with separate urban and rural sample. Verbal autopsy method used to determine the cause of both mortality and morbidity. Secondary analysis of the data of the survey was done for this study while descriptive and logistic regression analysis used to derive rates and test the association between variables.

Results

A totals of 788 cases of non-fatal drowning were identified during the survey. Among these cases, 677(85.90%) received some form of first aid of whom 262(38.70%) were provided first aid by the neighbors, 284(41.94%) by the bystanders, 89(13.14%) by the drug sellers and 42(6.20%) by the others. Among the above mentioned first aid providers, 72(10.64%) were properly trained. Different types of activities done for non-fatal cases were spun over the head [314(39.84%)], pressed abdomen to remove water [205 (26.02%)], messaging oil [154 (19.54%)], putting ash in mouth [21(2.66%)], mouth to mouth breathing and pressure on the chest [45(5.71%)] and taken to doctor/hospital [49(6.22%)]. Significantly males received first aid than females (OR 1.83, CI:1.247-2.681; p=0.002), children received first aid than adults (OR: 3.99, CI:1.570-10.114, p=0.004), Poorest SES quintile received first aid than richest (OR 2.87, CI: 1.645-4.992, p=0.000).

Conclusions

Findings of this study will help to design community interventions to increase the provision of appropriate first aid for non-fatal drowning focusing on golden first hour theory as trained community level first aider are very important to reduce preventable death from drowning.

Water rescue: suggestion of new terminology

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Introduction

The phases of water rescue can be divided as follows: 1-warning or observation; 2-approximation by land and/or water; 3- approximation (which may be through the use of floating material offered/thrown to the victim); 4-rescue (transportation in the liquid medium) which may be through floating material, or vessel, to a safe place or pulled through ropes; 5- removal from the liquid medium (1-6); 6-basic and/or advanced life support (if necessary) (7-10). However, water rescue may have several definitions, such as "removing one or more victims to a safe area", as well as "removing a victim from the water without signs of liquid aspiration and without evidence of respiratory failure" (11). In this way, a heterogeneous nomenclature can make prevention, rescue, transportation and pre-hospital care studies difficult for several professionals who work or not in water rescue, as well as researchers, editors and reviewers of scientific journals.

Objective

Propose a more precise rescue terminology. Methodology: The study involved a survey, through interviews, of water rescue specialists and medical emergency workers from the Military Firefighters Corps of Rio de Janeiro.

Results

The water rescue terminology proposed in this study would be "removal of one or more victims from the liquid environment in an imminent risk of drowning, using appropriate techniques, with the possibility of using equipment and/or vessels". This terminology can also include victims who do not have initial evidence of liquid aspirations, and who may have signs and symptoms of physical fatigue, considering the effort required to swim and/or stay on the surface to survive.

Conclusion

However, rescue should not be treated in isolation, as seen in some studies (6-9), but be included in all phases that precede the degrees of drowning, because it turns out to be common in all life-saving operations from phase 3, as discussed above. Thus, the terminology suggested in this study can support future definitions in studies involving water rescue techniques, as well as themes related to drowning itself.

Immunological aspects to the patient from drowning: an understanding for efficient treatment

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Introduction

One of the main injuries in drowning is the filling of part of the alveoli by the aspirated water. This dysfunction is due to the inactivation of alveolar surfactant and injury of the pneumocytes, leading to a decrease in the gas exchange, resulting in hypoxemia dependent on the extent of the affected area. However, the survival of drowning patient may lead to Acute Lung Injury (ALI). Although the pathophysiological effects of drowning are well known, it is still unclear how the immune system reacts to this type of trauma (1). Objective: To analyze the effects of ALI on the drowned patient's immune system, through a literature review.

Methods

Literature review by PubMed electronic databases and specialized books, using the following keywords: drowning, hypotonic, isotonic, hypertonic, immunology. It was analyzed 26 articles, nine were excluded, totaling 17 papers, published between 1991 to 2022.

Results

Either salty or fresh water may result in local or systemic alveolar destruction and inflammation as a response to trauma resulting in different grades of inflammatory response syndrome. It has been reported the mean period between drowning and clinical manifestations can occur as long as 37 days. These inflammatory symptoms and signs are most commonly manifested into fever, mental status changed, headache, neutrophilia, raised protein, and glycaemic decreased. There is the hypothesis that caspase-1 is activated in macrophages under hypertonic conditions, triggering the release of IL-1B(2). Activation of caspase-1 by inflamassoma may be mediated by certain NOD-like receptors, often in response to microbes and fungi. However, the inflammasome acts as a hyperosmotic sensor, verifying changes in the ionic environment intra and extracellular that is important for the induction of inflammatory response Th17(1). Also occurs enhanced the expression levels of tumor necrosis factor α (TNF- α), nitric oxide (NO), nuclear factor- κ B (NF- κ B), inducible NOS (i-NOS) and interleukin-1 B (IL-1B) secretion(3).

Conclusion

Regardless of whether it occurred in salt or sweet water, they do not lead to differences in treatment. Thus, ALI can be attenuated by drugs that interfere with NF- κ B and i-NOS pathways, and block the activities of pro-inflammatory cytokines, reactive oxygen species and proteases.

Potential risks of pathogen transmission in mouth-to-mouth ventilation in drowned patients: a mini-review

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Introduction

The primary drowning victim (Cardiopulmonary Arrest non-cardiogenic) presents hypoxia(1,2) as the main characteristic, being the mouth-to-mouth ventilation (MMV) crucial in order to try to reverse a Cardiopulmonary Arrest (CPA). However, some studies advise to do the MMV during the CPA, making the use of the protective barrier device optional, unless the rescuer does not delay the installation of this accessory(3-8) in order not to increase the risk of death(9).

Objective

To assess the risks to which lifeguards are exposed when performing MMV. Methods: The database indexed in PUBMED was consulted with the following keywords: "Transmission", "disease", "mouth-to-mouth", "ventilation", "drowning" from 1958 to 2022. Twenty two studies were selected that had information on the transmission of infectious microorganisms from the blood (hepatitis A, B, C, D, syphilis and HIV) and from saliva (mononucleosis, mumps, candidiasis, herpes, chicken pox and the flu). Results: Infections due to the transmission of disease from saliva from the blood were small, with 15 cases reported in the literature, the most common being the bacterium responsible for meningococcal meningitis(9). For HIV infection, evidence suggests that transmission does not occur through saliva (10,11,12) and nasal secretions, unless they are visibly bloody (13). Although the Hepatitis B virus can be present in the patient's saliva (14,15), its transmission potential is low (14). No infection has been reported by hepatitis viruses and the most common through saliva was the flu virus.

Discussion

The environment where the lifeguard is inserted is very different from a controlled situation, for example, an ambulance that has available resources, bioprotection, temperature control, supplies, etc. Thus, the response time of the lifeguards at the beginning of ventilation may increase due to the fear of initiating MMV; however, even if small, there is still a risk of contamination by pathogens due to the secretion of foam, and the use of hermetic barriers (face mask and face shield) are recommended to avoid risk exposure(16-21) and clinical protocols and therapeutic guidelines for post-exposure prophylaxis should be followed(22).

Trialling a Collaborative Female-Focused Swimming Instructor Training Programme in the Maldives: Challenges, Learnings and Impacts

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Two thirds of women worldwide cannot swim¹. Research with Maldivian school students we teach reveals girls are four times more likely than boys to feel unconfident swimming in the sea². Our programme will train six Maldivian people, including five women, from Rasdhoo and Ukulhas islands as SSI Swimming and Snorkelling Instructors. It aims to equip islands with the trainers needed to teach people, particularly women and girls, to swim for the long-term. In December 2022, the Manta Trust and Salted Ventures Swimmers conducted interviews and consultations with 204 Maldivian people from 44 stakeholder groups across 15 islands, to co-develop the instructor training programme, running in November 2023.

The 9-day programme includes:

- SSI Swim and Snorkelling Instructor training - 8-days including 36-hours apprenticeships.
- Workshops - 1-day:
 - Empowering women and girls for greater participation.
 - Programme development & mentoring with qualified swimming instructors: participants create localised plan of action to create sustained swim and snorkel lessons for their communities.
 - Environmental awareness and responsibility.

Programme funding was primarily secured from a Big Give match funding campaign and the Centre for Open Exploration. Participants include community members and schoolteachers. Challenges included finding women to participate who could swim, participants lacking free time, and the reliance of the programme on the sustained commitment of individuals and stakeholders. Larger barriers to women's participation need to be addressed to improve the up-scalability of this programme. Impacts include the instructors gaining new skills and livelihoods opportunities, and the islands' collective population of 2,400 people being able to access swim and snorkel classes following the programme.

During implementation and 1-year following, mentoring and quantitative and qualitative research will be conducted with participants and wider communities, to understand challenges, how to overcome challenges, and impacts of the programme on participants and their communities. This information will help us to build future programmes and contribute to a widely shared 'Ocean Connection Strategy.' This strategy will outline successful ocean access models, aiming to encourage other groups to implement such programmes in their regions. We predict that this programme will be significant for both drowning prevention and increasing inclusivity in ocean recreation.

Open water drowning survival guidelines for swimmers

Shayne Baker¹, John Connolly², Stephen Langendorfer³, Richard Franklin⁴, Joost Bierens⁵

1Lifesaving Foundation, Gold Coast, Australia. 2Lifesaving Foundation, Waterford, Ireland. 3Lifesaving Foundation, Bowling Green, USA. 4James Cook University, Townsville, Australia. 5Lifesaving Foundation, Eindhoven, Netherlands

Context

The lead editor, John Connolly had a vision to create an ebook to explore why swimmers drown. He maintains that there is no question mark because it is not a question. The book contains answers to the question and explains, in plain nontechnical language, why people who have learnt to swim, die by drowning. Despite positive emphasis on the merits of learning to swim it is not the same as being vaccinated against drowning. The editorial team decided early on that the language used would be in 'plain English', written in a magazine format, without references and instead of an abstract at the beginning of each topic bullet points were inserted providing the key messages.

Case Presentation

The book is available free as an e-book. It can be accessed on Waterford Institute of Technology's Lifesaving Foundation page. (<https://wit-ie.libguides.com/c.php?g=665155>). An editorial team was established to identify potential contributors another 20 contributors from throughout the world and to seek their expertise on the identified topics used for each chapter – drowning, swimming, how swimmers get into trouble, beach hazards, rivers and canals, lakes and reservoirs, boating and watercraft, special situations and activities, endurance swimming, water competency, survival psychology, resuscitation of drowned victims and future research.

Discussion

"Drowning has nothing to do with swimming and everything to do with breathing." The contributors were charged specifically to focus on the topic and the positive aspects of the topics so that message is essentially to encourage the reader to not drown in the circumstances that can cause fatal drownings and/or morbidity.

Conclusion

If swimmers follow the guidelines, they should not get into difficulty. Ideally, not getting into trouble is far better than having to self-rescue, even though the surviving drowning may have consequences. For example, John Wells and Suzanne Denieffe in their chapter on Survival Psychology, explain how successful rescues often result in short-term and sometimes long-term psychological issues. And as we know a swimming teacher often encounters learners with an anxiety and dread of water because of an earlier drowning event.

Floating competence: evaluating the separate effects of instructions and practice

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Extreme Environments Laboratory, School of Sport, Health and Exercise Science, University of Portsmouth, Portsmouth, United Kingdom

Background

Recent research showed floating competence improved with repeated floats and instruction. (1). The order of presentation meant it was not possible to determine the role of practice independent of instruction. This study explores the separate effects practice and instruction have on floating competence.

Methods

23 participants consented to participate in this ethically approved study. Participants were matched for sex and sum of skinfolds and each pair split between the coached first (70.4 [28.6] mm) or practice first (77.7 [32.0] mm) groups. Participants floated on their back for two minutes, doing as little as they needed to keep their airway clear of the water (naïve float). Before the second float, those in the 'practice condition', practiced floating for 5 min. In the 'coached condition', 5 min of instruction was provided by an experienced swim teacher before the 2 min float (Float 2). The groups swapped and undertook the other condition before the final 2 min float (Float 3). During each float, their technique was filmed for subsequent analysis (2), the angle of the float estimated, heart rate recorded, participants' confidence, perceptions of difficulty and ratings of perceived exertion (RPE, 3) were surveyed before and after each float.

Results

There were no between-condition differences in floating competence. When all participants were grouped together, float 2 showed reductions in post-float perception of difficulty ($P=0.001$), RPE ($P=0.014$) and heart rate ($P=0.020$), and increases in float angle (more horizontal) ($p=0.005$) compared to the naïve float. In the coached group post-float confidence increased ($P<0.001$).

By float 3, heart rate ($p=0.006$), RPE ($P=0.001$) and post-float perceived difficulty ($P=0.002$) reduced compared to the naïve float, with float angle ($P<0.001$) and post-float confidence increasing ($P<0.001$). There were also trends for reductions in pre-float perception of difficulty ($P=0.061$), pre-float confidence ($P=0.052$) and improved floating competence ($P=0.055$).

86% (20/23) of participants stated a preference for coaching followed by practice, this increased their confidence level early and provided an opportunity to practice later.

Conclusions

There were no differences in floating competence between the coach and practice conditions. People should practice floating, if they can get coaching this may initially increase confidence.

The construction of Sobrasa CPR mannequins in public schools - a measure of prevention

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Concerned about the high numbers of drowning among children and teenagers in various places such as buckets, swimming pools and others in the state of Rio Grande do Sul and throughout Brazil, the project "building your SOBRASA CPR manikin" was offered to public schools, which consists of a playful lecture on drowning prevention and building a manikin with recyclable material including students, their family, and teachers.

Objective

To provide students from public schools in the city of Torres/RS information in a playful and interactive way on how to behave in aquatic environments and how to build a CPR manikin with recyclable material.

Description

The project was implemented in 2020 in public schools in Torres/RS, longing to inform students aged from 5 to 12 years old on how to behave in aquatic environments, thus preventing drowning. After the lecture, the children, teenagers, and family members were instructed to make their own CPR mannequin with recyclable material. At the end of the lectures, a quiz with 05 questions was applied, with two main questions: "which is the emergency call number?" and "How many ventilations must be done on a drowning person?" to identify the level of fixation of the content and to improve the didactics. This data is being used for future studies and actions in favor of drowning prevention.

Conclusion

Through the quiz and the construction of the mannequin, it was observed that the target audience reached the basic knowledge about drowning prevention and the collected data allowed restructure for the following events. We believe that spreading prevention is the best way to prevent drowning. So, we align our actions with SOBRASA's campaigns.

Swim Vietnam Charity Swimming and Water Safety Educational program and Swim Teacher Training Professional Development.

Nhu Duy Nguyen^{1,2,3}, Nhu Cam Hoang¹

1Water Skills For Life, Sydney, Australia. 2Austswim, Melbourne, Australia. 3Royal Life Saving, New South Wales, Australia

2,000 children drown in Vietnam each year. That is more than 5 children every day*. The World Health Organisation calls it the "silent epidemic" and believes this figure to be conservative. Many of these lives could have been saved simply if the children had been taught how to swim.

Swim Vietnam, a registered charity located in flood prone Central Vietnam, trains swimming teachers, builds swimming pools and works in partnership with the government to establish swim schools giving free swimming and water safety lessons to prevent children from drowning.

*Vietnam Ministry of Health Statistics

What We Can Do

It costs US\$25 to teach a child in Vietnam to swim but they currently provide primary school aged children with free swimming lessons.

SURVIVAL SWIMMING LESSONS

Teach primary school children to learn to swim and practice survival techniques.

BUILDING POOLS

Build pools that we co-manage and then aim to hand over to local communities.

CLASSROOM WATER SAFETY EDUCATION

Water safety education for students at primary and high school.

SWIM TEACHER TRAINING

Training internationally accredited Austswim swim teachers and presenter. Training primary school teachers to become water safety educators to deliver the Swim Vietnam classroom based water safety curriculum.

From its humble beginnings:

- Over 33,000 children have successfully completed Swim Vietnam's survival swimming program.
- 15 swimming pools installed in Quang Nam province.
- Over 1,800 swim teachers trained to address the dire shortage of swim teachers in Vietnam and help spur generational change.
- Over 240,000 children have received classroom-based water safety education with over 3,600 sports teachers trained to deliver these presentations.

The goal in the future is to expand the charitable swim program into those remote areas within Vietnam where the locals are too poor to build a pool or parents can't afford swimming lessons for their children. In addition, to train more Vietnamese to become swimming teachers so the programs become self-sustaining. Swim Vietnam has been so successful because it has worked hard with other NGO's and Vietnamese groups.

The dream is the same for everyone – children safely enjoying the pleasure of swimming.

Floating competency of inexperienced water users in moving open sea and fresh water

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This study examined whether the RNLI "Float to Live" instructions could assist inexperienced water users to float in realistic conditions (moving fresh/sea water, after an accidental fall).

The research protocol was approved by a research ethics committee, and the volunteer inexperienced water users gave their informed consent to participate. For safety reasons, participants completed four floats in still water¹ before entering moving water. Six participants (3 women; mean [SD] age: 32 [14] y, BMI: 25.3 [3.8] kg.m⁻²) undertook two floats in moving sea water (harbour tidal flow of 0.4 [0.09] m.s⁻¹; 21.9 [1.6]°C), the first in swimwear and the second following a simulated accidental fall wearing summer clothing. Five participants (1 woman; mean [SD] age: 42 [17] y, BMI: 25.0 [3.8] kg.m⁻²) undertook three floats in moving fresh water simulating a Grade 1 river (1.4 to 1.7 m.s⁻¹; 18.1°C) in the following order: 1) wearing swimwear (naïve); 2) wearing swimwear following coaching on "defensive floating" by a qualified instructor; 3) following a simulated accidental fall wearing summer clothing. Expected/experienced floating difficulty and confidence were recorded before and after each float; and floating competence, perceived exertion and floating "efficiency" were recorded during each float. In moving fresh water, correct adoption of defensive floating (feet downstream; chin on chest and looking ahead; legs together, knees bent and heels lower than bottom; arms out for stabilisation) was also recorded.

Floating in moving sea water was perceived as more difficult ($P = 0.025$) and required greater exertion ($P = 0.046$) than still water, although floating competence and efficiency were similar in both conditions. All but one participant improved their defensive floating technique following coaching. Floating was not impaired following the simulated fall in either moving sea or fresh water.

In conclusion, the skills required to float in still water are transferable to moving water and after a simulated fall. In flowing water, individuals may need to adopt a defensive floating position to avoid obstacles and see downstream. This research project was funded by the Royal Lifeboat Institution (RNLI), UK.

Water skills for life charity swimming and water safety programs – volunteering in your community successfully. Providing opportunities to disadvantaged, CALD communities and others to learn water safety and swimming skills as well as a pathway to training as a swim teacher.

Tanya Carmont

Water Skills For Life Inc, Sydney, Australia. Swim Vietnam, Hoi An, Vietnam

Water Skills for Life started 11 March 2011, by volunteers. Vision, provide swimming, water safety skills and knowledge to children and adults, teacher training, funding assistance. Want to bring confidence and competence by providing water safety and swimming skills to our local community and overseas who are unable to access to learn swimming and skills in water safety. Programs conducted in ocean pools, beaches, outdoor and indoor pools. Volunteers are qualified swim teachers, coaches, trainees or helpers.

Collaroy Turtles December 2010, Collaroy rockpool, Sydney. Operates December to March, provides swim and water safety lesson 3 years to adults, targeted those unable to access lessons, disadvantaged families, new arrivals to Australia, CALD communities and those not receiving lessons.

Community Swim Program - First program for Tibetans commenced July 2012 giving disadvantaged and CALD communities opportunities learning swimming and water safety skills. We're committed to education, developing water awareness and skills, provide opportunities for interested people, CALD backgrounds as swim teachers and volunteering, working closely with their community as swim teachers versed in cultural and language skills. Project has potential to build knowledge and a skill base.

Summer Swim and Survive Camps - summer January school holidays, Collaroy and Forster, 5yrs -14yrs over 5 days. Use ocean pools, beaches and indoor facilities, skills for water safety all aquatic environments, in and around water, survival swimming strokes, rescue skills.

Swim Stars – Vietnam –Established and Funded program providing opportunities for children with a disability, working closely with Swim Vietnam swim teachers. Three NGO's currently participate based in Hoi An, KIANH Foundation, CHIA, Hearing and Beyond

Attracting volunteer swim teachers and other volunteers is a challenge, looking for potential trainee volunteer swim teachers, Seeking funding and support, Challenges for CALD groups, resource Water safety book for Tibetans. Important programs continue, for learning water safety, swimming skills those unable to afford lessons, CALD or new to Australia adults and children. Continue support Swim Vietnam initiatives. Training swim teachers, empowering communities-drowning prevention making a difference, enjoyment of aquatic environments. Important partnerships, Community Northern Beaches, Dee Why RSL, Swim Vietnam, Australian Volunteers Program and association Royal Lifesaving Australia, Austswim.

Drowning prevention in Lesotho.

Rethabile Majalle¹, Colin Macdonald²

1Royal Lesotho Lifesaving Association, Maseru, Lesotho. 2Royal Lesotho Lifesaving Association, Maseru, Lesotho

My name is Rethabile Majalle. I am Vice-President and Chief Instructor of the Royal Lesotho Lifesaving Association. I want to tell you what we are doing to reduce drowning in Lesotho.

Lesotho is a small, landlocked country. Its lowest point is 1400 metres above sea level, and it gets very cold in winter.

It has no natural lakes and only two large rivers, one of which forms its border with South Africa.

During 2020, and 2021, it lost more of its citizens to drowning than to Covid, because expensive tests at the border meant that many people tried to swim the river or cross on improvised rafts.

Few of the older people can swim, so we start with students in school. We train them to rescue those in danger without putting their own lives at risk. We also teach non-swimmers to float as a means of survival if they should accidentally fall into water.

But those who can swim, even the younger ones, don't use any recognised stroke. They do a leg-kick from the knees, which propels them slowly but splashes a huge amount of water on everyone else.

All our instructors have the Bronze Medallion. We also offer the Bronze Cross and the Silver Cross for instructors who want to improve their skills.

Lesotho is a poor country. The RLLA receives no support from the Government. We rely on donations from local businesses and also from overseas, plus a very small subscription from our candidates.

We are not paid for our work. Most of us became instructors while still in school and continued while in university. Many then found jobs and were unable to continue instructing. There are only about a dozen of us still active.

Nevertheless, we have awarded nearly 900 certificates.

We do our best under difficult conditions.

Factors affecting human floatation in water: a systematic narrative review

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1Leeds Trinity University, Leeds, United Kingdom. 2University of Portsmouth, Portsmouth, United Kingdom

Background

Back floating is a self-rescue skill for surviving the cold-shock response, a strategy to escape rip currents, a technique to extend survival times, and a fallback if unable to continue swimming. Accordingly, reduced float capability could compromise self-rescue prospects (1-4). Float capability is affected by various factors that differ individually and according to the task and environmental constraints experienced. Therefore, we synthesized these factors and established an evidence base.

Methods

Web of Science, Scopus, Medline, Embase, PsycINFO, SPORTDiscus, SafteyLit, and Google Scholar (the first most relevant 200 records) were searched from database inception to present with the terms (plus synonyms) "Flotation" AND "Humans" AND "Water". Retrieved articles were thematically synthesised using a framework synthesis approach (i.e., predominately deductive) to construct a conceptual map, and we tabulated the findings and discussed them narratively.

Results

3,610 records were identified and imported from databases; 2,825 from citation searching. Two reviewers screened 3,450 titles and abstracts and then reviewed 180 full texts. 81 studies were extracted and quality assessed. Factors were coded to create a concept map organised into key categories (physiological, behavioural, environmental) and the findings are discussed according to applied qualitative concepts: modifiability, deployability, and influence.

Conclusion

We present an evidence base of the factors affecting floatation in water and their applied value based on related concepts. Physiological factors (e.g., body composition, lung capacity etc.) and environmental factors (e.g., salinity, turbulence etc.) were mostly unmodifiable. Behavioural factors were mostly modifiable or conditionally modifiable (e.g., limb movement, body position etc.). It seems reasonable to target unmodifiable factors for prevention and modifiable factors for self-rescue advice.

The motor storytelling use as an educational tool in drowning prevention

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Ana María Domínguez Pachón

Royal Spanish Lifesaving Federation, San Sebastián de los Reyes, Spain

Background

Between 2015 and 2022, an average of almost 400 drowning deaths per year have been recorded in Spain. According to the World Health Organization (WHO), drowning is the second leading cause of accidental death in children between 1 and 4 years of age, ages that are very important to the learning that takes place in schools. For this reason, a bibliographical review was carried out, in which the situation of the introduction of swimming and aquatic activities in schools, specifically in the subject of Sports, was observed.

Description

An intervention proposal will also be put forward, with a motor storytelling to be taught in schools, from 3 to 6 years old, in this way an early intervention is achieved, so that 3 year old children already have their first contact with the aquatic environment, in a safe and playful way. The results obtained after this bibliographical review indicate the benefits and drawbacks of introducing this subject into the curriculum, as well as showing possible solutions to the problems that may be encountered when dealing with this content in the subject of Sports.

Lessons learned

Several recent studies have already shown that the introduction of swimming at school is very beneficial, since it helps children's education and makes it much more complete, both at a motor and cognitive level, as we can see in the article by Albarracín Pérez, A., & Moreno Murcia, J.A. (2019).

Conclusions

Therefore, we can conclude that activities in the aquatic environment are beneficial, as they enrich the subject and at the same time help the child to acquire skills in an environment that can become a danger for them.

Are you able to swim? What is the expected outcome of a learn-to-swim programme?

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1The Danish Water Safety Council, Helsingør, Denmark. 2Nordkysten Lifesaving, Gribskov, Denmark

Background

In Denmark, as well as in many other countries, it appears that most people have a narrative, that teachings of sport/recreational swimming in accordance with the competitive strokes, is equivalent to survival competencies in water, ie. "by enlisting child "A" into this learn-to-swim program, "A" will by default also acquire skills that will allow "A" to survive in otherwise life-threatening aquatic situations.

Purpose

To emphasize the difference, between being able to swim one or more of the 4 competitive strokes uninterrupted for a certain distance and having acquired the skillset needed to survive in real-world life-threatening aquatic environments.

The study will highlight if there is a discrepancy between the expectations of the parent/caretaker, and the actual offering in the majority of Danish Learn-to-swim programs, and if an increased focus on teachings in the Danish learn-to-swim programs, on aspects more relating to life-threatening aquatic scenarios, are likely to increase the chance of survival in such situations.

Method

Collecting anonymous data through questionnaires from parents/caretakers of enrolled children in learn-to-swim programs and communal school swimming programs, as well as syllabuses from the communal school swimming programs.

The study aims to uncover if there are differences between expectations, between coastal areas and inland areas, as well as the possible influence by socioeconomic and educational backgrounds of the parents/caretakers.

The study will collect, analyze and compare recommendations for minimum standards of water competencies from different water safety organizations to the principles of those of the communal syllabuses and offerings in the Danish learn-to-swim programs.

Conclusion

It is the hope of the authors of this study, that conclusions and results will enable – and maybe slightly nudge - politicians, communes and national learn-to-swim programs, to verify that the offerings in syllabuses and programs account not only for standardized swimming in accordance with the Olympic strokes, but also equips the attending children with basic lifesaving skills designed for aquatic, real-world life-threatening scenarios. The results could also be used to do develop a do-it-yourself lifesaving survival skills curriculum.

What happens when Primary Education does not protect against drowning?

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Royal Spanish Lifesaving Federation, San Sebastián de los Reyes, Spain

Background

According to the WHO, almost 236,000 people lost their lives due to drowning in 2019 and more than 90% of those deaths occur in low- and middle-income countries. The literature indicates that knowing how to swim and acquiring knowledge of drowning prevention reduce the risk of drowning.

As for Spain, the Royal Spanish Lifesaving Federation claims that from 2015 to 2022, 3,138 people have died by drowning. Despite these terrible figures, most of the Spanish educational curricula do not contemplate how to swim or how to prevent drowning.

Our researching group tries to know the effects of the application of different Education Curriculum on the level of aquatic competence of the students. In addition, we want to know the influence of studying in private, concerted or public schools on the level of protection against drowning.

Methods

For example, Madrid, which is one of the richest territories of Spain, we have checked the competence in the water of 1,274 students who are studying the last cycle of Primary Education (738 study in private or concerted schools and 536 study in public schools).

Results

The results show that 126 students (almost 10% of the total) do not know how to swim at all or are not able to swim 25 meters in a row. Likewise, 100% of those students are enrolled in public schools.

Conclusions

In conclusion, the Education of the Autonomous Community of Madrid does not guarantee that 100% of its students are minimally proficient in water before the age of 12 and does not reduce the risk of drowning for those who cannot learn how to swim outside the school. These results confirm the existence of a serious problem that especially affects the most disadvantaged population.

In Germany, water rescue and drowning prevention is largely based on voluntary workers. After the “Bernd” flood of the century in 2021, the helicopter-assisted rescue of people and the use of drones as resources for averting danger should be evaluated and applied across the board.

Gordon Wenzek, Andreas Paatz

German Red Cross, Berlin, Germany

In flood disasters, large areas of land are affected for weeks by slow receding floodplains. A combination of land rescue, lifeboats and air rescue is possible. In July 2021, worst flood disaster in German history, medical care was under great strain and had to be reorganized. Residents and clinics had to be evacuated and still clinics were being stretched to the limit.

Due to the destruction, places weren't accessible by land. Simultaneously, extremely high flow and current speeds prevented water rescue. Reconnaissance and rescue from the areas was only possible from the air. The combined air support from police and armed forces fell short of requirement.

The organization and initial coordination of voluntary air rescue services was lacking coordination and proper organization.

Comprehensive civil protection must be broadly based, and airside resources have also become indispensable. Especially helicopters and drones shouldn't only be used for specific rescue, but have also proven themselves in general reconnaissance and moving of material and special forces.

Helicopters and drones are operated and used by the police and the armed forces.

Helicopter water rescue professionals are supported by the Volunteer Water Rescue Service.

The first night of the 2021 flood proved, that helicopters with winches were needed. Unfortunately the lack of or the unknown locations of such helicopters hindered the rescue attempt. Going forward there needs to be direct communication and coordinated training between the German Red Cross and the Helicopter operators.

There was a criticism in 2021 that available resources (including special skills) of the water rescue were either not utilized or utilized too late. For the future there needs to be better information and resource management across all authorities and rescue organizations. Networking during operations plays an important role, especially through liaison officers in the respective management positions.

The increasing use of aircraft in hazard prevention can lead to a clash of a wide variety of technical systems. The consequence of this must be a coordinated process involving all the authorities and organizations involved under the leadership of the federal authorities.

Knowledge transfer - Improve technical know-how by linking research and practice.

Worst waterway tragedy of the country in the recent decades in Bangladesh: seventy people died in one incident

Nahid Akther, Aminur Rahman

Centre for Injury Prevention and Research, Bangladesh, Dhaka, Bangladesh

Background

In Bangladesh, drowning accounts for the majority of all fatalities. Research indicates that approximately fifty people drowned here every day. On September 25, 2022, 70 people drowned in the deadliest waterway tragedy in the country in decades. Of the victims, 30 were women, 21 were children, and 19 were men, two are still missing. There were people of all ages, from toddlers to grandparents. The adults ranged from 25 to 70 years of age, while the children were aged 1-15. This tragedy got tremendous media coverage.

Description

There was a religious ritual named Mahalaya of Durga Puja in a temple beside the river Karatoa in Panchagarh district in northern Bangladesh. It was drizzling that day from dawn till 9:30 a.m. The devotees were waiting for a boat to cross the river which is only five hundred meters. Once the boat came, at least 150 passengers boarded, even though the boat could only hold forty. Minutes after leaving the dock, it sank. In the bank, thousands of devotees watched helplessly. This tragedy has sent shockwaves nationwide. The media kept updating on this incident for one and a half months consecutively. Some 4,791 water vessel accidents occurred in the last seven years leaving 4,238 dead in Bangladesh. In the last 50 years, over 20,508 people have died in about 2,572 water transport accidents.

Lesson Learned

This tragic incident in Bangladesh highlighted the necessity comprehensive national drowning prevention strategy that addresses overcrowding and other risk factors. The government's quick response to build a river bridge following media coverage is a positive step towards preventing similar incidents in the future. However, the investigation revealed the underlying problem of apathy and indifference, which needs to be addressed through public awareness campaigns and enforcement of safety regulations. Overall, the incident underscores the importance of implementing comprehensive policies and measures to prevent drowning and ensure public safety in water transport.

Conclusion

Bangladesh is a land of rivers and boat accident is a regular phenomenon here. Besides having a waterway safety policy, the government should take the initiative to teach people survival skills if such incidents occur.

The Ongoing Development of a Beach Safety Program for the United States Marine Corps Base in Hawaii

Ron Bregman

Marine Corps Base Hawaii, Kaneohe Bay, USA

A multitude of drowning prevention strategies are currently employed by beach lifeguards at the Marine Corps Base Hawaii (MCBH) located at Kaneohe Bay, Oahu.

In addition to two highly hazardous, guarded surf beaches (Pyramid Rock and North Beach), the nine (9) nautical miles of coastline located within the jurisdiction of MCBH includes one other highly hazardous, unguarded surf beach (General's), three (3) less hazardous, but highly utilized beaches (Fort Hase, Pali Kilo and Hale Koa), and one extremely dangerous, beach access point through a residential area (Pond Road).

Our approach, which can be readily adapted by other governmental agencies, tasked with ocean safety/drowning prevention throughout the world, includes:

- (1) the proper training and staffing of certain high-impact beaches,
- (2) the establishment of tower-based and mobile rescue response teams,
- (3) the utilization of a warning flag system,
- (4) the placement and maintenance of rescue tubes at remote, unguarded beach locations, and
- (5) the design, placement and maintenance of safety signage at all coastal/beach access points.

Improve public awareness and marketing strategies for water safety

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Background

Water safety has always been an important issue in marine sports, water tourism, etc. However, there are a lot of accidents occurring continually, even causing injury and death. Therefore, it is crucial to adopt measures for improving public water safety awareness.

Description

First of all, hold a student water safety carnival to promote marine knowledge, safety precautions and self-help method to the public, so that the public can apply what they learned to avoid danger in the water. Secondly, by holding water safety press conferences, the presentation of 2023 student water safety implementation plan will be on display. In the meantime, this conference can increase the exposure of water safety issues, too. Finally, through drowning tracking and data analysis, we can find out the time, place, gender and age of drowning. we will enhance promotion times and skills and set strategies for the projects with high incidence rates.

Lessons learned

According to statistical results, high school students and college students are the majority of drowning in Taiwan and the drowning incident rate is higher among males. Moreover, most of the drowning incidents occur during the summer vacation, and there is no policy for conducting strategic marketing campaigns for high-incidence groups.

Conclusion

In order to carry out water safety education and publicity for groups with a high incidence rate more accurately, we expect to disseminate and educate correct knowledge through the online community platform frequently used by this group, and believe that it can effectively improve water safety awareness and reduce the incidence of water sports accidents, so that more people can safely enjoy the fun of water sports.

Key word: water safety, social media marketing, data analysis

Young people's alcohol use around water: A scoping review of the literature

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Background

Alcohol use in and around water has been normalised in Australian culture, with some researchers noting the existence of an 'aquatic alcogenic environment' (1). This is especially concerning given that alcohol is a major risk factor for fatal and non-fatal drowning. Young people in particular are at an increased risk of both drowning and the use of alcohol in and around water settings (2). This paper aims to summarise the existing literature addressing young people's use of alcohol in and around water and the associated social and health risks.

Methods

We conducted a scoping review to explore the peer-reviewed literature around the use of alcohol by young people (aged 15-34 years) in the context of aquatic environments. This review followed the framework outlined by Arksey and O'Malley (3). Five databases were searched for English-language studies conducted in high-income countries and published since 2008. EndNote and Rayyan were used to select and screen studies for inclusion. The methodological quality of the included studies was assessed using the MetaQAT framework (4).

Results

A total of 24 studies were included in the review, including those addressing the prevalence of and/or risk factors for alcohol use in water settings among young people (n=13); the epidemiology of alcohol-related unintentional drowning and water-related injuries in young people (n=9); and interventions to reduce alcohol-related harm around water (n=3). Findings suggest that young people's use of alcohol around water is common, and that there are multiple influences on this behaviour, including risk perception, location of aquatic activity, and the presence of others.

Conclusion

Alcohol use by young people in and around water and the associated harms is a major public health concern. The findings of this study will be used to inform future research around the aquatic alcogenic environment and to develop recommendations for public health action to prevent alcohol-related harm in aquatic environments.

How well is it working? Public health education in adult recreational drowning prevention over the last decade: A systematic review

Bridget Velasco

University of Hawaii, Honolulu, USA

Drowning is a frequent yet understudied and underrecognized public health issue. Studies and reviews recommend education as a public health strategy to increase awareness, to improve knowledge about the issue, and to decrease risky behavior or to improve protective behavior. However, there is little evidence-based information on the effectiveness of drowning prevention education campaigns, particularly for adults. A systematic study of adult recreational drowning prevention interventions between 1990 and 2012 found three of six studies reviewed used education as a prevention strategy. The effectiveness of this strategy was deemed inconclusive due to insufficient evidence, and the authors noted the studies generally did not apply health communications theory nor conduct robust evaluations.

The aim of this paper was to systematically identify and analyze the evidence for adult drowning prevention public health education campaigns for recreational settings since last reviewed. A systematic search was undertaken of peer-reviewed articles describing evaluations of education interventions and their outcomes published in English between 2010 and 2021. A total of six studies, five in high income countries and all with a coastal environment focus, were reviewed. The campaigns ranged from one week to eleven years. Campaigns focused on rip currents (n= 3) and alcohol consumption (n=1), and two did not present specific drowning prevention focuses. They primarily utilized on-site surveys as their measurement tool and change in knowledge as an outcome variable. All except one study reported some positive outcomes in the variables studied, but evidence of effectiveness was not well described or discerned. Campaigns that appeared to fare best did not have striking similarities, but some subtle patterns in campaign tools, duration and message specificity are discussed.

Across the literature, researchers frequently recommend the use of public health education as a drowning prevention strategy. This necessitates on-going and robust evaluation to determine the efficacy of education campaigns. We recommend drowning education campaigns prioritize evaluation efforts and use standardized outcome measures. This review describes the status of these efforts for adult-targeted interventions in mostly high-income countries over the last decade.

A focus on sex differences in drowning deaths in Australia: the need for reporting on sex and gender in drowning research

Kym Roberts¹, Ogilvie Thom¹, Sue Devine¹, Peter Leggat^{1,2}, Richard Franklin¹

1James Cook University, Townsville, Australia. 2National University of Galway, Galway, Ireland

Background

An evidence gap exists on sex and gender differences in drowning with previous research neglecting females. The lack of representation of sex and gender differences occurs widely in health research, with 69% of public health studies including sex and/or gender in data (1). The role of gender is influential in the behaviour and risk-taking activities that can lead to a drowning event (2), but to date sex and gender are rarely disaggregated data in epidemiological and clinical studies on drowning (3). The process for recording data on drowning is identified as problematic by researchers (4-7). Drowning studies have largely focused on accidental drowning and submersion, excluding the other classifications such as intentional, water-transport related, and undetermined drowning (4, 7, 8). This study aimed to 1) describe external causes of drowning deaths, as the primary or secondary cause of death, over a thirteen-year period (2006-2019) in Australia; and 2) compare drowning deaths by the sex of victims with drowning classification, year, state, month, age, remoteness, Indigenous status, socio-economic status, and visitor status.

Methods

This retrospective total population study included all females and males who died from drowning in Australia from 2006 to 2019. Data was extracted from the Australian Bureau of Statistics Cause of Death Unit Record Files. Australian population data was extracted to calculate the crude death rate and relative risk for drowning.

Results

There were 4007 drowning deaths recorded and females represented 25.2% of drowning fatalities. Females were less likely than males to drown, including by drowning classification, year, month, state, remoteness and visitor status, age, socioeconomic, and Indigenous status. The highest proportion of female drowning deaths were from intentional drowning, fall into swimming pools, and in natural water. The number of drowning deaths increased as age increased among females from 20-years of age.

Conclusion

There is a clear need for improved disaggregation of sex and gender in drowning research. Without the detailed exploration of females in drowning statistics there will be limited knowledge translation specific to females. The development of drowning prevention strategies targeted to females is required to reduce the incidence and risk of drowning.

Layering water safety education, one book at a time.

Louise Lambeth

Deep Water Publishing, Woy Woy NSW, Australia

Background

Injury is a leading cause of child deaths and a major cause of hospitalisation¹.

Parents or caregivers report having conversations around injury prevention post event, suggesting that they may be seeking information that will be helpful for preventing the injury in the future².

In the case of drowning prevention, multiple layers of protection should be used because no single strategy is likely to prevent all submersion deaths and injuries³.

A child's age reflects their stage of development. Very young children are particularly vulnerable to injury as they are not yet able to adequately assess the risks involved in new activities and avoid potential dangers¹. Yet, from around two years of age children can internalise adult-child safety conversations to help them navigate risky situations. These conversations ultimately become a guiding voice for future risky situations².

Description

Our project aims to create an additional layer of water safety education using peak injury prevention organisation reviewed children's literature.

The books we create are child focussed and provide safety information that can help a child to learn how to practice safer behaviours when in, on or around water. They are designed to help create confident conversations between a child and a support reader. They are utilised for community education by Surf Life Saving NSW and available on their Beach Safety Hub.

Beyond organisational educational programs these books can provide water safety education to children in their homes, at their early learning centre, school or public library.

Lessons Learnt

We have identified the need for cultures that are over-represented in the drowning statistics to have access to translations of our books. We are currently working with SLSNSW to provide these. Additionally, feedback received highlighted the need for audio versions or online book readings for children with a vision impairment, text disability or autism.

Conclusions

Even basic water safety education can mean the difference between someone drowning or not. It is important to be proactive through the provision of multiple strategies to prevent drowning death or injuries so that if one layer 'fails', then there is another that may save a life.

The 5 minute swimming lesson

Milton Nelms^{1,2,3}, Shane Gould^{1,2,3}

1Swedish Center for Aquatic Research, Lund, Sweden. 2World Aquatic Development Conference, Lund, Sweden. 3Shane Gould Swimming Project, Bicheno, Australia

Background

For most of the world, water safety and swimming knowledge is limited by lack of infrastructure, lack of funding, basic water safety for people providing and receiving swimming information, and the mismatch between the conditions (pools, infrastructure, wealth) in developed countries and the conditions where drownings occur in most of the world (natural water, little infrastructure, and lack of funding).

This "5 minute swimming lesson" is designed to bypass those limitations.

It is said that swimmers die because they "run out of time". Once energy is depleted, there are no longer options to self-rescue. The authors observed that lessons in the developed world are focused on travel to a destination, teaching high-energy movements early in the lesson programs, embedding shorter duration tendencies into swimming.

Methods

We often found ourselves in real world situations where we often had a single, short teaching encounter in challenging natural environments. We asked: "if you only have five minutes for a once-in-a-lifetime swimming lesson encounter that might help to save someone's life in the future, what would you teach?".

In response we prioritized adding duration over travel.

Results

Typical responses to early experience in the water are largely instinctive and emotional. This results in high energy, aggressive and frenetic arm and leg movements to get 'up' and to support oneself high enough above the surface to get air. This is a short duration strategy. With longer duration in mind, we changed the emotional response.

Conclusions

The focus of this change is called "interanimation". New exercises using sensation and perception lifted the mouth and nose above the water, with a calmer response. Using a learning loop of interaction between the water and the body, harnessed the mammalian programming of moving with efficiency. This loop of change and response with constant adjustment to the water environment is what we refer to as "aquatic interanimation". The result is a quickly established foundation for calmer and longer duration movements.

Interanimation bypasses many traditional and commonly used "best practice" methods of teaching of swimming. The result is a simple style of swimming that gives swimmers additional time to self-rescue.

National Alliance for Drowning Prevention (NADP): mobilising public awareness for state response towards zero drowning

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Drowning prevention requires a holistic response covering awareness, intervention delivery, and policy initiatives based on regulatory and professional capacity, and support for the survivors. Unfortunately, not many government or non-government actors are active in the preventive initiatives that could lead to incremental progress in drowning prevention. Challenges lie in achieving greater synergy among actors and addressing political and economic bottlenecks. Three challenges are:

- i. Insufficient credible and comprehensive statistics;
- ii. Absence of cross-sectoral dialogue among key stakeholders; and
- iii. Lack of effective accountability mechanisms to ensure greater impact.

Communities at large do not see drowning as a problem. It is critically important to aware parents and communities about the necessity of fencing water bodies, setting institutional supervision mechanisms for under-five children, and installing facilities for teaching swimming skills to save their children from drowning. It is important to make the local government institutions accountable to ensure the proper implementation of these interventions. NADP has been building community awareness so that they claim services and make the best use of the available drowning prevention interventions.

Society does not recognise the psychological trauma of the family members in particular of the mother once a child is drowned or of a child who has witnessed her friend or family member drowning where NADP has been intervening to develop a response to look after the mental health aspects of drowning, which have not yet been discussed at all.

Members of NADP have been intervening through innovative programmes to reduce deaths due to drowning across Bangladesh. Interventions, which have been recognised as global best practices need to sustain and scale up across the country and bring the drowning prevention agenda to a greater audience, firstly to create mass awareness and, secondly to bring drowning into the policy discussions by engaging a multi-stakeholder civic platform that can push the drowning prevention solutions holistically.

NADP implementing action plan avoiding duplication of existing initiatives that prioritise credible statistics, cross-sectoral dialogues and strengthening accountability mechanisms, back-stopping knowledge and advocacy support to partner institutions creating space for a unified voice that pushes the holistic nature of the related SDG agenda.

Rising tide: a policy analysis tracing the emergence of drowning prevention on the global health and development agenda

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Introduction

Drowning has been a neglected health issue, largely absent from global health and development discourse, until the United Nations General Assembly adopted its first Resolution on Global Drowning Prevention in 2021. We examined factors that shaped the prioritisation of drowning prevention in the two decades leading to the Resolution and identify opportunities to inform future actions for drowning prevention.

Method

This policy analysis examines the role of issue characteristics, actor power, ideas, and political contexts in the emergence of drowning prevention, and identifies opportunities for future actions. We used a process-tracing methodology, and triangulated data collected through in-depth interviews, and document analysis of peer-reviewed, grey literature and documents cited in the Resolution. We identified key informants with first-hand knowledge of the global prioritisation process and actors familiar with the Resolution negotiation process.

Results

We constructed a timeline showing the interrelationships of actors, milestones and factors that contributed to the prioritisation of drowning prevention 2000-21. We identified three factors critical to enhancing prioritisation of drowning prevention: i) methodological advancements in population-representative data and evidence for effective interventions; ii) re-framing drowning prevention in health and sustainable development terms with elevated focus on high burdens in low-and middle-income contexts; and iii) political advocacy by a small coalition.

Conclusion

Our analysis informs efforts to raise attention for other neglected health issues. This study reinforces the importance of framing an issue in ways that align to external priorities, navigating political contexts to avoid controversial policy areas, and ensuring that technical debates do not override the need for simple and compelling advocacy. Ensuring that the Resolution is a catalyst for action requires positioning of drowning prevention within global health and sustainable development agendas, strengthened capacity for multisectoral action, expanded research measuring burden and identifying solutions in diverse contexts, and inclusive global governance, commitments and mechanisms that hold stakeholders to account.

Green Rescue Board

Claire Ann Viesca Alfonso¹, Peter Davis², Cliff Ray³

1Norwegian Lifesaving Society, Oslo, Norway. 2USLA, Galveston, USA. 3P2P, Virginia, USA

The idea of Green Rescue Board emerged after the last WCDP, where the involved parties met. Cliff Ray owner, developer and manufacturer of P2P Rescue Boards.

Peter Davis chief lifeguard in Galveston, Texas. President of USLA and Secretary General in ILS America. Claire Ann Viesca Alfonso President for Norwegian Lifesaving Society. Member of the Board ILSE and ILS. Lifeguards all over the world uses rescue board in their service to prevent drowning and rescue. The rescue board are built with products that are not so environmental friendly.

For years the Norwegian Lifesaving Society has served as supplier of lifeguards at the coast of Oslo, Norway. The municipality of Oslo has required that as supplier of the service we need to utilize a more greener equipment. The idea to create an environmental friendly rescue board was born.

After a meeting with Mr. Davis and Mr. Ray, we decided to pursue the idea of creating a greener rescue board. Green Rescue Board is created by using bio epoxy and recycled foam. In 2020 the first green rescue board were delivered in Oslo Norway. During the process, Mr. Davis from Galveston also ordered 2 green rescue boards to use in their lifeguards service in Galveston.

The aspiration of environmental friendly lifesaving and lifeguard equipment was born. We wanted to create an service which not only protect lives but also the environment.

The ultimate goal is to plant a seed and steer towards an environmental friendly equipment across the world in lifeguard services. We hope by embarking this journey that we could encourage more to go greener. Hopefully also make a sustainable product in the market of lifeguard services.

How to survive a pandemic as a Lifesaving Federation?

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The COVID-19 pandemic was a major pitfall for all lifesaving federations: Pools were closed, open water was no longer accessible, and people were quarantined at home. This situation put a hold on any kind of regular activities within a lifesaving federation like the DLRG. Being a large organization, DLRG started to reframe the role and responsibilities of a Lifesaver on a national level. Various measures were taken to create a sustainable operation model during pandemic circumstances.

This presentation will give a short glimpse of this development. From a medical point of view, DLRG started to support all kinds of medical related tasks like supporting or even ultimately running test- and vaccination centers, transporting vaccines and supporting the public during lockdown, in general.

In perspective of a Lifeguard service, additional expertise besides establishing new rules and regulations for the lifeguards themselves were required, but also for the treatment of rescued swimmers once the lockdown was lifted. In addition, standard service, like our central Lifeguard coverage of the German beaches in summer was re-defined. From an educational perspective, the lockdown of pools led to a significant decrease of swimming lessons.

Therefore, DLRG needed to find an option to develop as many additional swimmers as possible in order to avoid a "generation of non-swimmers" due to the pandemic. In 2021 and 2022, two campaigns – "Sommerkampagne" and "Schwimmkampagne" – were initiated to allow a nationwide program to increase the number of participants. In addition, this was a good restart for the local clubs and allowed them to return to operations.

Beside these national projects, there were numerous local activities which all contributed to the overall success for our members as well as the communities to overcome and withstand the pandemic aftermaths.

The presentation will give insights into the principles applied during the pandemic but also deliver additional ideas on how to overcome such extraordinary situations. An evaluation of "lessons learned" will take a closer look at opportunities for the future.

The My Coast App – curated data for improved beach safety, a global first

Jo Murray

My Coast Limited, Truro, United Kingdom

Background

Beaches in Cornwall, southwest England, are currently visited by over 5 million people a year with numbers continuing to grow¹. Cornwall has the greatest number of drownings in England, with an average of 15 deaths per year². Inadequate awareness of beach safety, compounded by the escalating challenges posed by climate change, hampers users' capacity to recognise potential hazards and seek help when needed. The conditions leading to accidents near water are often predictable but lack effective communication to coastal and water leisure users. The MyCoast app aims to address this gap by serving as a tool for emergency services to both (a) aggregate and (b) disseminate crucial information to their stakeholders.

Description

The My Coast app, created in partnership with local government, industry experts, academia and end-users, serves as a cost-free, user-friendly platform offering curated real-time, multi-source data for individuals enjoying beaches and water-related activities.

My Coast provides:

- IoT and data integration platform for existing and future devices including water condition sensors, digital billboards, UAVs, and video cameras.
- Real-time curated safety data on suitable locations for a chosen activity based on water and weather conditions, including rip currents.
- 2-way communication between emergency services and the user, including banner warnings and emergency push notifications highlighting changes in conditions affecting safety.
- Call-for-help function with geolocation to aid emergency response, backed by satellite connectivity.
- Hyper-local information on public facilities, amenities, attractions, experiences, and businesses.
- Fundraising platform for emergency services and support organisations.

In addition, real-time user information delivered to emergency services will inform risk mitigation and incident response. This will inform decision makers to drive future social, environmental, economic and infrastructural policies.

Lessons learned

Globally, My Coast is the first platform to offer users comprehensive, curated real-time beach safety information alongside hyper-local visitor information. By combining data-streams we educate, warn, and prompt users to make better decisions before they leave home or enter the water.

Conclusions

For the first time, My Coast brings together multi-source data in an easy-to-use, white-label platform designed to help users and the emergency services keep beach users safe.

Importance of social networks as a tool for the dissemination of drowning prevention

Isabel García Sanz, María Rodríguez Martínez, Álvaro A. Vega Cid, Alberto García Sanz

Royal Spanish Lifesaving Federation, San Sebastián de los Reyes, Spain

Background

Every year in Spain more than 400 people die by drowning, however, there are no official statistics that publish this information as is the case with other types of accidents such as traffic accidents.

This lack of information has meant that Spanish society, and consequently its administrations, have not had a real awareness of the scale of the problem and consequently have not considered it necessary to take measures to alleviate a situation that does not exist if it is not measured.

Description

For this reason, the Royal Spanish Lifesaving Federation, since 2015 has produced the National Drowning Report offering daily updated data on drowning deaths in Spain.

This report is disseminated through different media, one of them being the social profiles of the entity: Facebook, Twitter, Instagram.

For the dissemination of information through these very specific media, a studied strategy is used that takes into account various aspects, such as audience profile on the different platforms, prime time for publication, design and information provided, etc.

Lessons learned

The impact of this type of publications is very high, not only on the general population, but also generates a great impact on the media.

Since the implementation of the communication strategy, interactions with information on the number of drownings and their prevention have increased considerably, as well as enquiries from the main media (television, written press, digital press, radio, etc.) to write articles or arrange interviews in which, in addition to statistics, prevention measures to reduce accidents in the aquatic environment are disseminated to a wide audience. This increased interest in drowning prevention has also reached educational centres that request information and prevention activities, and even public institutions, which has positioned the Royal Spanish Lifesaving Federation as the national reference entity for drowning prevention.

Conclusions

The use of social networks in the dissemination of drowning prevention content has a great impact at a social and governmental level and can even influence political decisions.

SIFA. Integrated Data Management System for Incidents in the Aquatic Environment. Digital drowning data tool

Ana María Domínguez Pachón, Isabel García Sanz, Álvaro A. Vega Cid, María Rodríguez Martínez

Royal Spanish Lifesaving Federation, San Sebastián de los Reyes, Spain

Background

Since 2015 the Royal Spanish Lifesaving Federation (RFESS) has been collecting information on deaths in the aquatic environment with the aim of generating a basis of awareness of the problems generated in this context, and from this work came a statistic that is contained in the National Drowning Report the I.N.A.

Description

Due to the high impact produced by the I.N.A. in its publications and monthly updates, both in social networks and in the media, positioning itself as a reference source of information regarding drowning data, the Royal Spanish Lifesaving and Rescue Federation considered the need to have quick, efficient, rigorous, accurate, established and truthful access to information directly, without the need to be an intermediary between the source requesting information and the source producing it.

Lessons learned

Based on the above approach, the Integrated Data Management System for Incidents in the Aquatic Environment (SIFA) was born, developed by a reference company in the field of information technology, that allows the generation of data according to the multiple variables that can be selected and is positioned as a useful and easily accessible tool for communicative, educational or transfer purposes, depending on who uses it.

Conclusions

The SIFA gives the possibility of immediate access to the most significant data collected in the INA, without having to wait for the monthly update, and depending on the access permission to this tool, to be able to affect casuistry, locations, temporality, reasons and other variables that are being worked on so that the information is accessible to any person to whom the Royal Spanish Lifesaving Federation gives access to the System.

Forgotten responders: A preliminary study on Australian surf lifesavers and lifeguards

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Background

First responders often face traumatic, demanding, and emotionally-taxing incidents in their role. Understanding their mental health and coping capacity is important for wellbeing and continued service delivery. Volunteer surf lifesavers and paid lifeguards are an under-researched, yet vital, part of the first responder workforce. Surf lifesavers and lifeguards have patrolled beaches to keep the general public safe for over 113 years, often risking their own lives and placing the duty of care to others above themselves. Continued exposure to traumatic or catastrophic rescue and first aid incidents during their time as members and first responders, has the potential to negatively affect their mental health.

Methods

The present study addresses the paucity of research on mental health of the Australian lifesaving population, extending on from our pilot survey which was completed earlier in the year. Two anonymous, online national surveys were rolled out: adolescents (13-17 years old) and adults (18 years and above) to the lifesaving community.

Results

The results of the national survey included a total of 1,076 lifesavers (234 adolescents; 842 adults) with an average age of 39 with a range of 13-87 years old. Further analysis is to occur with the survey only closing late last week. There was a significant positive relationship between exposure to direct trauma and PTSS, which in turn, were associated with greater negative stigma towards the mental health of others, and lower levels of self-efficacy. Male and female adults with PTSS reported lower social support, whereas for adolescent males, a positive relationship between direct trauma and PTSS was observed.

Conclusion

By addressing this gap in the literature, we hope to better provide for members, create evidence-based training programs and resources, monitor the effectiveness of educational interventions over time, and improve productivity, retention, and attraction to the surf life saving movement.

Systematic Literature Review of Surf Lifesaving Research – Australia & New Zealand

Susan Loomes^{1,2}, Elissa Farrow^{3,2}, Shayne Baker^{4,2,5}, Samantha Fien^{6,2}

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Background

The purpose of this research was to establish what research had been undertaken on surf lifesaving from Australia and New Zealand within the last 20 years to inform future strategic initiatives through the organisation.

The primary task being instigated is a project to review the current literature to answer the following questions:

1. What research exists within the context of surf lifesaving in Australia and New Zealand?
2. What areas of surf lifesaving have been reported?

Method

A systematic literature review of published literature was conducted to identify what research has been developed in Australian and New Zealand surf lifesaving over the last 20 years.

Studies were found by searching over 15 academic databases (including but not limited to: PubMed, Scopus, ScienceDirect, Onlinelibrary Wiley, Springer, espace, TandFonline, sagepub, psycnet, proquest, JSTOR, researchgate) for literature between 2000 to July 2022 using the key words: lifesaving; lifesaver; lifeguard; surf lifesaving; surf lifesaver; surf club; Australia; New Zealand. Papers were selected based on title, then abstract, and finally text. Manual searching of reference lists was also used to identify any additional articles.

Results

A total of 79 papers met the criteria for this review spanning from 2000 to 2022 with 29% of the articles being published in 2016-2020. A large proportion of studies were conducted in Australia (89.74%) with the remaining in New Zealand (8.97%) and one article a comparison between the two countries (1.28%).

The review was further categorised into 11 key themes and 24 sub-themes. The focus of this presentation will be to discuss the following themes: drowning, rescues, rescue equipment, medical, and learning and education.

Conclusions

Our research shows that there is a wealth of research that can inform and support the work of patrolling members of SLSA and that as practitioners, lifesavers/lifeguards work and data is valuable to develop initiatives important to drowning prevention. It is important that in this presentation that we will discuss several recommendations based on evidence-based insights gained from our literature review.

Remaining relevant for the future – the role of training and education in building aquatic rescue capability

Andrew Chan

Surf Life Saving NSW, Sydney, Australia

It's a new world, and we're all finding our way through a new uncharted reality. In this dynamically changing landscape, learning technology is taking an accelerated role in driving us to deploy learning differently and rethink what's possible.

The learning function plays a key role in ensuring lifesavers gain and maintain skills and aquatic search and rescue capability.

Ensuring the organisation has the essential digital infrastructure to support the implementation of our valued added digital learning initiatives is more important than ever. At this session, Surf Life Saving NSW will share its digital learning strategy and how it is used to engage the new generation of future lifesavers and first responders.

The effectiveness of the Bangladeshi adolescents in strengthening the child drowning prevention program

Md Al Amin Bhuiyan, Zobaer Alam, Fazlur Rahman, Aminur Rahman

Centre for Injury Prevention and Research, Bangladesh (CIPRB), Dhaka, Bangladesh

Background: Drowning is Asia's leading cause of child death after infancy. Every year, 17,000 children under 18 die in Bangladesh due to drowning. The highest drowning rate is among 1-4-year-old children, followed by 5-9-year-old children. A community trial in rural Bangladesh between 2005-2010 found two effective and cost-effective interventions to prevent child drowning: Anchal (community crèche) and SwimSafe (survival swimming teaching program). However, some parents were reluctant to avail themselves of these opportunities to protect their children from drowning. A study was developed with an adolescent brigade for child drowning prevention in rural Bangladesh and evaluated its feasibility, acceptability, and effectiveness.

Methods: A quasi-experimental study was conducted for six months with an intervention and a comparison union at the Raiganj sub-district. Thirty brigades were formed with seven members of both sexes, ages 15-19. Adolescent Brigade raised awareness, organized social autopsy and other community (VIPC, parents) meetings, provided first response service, and developed a first response system. FGDs were conducted with parents, VIPC members, and Anchal caregivers, and IDs with the first-responder receivers.

Result: The brigade members conducted a community awareness session on drowning prevention with 2,797 primary school children from classes I-V of 24 schools in the intervening area and assessed their knowledge of drowning prevention. 840 from the intervention area and 665 school children from the control area were assessed on the knowledge of drowning prevention through pre and post-test. The assessment result showed that the knowledge of drowning increased in class V by 58%, while the increase rate in the comparison area was only 23%. 124 cases were identified who received first aid services from brigade members. The increased rate of children's average day of attendance in Anchal was 10% per week in the intervention area and 8.3% overall. Most respondents were aware of the program and commented that it was effective.

Conclusion: Adolescent Brigade found feasible, acceptable, and effective in preventing drowning in rural Bangladesh. The Brigade worked to enhance the participation of the community members, increase Anchal attendance and provide the first response to the community to reduce drowning in the rural intervention area.

Interanimation is a dynamic, interactive aquatic phenomenon affecting humans in the water, changing their relationship to the water.

It is a sensory and perceptual phenomenon that calms emotions, reduces energy demand, and when taught as part of swimming, adds duration to any swimming activity, helping to prevent drowning.

Milton Nelms^{1,2}, Shane Gould^{1,3}

1Shane Gould Swimming Project, Bicheno, Australia. 2Swedish Centre For Aquatic Research, Lund, Sweden. 3Victoria University, Melbourne, Australia

Background

Circumstantially we found ourselves in locations where drowning occurred, and poor swimmers prevailed. Looking for patterns, we observed that all humans, including good swimmers, had a common sensory and perceptual 'interanimative' response to the water. In our work and studies, we defined the basis of swimming as interanimation.

We had opportunities to affect cultural changes in countries where we worked to reduce drowning. Customary methods used in developed countries simply did not work, including modified traditional curricula. Despite our expert knowledge and a motivated audience willing to make changes, we faced many choke points in communicating knowledge. Encounters were brief, often only a single chance to teach. We rarely had the chance to have any follow up. Aquatic environments were challenging. Out of necessity, we identified the principle of interanimation. We created functional programs - GillaVatten a program to disable fear of water in immigrant and refugee populations, an aquatic therapy program for autism, cerebral palsy, and brain trauma (Nelms Metod), a unique learn to swim program (BrainSwim). Competition swimming consultancies were included in the applied research. The consistent thread between them is interanimation.

Method

We observed how humans learn to manage the water for play, sport and recreation. We used observation, guided feedback loops during teaching sessions, and special exercises to awaken or enhance interanimation. We often worked with local teachers merging their traditional ways with our own methods. We produced teaching materials and trained teachers who provided feedback.

Conclusion

Cultural change can be generational. Using our methods, there is an immediate effect on the causes of drowning, through better interanimation.

The practice of teaching water safety, swimming and drowning prevention must use Interanimation to understand how humans respond to the water. This sensory and perceptual concept has been tested in reliable applications. Interanimation should underpin the knowledge of all human aquatic activity and will reduce drowning as a result.

Promoting and ensuring ongoing safety during Surfing Lessons: A partnership between the Irish Surfing Association and Water Safety Ireland.

Brendan Mc Grath

Water Safety Ireland, Galway, Ireland

Background

Surfing has been growing steadily in Ireland since the 1970s. During the 1990s surf schools started up to meet the demand from many to experience the sport. Initially these schools were unregulated with businesses being run on an ad hoc basis without controls on quality. Lifeguards were viewed as the safety support during lessons.

Description

To introduce standards and quality control the Irish Surfing Association (ISA) introduced coaching qualifications and surf school guidance.

As part of this process a partnership was formed with Water Safety Ireland to ensure that lifesaving is part of all Surfing Instructor qualifications. This award is now a prerequisite for all wishing to become surf instructors. The award started as a full Beach Lifeguard award but has since been modified to recognise the skills of potential instructors. This award is delivered by WSI in agreement with the ISA at a number of locations by qualified WSI personnel.

Aligned with this award, WSI accepted the role of carrying out safety checks at all ISA registered surf schools nationally. Qualifications, equipment and safety procedures are the focus of these inspections. This process is supported by spot checks during the season.

Additionally, many Local Authorities now licence surf schools to operate on their beaches subject to meeting the criteria outlined above.

Outcomes

- Surf School standards have greatly improved.
- Safety is a priority with all schools.
- The compulsory Lifesaving Award has ensured correct actions are followed during an incident.
- Surf schools have become a potential support for the lifeguards in situ.
- Quality of delivery has been standardised.
- Surfers are being recruited as part of local water safety response groups.

Conclusions

The development and inclusion of the Surfing Instructors Life Saving Award has enhanced safety during surf lessons. The skills learned by the instructors have saved many lives after accidents during formal lessons but have also been used at many other locations.

Using International Service Organizations to Promote Children's Drowning Prevention Programs in Thailand and Building a Strategy to Reduce Drowning Deaths in the Poor and Middle Income Countries of the World

John Schorr

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Over 1,000 children drown each year in Thailand; and according to the WHO, drowning is the leading cause of children's deaths in much of Southeast Asia. Focusing on the problem in Thailand, the Chiang Mai International Rotary Club (CMIRC) created a program based on the RLSS of the Commonwealth curriculum to reduce children's drowning deaths. Over the course of the past 8 years CMIRC has organized annual survival swimming instruction for all 4th-grade students in the 11 public schools in Chiang Mai, 12 schools in Phrao, a neighboring town, and working with the Rotary Club of Patong Beach our program is now taught in several elementary schools on the island of Phuket, as well as at the Banya Burmese refugee school in Phuket. Using the Rotary network, which now includes a cause-based Global Water Safety and Drowning Prevention Rotary Club devoted entirely to reducing drowning world-wide, we are in the process of providing RLSS of the Commonwealth curriculum training to swim instructors on Koh Samui and Koh Phangan Islands and in the coastal city of Hua Hin. This presentation describes our Thailand-based programs in detail and shares the lessons learned over the past 8 years of planning, implementation, and evaluation. We hope that other developing countries can learn from CMIRC's experience using volunteer network resources provided by Rotary Clubs and other international community service organizations to organize and fund survival swimming and water safety instruction.

Our programs annually provide 15 hours of swim and water safety instruction (5 hours poolside and 10 hours in the pool) for over 800 4th-grade children nation-wide. We fully expect that in the next 2 or 3 years those numbers will grow dramatically as more Rotary Clubs, municipal schools, and other NGO's learn our system. Our success and growth would not have been possible without the support of a major international service organization like Rotary International. The presentation will conclude with a discussion of how to establish such relationships and turn the examples of local mobilizations to reduce drowning deaths into the basis for shaping a global strategy to reduce those deaths.

Development of a drowning prevention and water rescue curriculum using the Competences-Resources-Model and the Drowning Chain of Survival

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In Switzerland, minimum qualifications for the prevention, early detection and treatment (incl. rescue) of drowning accidents are prescribed for the practicing of various functions / jobs in, on and around water bodies. Be it as a standard or as a legal regulation.

The Swiss Lifesaving Society coordinates a national modular education and training system to obtain and maintain all these qualifications.

In order to enable a better coordination between all stakeholders, the SLRG has developed a curriculum using the competency-resource model (CoReModel) (1). A "competence" is considered as the ability to successfully face a set of situations. The resources needed are intended in the form of declarative knowledge, procedural knowledge and attitudes.

The development of the curriculum was conceived as a project and took around 1.5 years.

First, a proof of concept was developed. This provided information on whether the CoReModel is applicable for a curriculum in the field of drowning prevention and water rescue. In particular, it was clarified how the different target groups (individuals, persons with supervision duties, persons with surveillance duties, emergency response units) and types of water bodies (pool, lake, river) can be mapped and whether the Drowning Chain of Survival could be helpful to do so (2).

Subsequently, an authoring group was formed to create the content of the curriculum. The group consisted of selected, qualified representatives of the various target groups. The results of the work were validated by an expert panel (agreement with drowning incidents in Switzerland; no obvious contradictions with currently available scientific evidence).

We found that a) the CoReModel is an appropriate method to develop national or even international framework curricula in the field of drowning prevention and water rescue and b) that the "Drowning Chain of Survival" is a suitable basis for the development of a curriculum.

The development and existence of a framework curriculum fertilizes the cooperation between the different actors in drowning prevention and water rescue.

Prioritize sustainable drowning prevention through comprehensive communications program

Jennifer Patterson, Lexi Bullick

Global Health Advocacy Incubator, Washington, DC, USA

Background

Bangladesh has one of the highest drowning rates in the world among children under five. In 2012, Bloomberg Philanthropies worked with civil society organizations such as the Centre for Injury Prevention and Research, Bangladesh (CIPRB) to develop and fund a comprehensive childcare model, which has proven to be an effective solution. They worked with the Government to fund a national program based on this model.

Description

Child drowning is largely preventable, but many people are unaware. There was minimal coverage about the issue, and it had not been a priority for the Bangladesh Government. There was a need to bring this neglected issue to the forefront and increase demand from the public and bring awareness to policymakers. The Global Health Advocacy Incubator joined the project to build communications capacity to educate the public, media and political stakeholders about the problem, the effectiveness of interventions and elevate the importance of ongoing government investment.

We created an enabling environment through strategic communications and advocacy efforts. We executed communications activities, including creating a group of spokespersons, including voices from families of victims, which provided authentic voices and humanized the problem; developed a strong professional journalism network; executed community radio programming to educate hard to reach communities; generated media coverage with diverse story angles including the impact on families and national economy at both the national and local levels; and created a Facebook page to raise awareness. These activities created an increased public demand and awareness from policymakers on the need to fund this national initiative.

Lessons learned

Media advocacy and communications activities were crucial to influence the public and policymakers to adopt a drowning prevention program. We built a network of professional journalists through training, workshops and fellowships to educate about the issue, which transformed 250+ journalists into dedicated advocates at the local and national levels to promote the issue and demand policy changes.

Conclusions

Following these advocacy efforts, the Government approved a \$32 million, three-year program to reduce child drowning throughout the country in February 2022. The government took over the 2,500 childcare centers and will expand the program for kids.

Community drowning prevention coalition development in Canada

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Background

The WHO Global Report on Drowning (2014) called for national water safety plans. There has been some movement in Canada. In addition to the Canadian Drowning Prevention Plan, community drowning prevention coalitions can be an action intervention that has impact.

Description

Community drowning prevention coalitions have multi-sectoral stakeholders who contribute leadership, planning, risk identification, interventions, civic engagement, and community actions that are close to home, work and activities that place people at risk. There is an organizational framework tool and implementation guide to support community drowning prevention coalition formation and activation (1,2). Data will be presented about the numbers and characteristics of community drowning prevention coalitions (3). Seeding coalitions after community tragic events and after community engagement on other drowning prevention projects has occurred.

Lessons learned

Seeding and facilitating the exploration and creation of community drowning prevention coalitions have had some success. Illustrating the good work of community coalitions at a national level may be inspiring. National facilitation, coordination and documentation of the actions of community drowning prevention coalitions will be helpful.

Standardization of lifeguard work regulations as a way to prevent drowning and expand activity to support disaster management multidisciplinary teams

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Introduction

The UN recognised drowning as a preventable cause of death. In Europe, an estimated 17.597 people died from drowning in 2019. As climate-change related events occur more frequently, drowning events are also expected to increase. Lifeguards are individuals with professional training and competent in preventing injuries, rescuing people and providing first aid in and around water. In recognition of their relevant role, some countries in Europe have their activity regulated as a profession. This work aimed to analyse the current requirements and qualifications of lifeguards in Europe and the current efforts for standardization.

Methods

A survey was developed and sent to member organizations of the International Lifesaving Federation Europe (ILSE). Data was analysed using Excel through descriptive analysis.

Results

The survey was sent to 37 members (19 replies). 56.5% reported having lifeguard work regulations that are law. In 52.2% of the countries, lifeguards are professional workers, while 47.5% of the countries possess both professional and volunteer lifeguards. Most countries (69.6%) have a periodic exam to assess the skills maintenance necessary for the exercise of the profession. Most of the revalidation exams include the same tests, making it easier for countries to adapt and comply with ILSE recommendations, promoting the access to the profession at European level. 78.3% hold separate qualification courses for beach, pool and open water lifeguarding. Participants reported interest in setting up a joint taskforce to address this issue. Implementing standardization across Europe was perceived as promotor for more and higher qualified professionals in preventing drowning.

Conclusions

Information regarding lifeguard work regulations in Europe is still not compiled and organized. Many countries don't have the activity regulated as a profession. Having separate qualification courses for beach, pool and open water lifeguarding is perceived as a way to improve the specific skills and knowledge of the professional lifeguards to prevent drowning and protect lives overall at different aquatic venues.

Efforts to make lifeguard work regulations standardized in Europe are still in the embryonic stage but will have promising impacts specially as climate change related events occur more frequently and will implicate transnational coordination of disaster management multidisciplinary teams.

Systemic drowning prevention: A theoretical framework for the development of evidence-based regulations, interventions and decisions in the public and policy-making domain

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Background

Drowning is a multifactorial, systemic issue. In order to enable evidence-based, widely justifiable decisions and policies, an overarching theoretical framework is necessary that is capable of describing the complexity of this issue. This serves two purposes: Firstly, to be able to define and consistently use terminology, and secondly to have a common toolbox that can capture and deal with all the various aspects of drowning prevention. Furthermore, a theoretical framework may help to identify parallels and overlaps to other prevention fields.

Methods

We describe a systemic drowning prevention framework based on the main tenets of Luhmann's systemic theory (1, 2). With respect to four different levels from which drowning prevention can be viewed (i.e., population level, impact factors level, target systems level and methods level), theory-driven methods are derived for acquiring information, potential challenges are flagged and an outline is provided how the application of this theory can be combined with a process of evidence-based practice.

Conclusions

This framework presents, in an organized manner, the basic principles which a practitioner or governing body might use to reach a decision about evidence-based drowning prevention actions. The framework does not provide specific solutions to problems. It is there to help a person or provider understand the complexity of their problem and encourage them to see and address the problem on each level (or, if not, to make an informed decision not to do so).

ALFAC (“Aquatic Literacy For All Children”): A European Project to protect and engage children in the aquatic environment for a long-term

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Aquatic activities (AA) are promoted for their health benefits (1-4), and the fact that positive childhood experiences have a significant impact on lifelong engagement (5) should encourage educators to provide maximum pleasure and confidence to children who discover this aquatic environment in a water safe manner.

However, these benefits can be tragically overshadowed if children are not empowered with protective skills against drowning. This “dark side” of aquatic recreation is partly responsible for the deaths of about 37,000 lives lost in Europe every year (6). Identified as the second leading cause of death among children, the school-age population appears particularly vulnerable when being active in, on and around the water. According to the WHO, this terrible observation is not a fatality and could be greatly reduced by a series of measures such as improving the quality of swimming education from an early age. This appears to be a key for better protecting children while equipping them with the water competencies that will enable them to safely engage in aquatic environments (7).

To tackle this dual aquatic issue, a partnership has been built between researchers, educators, and stakeholders from Europe around the ALFAC (Aquatic Literacy For All Children) project, co-funded by the European Commission. The goal is to improve the quality of aquatic education while increasing the Aquatic Literacy (AL) levels of children aged 6-12, to better protect them from the dangers of being active in the water, while motivating them to engage in AA in the long-term. For that reason, the consortium aims to create diagnostic and pedagogical tools to raise the AL level of children through a collaborative project.

The ten full partners come from seven countries with different drowning accident rates and are involved in the education or organizing swimming. In each country, a network has been formed to be as close as possible to the pedagogical, cultural, and structural issues.

This intersecting view between scientific research and practitioners’ feedbacks around the topic of AL, presents an example of a collaborative project that addresses the issue of promotion of AA while preventing drowning among young Europeans.

Drowning Prevention in South Africa

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National Sea Rescue Institute, Cape Town, South Africa

Background

A global surge in drowning prevention has occurred over recent years, where drowning has been recognized as a public health concern. The National Sea Rescue Institute (NSRI) is one organization in South Africa that has taken up the challenge of drowning prevention by initiating a department responsible for water safety education and survival swimming programmes in schools, pink rescue buoys and beach safety camera.

The Drowning Prevention department, over the last 18 months, has reviewed its current programmes and core activities to ensure that it is better aligned with best practice guidelines as recommended by the World Health Organization and United Nations. This paper aims to describe the NSRI's Drowning Prevention Department in terms of (i) how activities have been aligned to best practice guidelines as recommended by the World Health Organization and United Nations and (ii) the proposed methods for monitoring and evaluation.

Description

The United Nations passed resolution 75/273 on global drowning prevention on 28 April 2021. A situational analysis was undertaken using the best practice principles recommended by the UN resolution.

The review highlighted that the NSRI DP programme and core activities correspond to 5 UN and WHO 10 actions. Several activities were not covered in the WHO's recommended actions. The structure was streamlined into three focus areas which are aligned with the WHO's ten actions, including (i) Research and Advocacy; (ii) Education and Training and (iii) Technology and Innovation. Within each focus area, there are clear objectives and activities that have been designed using the Theory of Change and follow a logic model.

Lessons Learned

The outcomes from the review and alignment include:

1. Research is crucial to the success of drowning prevention
2. Monitoring and evaluation should be integrated into the drowning prevention strategy
3. International frameworks and guides are valuable resources
4. There is a need to strengthen collaborations

Conclusion

Aligning the NSRI's Drowning Prevention programme to best practice guidelines and implementing a monitoring and evaluation will aid in realising the NSRI's vision of a water-safe nation.

Drowning prevention in the revision of the Italian swimming pool legislation

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Background

On December 2020, an inter-regional working group was established in collaboration with the Italian Ministry of Health and the Italian National Institutes of Health to update the Italian pool sector discipline.

Description

The technical document produced in 2023 represents an overall framework of the swimming pool sector, including the requirements of swimming pools for drowning prevention and the professionals in charge of swimming pool hygiene and safety.

Lesson learned

The structural requirements for public pools must take into account the EN 15288-1, and 1069-1 standards and ensure that the swimming activity can take place in compliance with the security and surveillance needs of users, including uncontrolled access to the pool with the risk of drowning; domestic pools must take into account the UNI 16582-1 - UNI EN 16582, UNI EN 16713 standards. In order to ensure hygiene and safety, to prevent domestic accidents and the risk of drowning, domestic pools must provide an impassable protective barrier, a perimeter alarm, a rigid carrier cover cloth, and regular checks and maintenance. In addition, the owner, in relation to the context, is required to take all possible additional preventive measures to prevent domestic accidents, physical trauma, and drowning.

Moreover, for the purpose of safety in swimming pools, the following personnel with different assignments have been regulated in the technical document:

- the bather safety officer organizes the entire lifeguard system and coordinates the activities of lifeguards. It deals with the verification of the efficiency of the relative devices and to enforce the safety rules indicated by the pool manager;
- the lifeguard (qualified for rescue and first aid operations, supervises the activities that take place in the pool and in the perimeter spaces around it). The presence of a lifeguard on the pool should be ensured continuously throughout the operating hours of the pool, with a number calculated on the basis of the risk assessment, taking into account the characteristics and use of the pools, and the number of bathers.

Conclusions

The technical document should be transposed into an Italian Ministerial or Interministerial Decree thus ensuring the prevention of drowning uniformly throughout the country.

A partnership approach to a Geographic Information System (GIS) between Surf Life Saving South Australia (SLSSA) & Surf Life Saving New Zealand (SLSNZ)

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In early 2022 SLSSA & SLSNZ were both looking at options to improve their intelligence and ability to collect and share spatial information. Naturally, the discussions began to investigate options for a GIS server. Both organisations had a goal to provide data-driven and intelligence-led operational patrols, to better focus their attention and efforts on those areas in which drownings are most likely to occur on any given day. To achieve this goal, SLSSA & SLSNZ have integrated the use of a Geographic Information System (GIS) into their patrol planning, briefing, and incident recording activities, through applications such as mapping, Common Operating Pictures, Dashboards, GeoEvent (GPS tracking of assets), Rapid Assessment Tools and in-field collection maps. Both organisations have finite resources and GIS allows a more efficient allocation of resources to have the greatest effect on saving lives.

Beyond surf lifesaving activities, both organisations are using GIS to benefit the activities of other Emergency Service Organisations through the sharing of spatial information.

SLSSA is using its 2700 patrolling members to collect data along the coast, using hardware such as patrol iPads and GIS applications to conduct online spatial surveys. This 'crowd sourcing' style of large-scale information collection will be beneficial to all Emergency Management agencies across the state and potentially nationally, to prevent, prepare, respond, and recover from disasters and emergencies.

SLSNZ is using the GIS within its Coastal Safety Team to gather more accurate coastal information, and record hazards, and beach access points.

New grant program for lifeguard and instructor training courses to counter the effects amid shortages due to the pandemic in Quebec, Canada.

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Société de sauvetage, Montréal, Canada

The Lifesaving Society - Quebec Branch is responsible for the certification of lifeguards and swim instructors in the province of Quebec, Canada. Containment measures during the pandemic resulted in the loss of cohorts of new lifeguards. A profession usually practiced for only a few years during school as indicated by an annual turnover rate of almost 30%.

To become a lifeguard, a candidate must invest close to 100 hours of training and spend over \$1000 in training fees. To become a swim and lifesaving instructor, it is nearly 140 hours of training and more than \$1500 in training fees. From 2019 to 2022, the number of certified lifeguards has been reduced by over 22% and the number of annually certified swim instructors has been reduced by nearly 70%. Lack of swim instructor has significantly reduced the offer of swimming classes.

The Quebec government has implemented a grant program course to become lifeguard and instructor free of charge. This program represents an investment of \$21.5 million to reduce financial barrier to become lifeguards and instructors. This subsidy to aquatic training center was made within the framework of the unveiling of the Action Plan to enhance the practice of physical, sports and recreational activities in Quebec 2022-2027.

In the first quarter of program implementation, we have observed for the first two courses to become lifeguard an increased participation by over 40% compared to the same period in 2021. The number of lifesaving instructors and swim instructor an increase by 400% over the same period.

These measures are expected to have an impact as early as 2023 and will restore access to swimming lessons for children in Quebec and reduce the risk of drowning.

Swimming pool lifeguards in Rio de Janeiro: a new profession for young graduates of the armed forces

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Introduction

In Brazil, according to Law No. 4,375 of August 17, 1964, every man who turns 18 years old must join compulsory military service in any of the three armed forces (Navy, Army or Air Force). However, the young man after a certain time (in average one year) will not follow the career, and must leave the Corporation. The swimming pool lifeguards of the state of Rio de Janeiro are civilians seeking a profession to work in pools in public bodies (colleges, social projects, schools, etc.) and commercial institutions/facilities (hotels, clubs, resorts, gyms, condos, water parks, etc).

These professionals are trained in accordance with Decree No. 4,447, dated August 14, 1981, Law no.3,728 of December 13, 2001 and Law no.4,428 of October 21, 2004. In this context, the Rio de Janeiro State Military Fire Brigade (CBMERJ), through a partnership with the Army and Air Force, aiming to offer a profession to the young people who will eventually leave the Armed Forces, trained 118 young people in the profession of pool guards (1). The Project is managed by CBMERJ and executed by the Maritime Groups and headquarters which provide rescue service throughout the State of Rio de Janeiro. Class instructors are lifeguards - military firefighters specialized in rescue at sea situations who work daily for insuring the safety of beach-goers. This social action had three classes graduated, which in the period of three months each, had the following instructions: daily service of guardianship of pool, prevention of drowning and accidents in the pool, swimming pool legislation, rescue with and without equipment, physical conditioning and first aid.

Conclusion

In this sense, this project has given a new profession to young graduates of the armed forces, who will greatly contribute to prevent drownings in swimming pools in the state of Rio de Janeiro.

The app “Water Competence” is a free and open teaching-tool for instructors, teachers, trainers, parents, and others who conduct training in water, swimming, self-rescue, and lifesaving.

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Background

Focus on and development of swimming skills and life-saving work have, for many decades, received little attention. As a result, there are many people who cannot swim, and this may be a contributing factor to the high number of drowning related accidents. According to the Norwegian Society for Sea Rescues, statistics show that 89 people drowned in 2022. In comparison, 118 people died in traffic-related accidents. Most drowning related accidents occur either close to shore, boat, docks, or other rescue opportunities.

Description

The app gives access to exercises in aquatic learning from the Norwegian Swimming Federation, the Norwegian Canoe Association, and the Norwegian Lifesaving Society, with roots in evidence-based research on water competence. While many learn to swim indoors, most accidents occur outside. This app includes exercises in open water from beginner swimming and self-rescue to lifesaving (1). The aim is to strengthen the swimming skills of the users and their students so that they can be safe in, on or around water (2).

Lessons learned

After its launch on 1 October 2022, the app Water Competence has gained users in 70 countries and has had over 40,000 downloads. We have users in these countries: Norway, Sweden, Denmark, Finland, Faroe Islands, Latvia, Iceland, Lithuania, Estonia, England, Ireland, Germany, Portugal, Netherlands, Poland, France, Austria, Ukraine, Slovenia, Romania, Switzerland, Portugal, Spain, Serbia, Italy, Greenland, Italy, Ireland, Slovenia, Belarus, USA, Mexico, Brazil, Argentina, Canada El Salvador, Australia, New Zealand, South Africa, Egypt, Ghana, Uganda, Morocco, Kenya, Malawi, Qatar, Tunisia, Lebanon, Kenya, Uruguay, Jamaica, United Arab Emirates, Iran, Saudi Arabia, Zimbabwe, Malaysia, Pakistan, Vietnam, Thailand, Indonesia, Japan, China, Hong Kong, India, Singapore, Nepal, North Macedonia, Uruguay

Conclusions

It is too early to say anything definite about the effects of using the app, but our users give feedback that the app is easy to understand, provides structure and good visual aid in the teaching process. We intend to commence research into the use of the app during 2023, and hopefully get fundings to translate into more languages and produce more videos

Migrant/Refugee Programs. Are we reinventing the wheel?

Carolyn Veldhuyzen

South Australian Aquatic Committee Chair, Adelaide, Australia. National Aquatic Industry Committee Guest, Melbourne, Australia. iSwim @ Immanuel, Adelaide, Australia. Swim Coaches and Teachers Association South Australia Chair, Adelaide, Australia

Refugee, new migrants and First Nations people are over represented in Australia's drowning statistics. Around the country there are numerous programs run by a number of different organisations. Examples are The Aqua English Program, Swim Sisters, Swim Brothers, SLSSA Displaced Ukrainian Water Safety Program, RLSS programs in each State and Territory, Surf Life Saving programs and partnerships, along with local and regional programs in partnership with Multi Cultural Australia and Refugee advocates.

The problem is a recognised one.

How do we help and promote water safety to new migrants and refugees?

How do we get one clear message out there and keep it manageable by education settings and migrant groups?

What is important?

What do you see as the key messages?

The impact of collaborative programs and community engagement can be accessed in a short documentary produced by Surf Life Saving SA, iSwim @ Immanuel, West Beach Surf Lifesaving Club Cultural Diversity Program and support from AUSTSWIM SA and SA Office of Sport and Recreation. It tells the personal story of refugees, the impact of drowning on community groups and the support they then give to their community groups. The human faces of drowning and drowning prevention. Email manager@iswim.sa.edu.au to provide the documentary link. From refugees, near drowning, tragedy to Surf Life Savers. Educating Communities. These are their personal stories and journeys.

Reinventing the Wheel

If we in the swimming and water safety industry are all working towards a common goal, is this something we can do Federally as opposed to locally inclusive programs?

Conclusions:

What are your thoughts on swimming and drowning prevention strategies around Australia? How do we create a model that can be used by any program anywhere? Why is it important to provide access to swimming and water safety for all Australians?

Collaboration is the key, we do not need to reinvent the wheel, we could be looking at one voice to ensure every Australian from any background, can access swimming and water safety from the moment they set foot on Australian soil.

“The Bubble” A sensory approach to teaching swimming and water safety

Jacqui Taylor, Jodie Walker

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Background

Victorian children were greatly impacted by the COVID-19 pandemic with extended lockdowns and aquatic facility closures. This exacerbated an already poor performing cohort whereby many children were leaving primary school not having achieved the minimum swimming and water safety benchmarks. Current pressures on swim schools means many children are now missing out on swimming and water safety lessons, particularly children with a disability, those with additional needs and those in regional communities. Accordingly, this project aimed to develop a solution to the lack of aquatic education provided to these groups.

Description

A sensory tent ('The Bubble') was designed to teach children aged 3-18 years about swimming and water safety, without the need for aquatic environments.

The Bubble is a mobile, inflatable structure designed to be an encapsulated space, removing distractions, and allowing the delivery of focused learning using equipment complementary to specialist teaching. Occupational therapists, specialist, and classroom teachers, play experts and leaders in water safety assisted in activity design to educate on water safety through play. Examples of activities include the use of figurines to replicate common scenarios at the swimming pool, beach or river and discussion around the safety concerns.

Lessons Learned

Initial learnings indicated children and parents/carers/teachers were engaged with The Bubble, however many adults lacked the knowledge themselves to lead the activities on offer. As such, more detailed instructions were required to be provided for each activity to ensure targeted learnings when they were not led by expert instructors.

Feedback provided by parents and carers suggests the enclosed environment takes away clutter and noise and lends itself to be a prime learning environment and encourages learning at the child's pace.

Conclusions

The Bubble offers an alternative water safety program in a conducive learning environment to children who are unable to participate in traditional swimming lessons, as well as supporting the education received to those already participating in standard swimming lessons.

Successful activities from The Bubble can be replicated in sensory rooms in schools, and The Bubble itself can be replicated to provide more opportunities for learning.

Lessons learned of drowning prevention in situation of Covid-19 by interactive street art

Chanchai Supawerakul, Banyat Fuklor

The Friend in Need (of "PA") Volunteers Foundation, Thai Red Cross, Bangkok, Thailand

Background

The Friend in Need (of "PA") Volunteers Foundation, Thai Red Cross, is non-profit charitable organization, established following the initiative of her Royal Highness Princess Soamsawali Krom Muen Suddhanarinatha, the foundation's Honorary Lifetime President, with her Royal Highness Princess Bajrakitiyabha Narendiradebyavati as the chairperson. The objective of the Foundation is to encourage and coordinate with the public and private sectors as well as communities, in order to provide support for each other in times of crises from flooding and severe disasters. One of success stories is a drowning prevention activity to educate and teach people in the community to reduce the number of deaths from drowning.

Description

During the Covid-19 pandemic, teaching and learning activities towards a local community were disrupted. The Department of Disease Control has initially launched an innovative method of drowning prevention known as 'New Normal ... New Landmark' campaign being presented in an interactive street art. This campaign is cooperated by education institution, a teacher, a student, Health District Office, and local community. They have made art pieces to teach everyone about the following issues; water safety skills, how to save people from drowning, how to save their own lives from drowning, and how to do a CPR, risk water sources management, warning signs attached with anti-drowning kits. All of these contents are generated with a QR code to describe all steps.

Lessons learned

Teachers and students from a kindergarten to grade 6 altogether with 2,500 people have participated in this activity every month. More than 6,000 people in a local community has travelled regularly on this main road, Non-Sung district in Nakhon Ratchasima Province, where is the showcase of this interactive street art.

Conclusions

Drowning prevention has a great and continuous cooperation by merit makers within a local community. During the Covid-19 pandemic, this campaign 'New Normal New Landmark' being presented in Interactive Street Art, has created a social movement and a great impact on drowning prevention across the country. We have achieved with award winning in Thailand, being inspired by other networks.

Competent (effective) adult swimmers: effect of clothing on aquatic skill performance

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Background

Young people aged under 25, living in low- and middle-income countries, accounted for ninety percent of the global drowning mortality rates [1, 2]. Yet in high income countries like Australia, the largest proportion of the annual drowning fatalities are experienced by adults, in open water locations while recreating on, in or under water [3-6]. As unexpected falls into water are a common drowning risk for Australian adults, this study explored the impact of being prepared (i.e. wearing swimwear) and unprepared (i.e. clothed) for water entry on the swimming and water safety skills of competent (effective) adult swimmers.

Methods

Adult (n=20) aged between 18 and 34 years, assessed as effective swimmers by qualified AUSTSWIM teachers using the RAEE (Refuse, Assisted, Effective, Efficient) assessment tool, participated in this study. All participants completed a swimming background and demographic questionnaire and were randomly allocated into one of two treatment groups. Both treatment groups completed the Swim and Survive Active Award 4 (version 2016) tasks (n=14) twice. Task efficiency was rated on a scale between four (effective but inefficient) and seven (highly efficient). Participants swam the first trial (wearing swimwear or clothing), had a 15 minute rest interval, then repeated the trial wearing the opposite treatment. Commencement and completion times were recorded.

Results

The self-reported swimming competence found male participants consistently rated their competence higher than the female participants for all swimming strokes. A significant rating difference ($P = 0.05$) was found between the swimwear and clothed treatment orders using Least Square Regression. The swimming performance of the participant in the swimwear first trial received higher ratings (i.e. more efficient) compared to the participants in the clothed swim first trial.

Conclusion

This study identifies that regardless of wearing swimwear or being fully clothed, there is a bias towards freestyle and backstroke swimming aquatic skills. Differences between real and perceived competency was demonstrated by participants when self-estimating their swimming competency and, participants failed to recognise when there was a need to modify their performance or how to modify their performance to suit less than ideal conditions.

The Development of drowning prevention model in the communities of high risk flooding area.

Chanchai Supawerakul, Banyat Fuklor

The Friend in Need (of "PA") Volunteers Foundation, Thai Red Cross, Bangkok, Thailand

Background

The Friend in Need (of "PA") Volunteers Foundation, Thai Red Cross, is non-profit charitable organization, established following the initiative of her Royal Highness Princess Soamsawali Krom Muen Suddhanarinatha, the foundation's Honorary Lifetime President, with her Royal Highness Princess Bajrakitiyabha Narendiradebyavati as the chairperson. The objective of the foundation are to encourage and coordinate with the public and private sectors as well as communities, in order to provide support for each other in times of crises from flooding and severe disasters.

Description

Our Foundation aims to advocate and associate with public and private sectors to provide support for each other in times of crises from flooding and severe disasters. We provide an assistance towards the victims with sustainability through alarm surveillance by setting up a telemetering system station around risk areas, the assistance at the time of disaster, and the rehabilitation programme after the disaster. In addition, we are ready to deliver a set of knowledges, which supports concerned organisations or society and community as a whole. One of those is drowning prevention programme which is designed for a local community at risk with flooding areas. This helps minimize a severe loss/damage to Disaster relief Operation team across 19 communities. It can be done through a specialist as a speaker teaching about survival swimming under the Foundation through networks and local communities where are interested in. Merit Maker is a key strategy to conduct the rehabilitation program after disaster.

Lessons learned

After developing the drowning prevention programme for a local community located in the risk areas, there are 19 communities where have successfully completed the workshop and have become a role model of disaster management sustainability.

Conclusions

The drowning prevention programme us accomplished by local's measures to tackle with a high-risk water sources management. This targets at children and local community to be educated and gain necessary skills to prevent drowning in the future.

Teaching water safety to 3-5-year-olds.

Ciara Gleeson

Water Safety Ireland, Galway, Ireland

Background

Ireland has over 12,000 loughs and an extensive coastline of over 3,000km. All children live close to water placing them at risk of drowning if they do not have the necessary attitudes and behaviours. Water Safety Ireland believes that it is never too early to start learning how to be safe around water. The earlier children begin to understand the dangers, the more it fosters a healthy respect for water as they grow. This is why WSI embarked on the development of a water safety programme for early learning and care centres.

Descriptions

The programme called Hold Hands was developed in 2021 and launched as a resource pack to over 4,000 Early Learning Centres nationwide. These included illustrated storyboards that act as an engaging device to highlight potential water safety dangers at home, on farms, at the beach, on rivers, lakes and on holidays. It also aims to encourage educators who may be unfamiliar with water safety education to lead discussions and inform of safe practices and behaviours.

Lessons learned

The author speaks to the pedagogical approaches that were conducted as part of the Hold Hands development, particularly the activities that allowed for longer retention of key messages and methods that proved successful in maintaining engagement. The author speaks to the lessons learned as a result of the pedagogical approaches and how the programme was further developed to ensure the key safety messages were retained.

Conclusions

Hold Hands instils an awareness of safe behaviours and waterways for 3-5-year-olds although it is only effective if the educator feels empowered and sufficiently educated to deliver it.

www.holdhands.ie

Teaching teachers to teach water safety: PAWS (Primary Aquatic Water Safety) in the classroom.

Ciara Gleeson

Water Safety Ireland, Galway, Ireland

Background

Aquatics is one seventh of the Physical Education Primary School curriculum. Water Safety Ireland alongside the Department of Education and Primary School Teachers of Ireland developed a water safety programme to incorporate all aspects of the Aquatics strand called PAWS. It outlines the essential life-saving guidelines that every child needs to know and consists of two units; Land PAWS, a classroom-based programme and PAWS in the Water, a swimming syllabus. Land PAWS is intended to be delivered by the educator and this is why WSI began to develop a programme to teach educators how to deliver PAWS, particularly to those without previous water safety education.

Description

PAWS Provider was developed in 2018 as a certified, online programme. The key message underpinning the programme is "you do not have to be water confident to be water safe." The programme covers water safety best practices and the importance of understanding risks at home, at the beach, on the farm, on inland waterways and abroad. It also informs how to safely teach non-contact rescue techniques.

Lessons learned

The author speaks to the requirement for educators to be trained in water safety education and provides evidence of the increase of engagement with the Land PAWS programme following the development of the PAWS Provider. The author speaks to the lessons learned as a result of redeveloping this programme in order to increase engagement with enrolment.

Conclusions

PAWS Provider programme empowers educators to teach basic water safety skills in the classroom with the correct water safety knowledge to do so. The development of the PAWS Provider programme has increased the engagement with the primary-school water safety programme as well as furthering the reach of those engaging with water safety education to include a wider demographic.

Making “Stone Soup”: Cooperation, partnership and inclusion in the creation of the Tauranga Water Safety Training Hub in the Bay of Plenty, Aotearoa New Zealand.

Kurt Cordice

Enigmatic Global, Tauranga, New Zealand

What started as an effort to make important equipment available to grass-roots, locally focused aquatic and water safety programs has now shown the potential to be much more.

The Tauranga Water Safety Training Hub (aka the Hub) has opened the door to empowering local role models, especially from our diverse local communities, allowing them to deliver water safety education directly to their own communities. Hub membership includes resources and professional support in helping to customise programs to be more relevant to the communities they are delivered to. The Hub has also provided opportunities to connect industry professionals and community role models, with the intent to build bridges and reduce barriers to inclusion.

Originally, it was believed by many that the Hub would not be realised, even though it was generally thought to be a good idea. It took a few individuals and significant in-kind contributions of effort and time to build the fire, place the pot of water, and drop the first stone in to start the ‘broth’. One by one, local individuals came to the table, including members of our local council, national organisations, and local community members. They all stepped forward to add something to the broth. The result was a true demonstration of cooperation and partnership (1).

The story of the Hub is still being written and is by no means the only story that can claim some analogy to the tale of “Stone Soup” (2). However, as a case study, the Hub’s story offers a unique opportunity to take a closer look at this approach to grass-roots development related to water safety and local aquatics. This talk will explore the lessons learned, challenges faced at both local and national levels, and the potential future positive impact the Hub could offer local communities here in Tauranga. The challenge of sustainability as the Hub moves forward will also be discussed.

Evaluation of the First Lap learn to swim voucher program

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Swimming skills are an evidence-based component of drowning prevention. However, in Australia, many children miss out on learn to swim education. Voucher programs may reduce swimming lesson cost and increase participation, especially among priority populations. The First Lap voucher program provides two New South Wales state government-funded \$100 vouchers for parents/carers of preschool children to contribute to swimming lesson costs. This evaluation aims to determine the effectiveness of the program in meeting objectives of increasing preschool-aged children participating in learn to swim program and building parent/carer knowledge and awareness of the importance of preschool-aged children learning to swim.

A program logic model was developed to explain the inputs, activities and intended outputs, and outcomes, which guided this mixed-methods evaluation design of quantitative and qualitative analysis within an impact/outcome evaluation. Baseline sociodemographic registration data will be provided by the parent/carer of each child participant and linked to swim school provider data on voucher redemption. Data will be collected on voucher use, knowledge, and attitudes to swimming lessons at registration and across two surveys. An economic evaluation will assess programme cost-effectiveness.

This evaluation will determine impacts on participation rates in learn to swim program, particularly within priority populations. It will examine whether the program has influenced attitudes and motivations of parents and carers toward learn to swim program and water safety, whether the program has impacted or enhanced the ability of the aquatics sector to deliver learn to swim program and assess its cost-effectiveness.

Development and validation of an aquatic literacy questionnaire for elementary school children: risk perception

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In the Aquatic Literacy for All Children (ALFAC) research project, three core dimensions are linked to each other: (a) aquatic skills (both actual and perceived), (b) psycho-social features (autonomous motivation, enjoyment & engagement, confidence) and (c) a knowledge aspect (risk perception).

In this contribution the focus is on the development of a tool to assess risk perception in an indoor swimming pool and an outdoor water recreation context. Based on two separate overview drawings with each 10 numbered activities in the water, children have to indicate how dangerous they perceive each illustration (5 point Likert scale with smiley). This gives information about risk awareness on 20 situations of which an international expert group identified 10 as dangerous.

This knowledge dimension was also explored in an earlier study on the development and validation of a tool for individual aquatic risk management among children aged 6 to 12 years (De Martelaer et al., 2022). In this study, 10 aquatic situations (5 indoor swimming pool and 5 outdoor) were presented one by one to the child, by showing these pictures as a comic strip without text, followed by an interview. Four questions were used to gather information: (a) What do you see in the drawing? (b) How do you feel when this happens with you? (c) What is the likelihood this happens to you? (d) What would you and your environment (peers & adults) do in this situation (anticipation/solution)?

The development and the face validity of both instruments will be explained and discussed. We end up with a pedagogical approach stimulating a balanced curriculum concerning a fun and safe aquatic program for elementary school children with developmental appropriate beneficial risks during aquatic recreation.

Let's Launch a Campaign: Initiating a National drowning prevention policy with integrated marketing communications strategy

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Background

Drowning prevention is a worldwide issue which should not be ignored. The Chinese Taipei government has conducted a series of firm water safety policies through various strategies, especially targeting to children and youth since 2000. The drowning death number from 2000 to 2015 has been dramatically reduced from 85 to 20, yet, stuck around 20 from 2016 to 2019. To solve this bottle neck of the drowning issue, except watching the number of the drowning death, the government adopted the Integrated Marketing Communication (IMC) module and launched a 6-year "MAKE a WISH" campaign.

Description

Integrated marketing communications (IMC) is both a theory and a set of communication practices that facilitate consistent messaging across channels for stakeholders. After clearly examining the 3 pillars of IMC, the "MAKE a WISH" campaign was launched. To wish no more death from drowning, the Water Information & Safety Hub (W.I.S.H.) was founded and projected 4 categories of implementation, which means Measurement, Advocacy, Knowledge, and Education. In Measurement, the water risk management evaluation committee kick off the quantitatively evaluate the environmental factors. In Advocacy, the water safety festival was held each year since 2019 and several microfilms and video clips were produced to reach the major stakeholders via effective channels. In Knowledge, the National Aquatics Safety Awareness (N.A.S.A) program was conducted which increased the awareness of water safety for all stakeholders. In Education, the Water Safety E-Learning Platform has been innovated.

Lessons Learned

W.I.S.H. is the brain and the engine to plan and promote the policy. By measuring and evaluating the environmental facts, the risk of drowning could be eliminated. By advocating, the water safety could be known as part of life and increase the publicity. By awaking the knowledge, stakeholders will increase the intentions of learning water safety skills. By educating stakeholders through E-learning platform, the shortage of instructor and the issue of standardizing the material could be solved.

Conclusions

To effectively promoting a drowning prevention policy, government adopting the IMC module is effective and reduce the drowning death as well. Furthermore, stakeholders' attitude, intention, and behavior in water safety had tremendous change.

A description of Nelms Method – a nervous system-based activity and training program in the water for people with disabilities.

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Nelms Method (NM) was a national based project in Sweden between 2019-2022, with fundings from the National Heritage Foundation. NM is also a nervous system-based activity and training program in the water for people with disabilities. We have educated more than 500 persons, and many of them had disabilities themselves. Approximately 1500 from the target group have been practicing the method during the project period.

The purpose of the NM program is to help disabled people to use the water to create new stimulating experiences and new challenges to movement and perception. These experiences, used to cause new perceptions and new feelings about the water, will stimulate the body and the nervous system in new ways. NM is also a way for people with disabilities to learn to swim. This is the important step you have should learn first – before you can start to do more traditional swimming. By doing the exercises in NM the positive outcome that will emerge is calmness, better understanding of the water environment, and better confidence. These changes result in better control of the water. NM use water/body phenomena for stimulation and learning.

NM uses three aquatic phenomena to stimulate changes. Aquatic physics are the way the heavier and lighter parts of the body interact with the water. Aquatic Rhythms are the way that the water flows over the skin, pushes into the body, or tugs on the body as the water or the body move. Aquatic breathing is the way that breathing mechanics and emotions are changed in the water. These phenomema comprise a quality called aquatic interanimation, and use special exercises for both robust and gentle experiences of sensory stimulation, and for changing strength, control, and pliability. The program includes training for caregiver handling of a range of disabilities. Read more at www.nelmsmetod.se.

Aussie Lifeguards Come to the Rescue in Denmark

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An ILS Rescue Commission meeting in September 2022, in Italy, discussed work force issues and lifeguard vacancies around the world. This led to an invitation from the North Sealand (Nordsjælland) Lifeguards for Portsea Surf Life Saving Club's Australian lifeguards to work on Denmark's northern beaches for three weeks of the European summer. Countries not typically known for their beach tourism can experience difficulties filling seasonal vacancies, and this gave an opportunity to southern hemisphere lifeguards to travel north in their winter university break, where they experienced a lifesaving culture very different to their own.

Portsea SLSC hosted a single Danish lifeguard over January 2023 and this allowed an initial sharing of information as the project's plans were formulated. The pre-travel logistics of living and working in a foreign country and dealing with embassies can be complicated, and at times frustrating. Residency/work permits, tax registration, banking requirements, reciprocal award mapping and duty rostering, often in Danish, all needed to be arranged pre-departure.

The eleven lifeguards were accommodated together but worked solo on different beaches strewn across a seventy kilometre stretch of "Danish Riviera" – a wooded coastal area where small fishing villages morph into summer tourist and festival hubs. The 'Aussie Lifeguards' drew the attention of local print and television media, especially when dealt a mass rescue and an unexploded military grenade on the beach. Hearing of the project, the Australian Ambassador to Denmark visited a North Sealand beach and has expressed her support to future lifeguard exchanges.

The project was cost-neutral but provided a wealth of opportunity to form friendships, experience life and work in Denmark, appreciate local quirks and customs, travel to neighbouring countries on rostered days off and for some, provided a platform to an extended European stay.

The success of such projects requires 'champions to the cause' in both countries, who can liaise and advocate on behalf of the travelling group, before, during and long after the tour. The benefits are bi-national and offer ongoing opportunities beyond the days on duty.

Gender considerations in enrolment of Water based personnel to foster water safety Education across all institutions in Uganda

George William Mukasa

Lifesaving Association Uganda, Kampala, Uganda

Swimming, Water Safety and Drowning prevention in Uganda has not been structured well yet the number of aquatic activities are growing year in year out with less interventions from the line Ministries such as Gender and social development and Ministry of Education and Sports which oversee the co-curricular activities and wellbeing of the youth and Gender activities in Uganda.

Swimming is an optional subject and sporting activity undertaken from day care facilities to tertiary institutions including Uganda taking part in competitions at the Global scene, all this is done with minimal and thin infrastructure that focuses on Gender patterns and tracings from all sectors of the nation which has been observed to have more female swimmers involved in swimming at the early school levels and dropping out after primary level at about 14 years of age without learning the basic aquatic skills and knowledge.

This leaves many female children ending their swimming and water safety careers at an early stage compared to others globally whose career is just starting to yield benefits mainly in developed nations.

Most of the Female swimmers during their early years of swimming receive no water survival lessons that would see them survive in water but instead learn how to compete and when they don't win any accolades or medals the resort to other sports permanently.

This has led to a male dominated swimming and aquatic field in Uganda and despite more male counterparts drowning more than female gender in Uganda according to research by Makerere School of Public Health (1), many have lived to discourage their children not to take on swimming when they become parents, something we have to change in order to promote an even environment through equal opportunities, education, awareness, long-term aquatic career plans among many others in Uganda.

There are no Government swimming facilities and this means there is less formal regulation of swimming standards and drowning prevention interventions than how it would be with Government owned facilities and regulations, but a female post primary aquatic focused programme would be viable in Uganda.

Liquor regulatory board plus public health? A unique partnership approach to social marketing to influence attitudes and behaviours around alcohol use and boating in British Columbia

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Alcohol consumption is a risk factor for many preventable injuries, including fatal and non-fatal recreational boating-related drowning. In Canada, alcohol is a contributing factor in 35% of recreational-boating related fatalities (1). The goal of liquor distributors to profit from selling alcohol is in direct conflict with public health messaging around responsible consumption; it has been said that “the alcohol industry and the health field have separate and conflicting interests” (2). As such, the effectiveness of collaborating with liquor distributors to deliver public health messaging remains largely unexplored.

Preventable is a social marketing campaign in British Columbia (BC), Canada, which aims to change attitudes and behaviours towards preventable injuries. The campaign strives for outside-the-box thinking to achieve its goals in its mass marketing approach (TV, out of home, digital, social media) to reach its 25-54-year-old target audience.

From 2016-2019, Preventable partnered with the BC Liquor Distribution Board (BCLDB), the regulatory body for alcohol procurement and distribution, on campaigns focused on responsible consumption in relation to risky situations, including driving, skiing, and boating. Messages included “If you think drinking and boating are a good mix, have a word with yourself,” and were shared in-store (signage, bag stuffers), digital ads via geofencing, and on social media. Over the course of the partnership, almost 24 million impressions were generated. In 2019, the boating safety campaign received over 700,000 impressions. An analysis of social media comments suggested that British Columbians recognize that alcohol consumption increases injury risk, but that alcohol is considered a cultural element of certain activities, such as recreational boating (3,4). While campaign efforts were halted in 2020 due to the COVID-19 pandemic, results from 2019 indicate that further work to shift public perception and attitudes is warranted.

This partnership highlights that incorporating alcohol-moderation messaging at consumers’ points of choice may raise awareness and promote behaviour change. A social marketing approach to boating safety and drowning prevention is beneficial, and social media can be used to understand attitudes and behaviours of recreational boaters. Collaborations between industry, community, and academia are an opportunity to increase awareness and change behaviours related to recreational boating safety.

Conceptual definition for drowning prevention: a Delphi-study

Justin Scarr^{1,2}, Jagnoor Jagnoor²

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Background

Increasing support for drowning prevention is evidenced by successive Resolutions at the United Nations (2021) and World Health Assembly (2023). While progress has accelerated, a universally agreed definition for drowning prevention remains absent. We aim to develop a conceptual definition of drowning prevention using the Delphi-method.

Methods

First, we conducted document review (1-3) to guide our development and consensus-building process. Then, we formed an advisory group and recruited participants with diverse expertise to contribute to Delphi-method surveys. In the first-round participants selected from draft concepts to build a definition and delineate between the terms drowning prevention and water safety. In the second-round we presented a co-developed definition, and three statements based on first-round findings. We then sought participant feedback where $\geq 70\%$ support was considered consensus-based agreement.

Results

Participants (n.134) were drawn from community (7.46%), policy (26.87%), research (40.30%), and technical backgrounds (25.37%), and low and middle-income countries (38.06%). In the first-round, half (50.74%) disagreed that drowning prevention was synonymous to water safety, while 40.30% agreed. The second-round achieved consensus-based agreement (97.27%) for the definition: Drowning prevention is a multidisciplinary approach that reduces drowning risk and builds resilience by implementing evidence-informed measures that address hazards, exposures, and vulnerabilities to protect an individual, community or population against fatal and non-fatal drowning.

Conclusion

Our study presents a consensus-based conceptual definition for drowning prevention, including the key concepts of risk, hazard, exposure, vulnerability, and resilience. Agreement on the definition for drowning prevention forms the basis for strengthened multisectoral action, and partnerships with health and sustainable development agendas. Defining drowning prevention in terms of vulnerability and exposure might increase focus on social determinants and other upstream factors critical to prevention efforts. The definition forms the basis for further investigation of how sectors and agendas not yet engaged in drowning prevention might identify co-benefits and work to co-develop interventions in ways not previously considered.

Developing the Australian Water Safety Strategy 2030: our most robust and detailed consultation yet

Justin Scarr¹, Stacey Pidgeon¹, Shane Daw², Dr Jaz Lawes², Will Koon¹

1 Royal Life Saving Society – Australia, 2 Surf Life Saving Australia

Background

The Australian Water Safety Council (AWSC) released its first National Water Safety Plan in 1998. This evolved into the Australian Water Safety Strategy (AWSS) in 2008, which established an aspirational target of reducing drowning by 50% by 2020 and launched a structure that reinforced a focus on a life stages approach, identified high-risk locations and key drowning challenges.

AWSS 2008 brought new energy to areas including strategies to reduce drowning in multicultural communities, at unpatrolled beach locations, while boating and in inland waterways. Perhaps the most significant achievement was the continued reduction of drowning in children 0-4 years, and 5-9 years, both exceeding the targeted 50% reduction by 2020. It also expanded recognition of the impacts of non-fatal drowning.

Consultation

The new AWSS 2030 is the product of ongoing collaboration and extensive consultation that started with reflection on the successes and challenges of the AWSS 2008 – 2020 period. The AWSC then convened a workshop of over forty researchers, policy makers and practitioners, including representatives of the World Health Organization, as well as colleagues from the United Kingdom, New Zealand and Thailand. This workshop resulted in two separate consultation drafts, and more than seventy separate feedback submissions. This was the most robust and detailed drafting and consultation yet.

AWSS 2030 Targets

The AWSS 2030 commits to an aspirational goal of reducing drowning by 50% by 2030. This is expressed in the targets replicated throughout most of the areas of focus. The AWSC stresses that progress must be measured on a population rate basis, and where appropriate, reflect incremental changes in visitation at places, or participation in activities, and in population demographics. A baseline, based on the three financial years 2017/18, 2018/19 and 2019/20 will be established. It is stressed that these targets are aspirational, and accountability difficult to assign. In any case, we urge all to join this approach.

Partnerships

Widespread adoption, adaptation, and implementation of the AWSS 2030 by many including State, Territory, and Local Governments, organisations and communities is critical to its success.

Specific actions for population groups vulnerable to drowning

Francisco Cano Noguera, Anabel Navío Robles, Ana María Domínguez Pachón, José Miguel Rodríguez Ferrero, Isabel García Sanz

Royal Spanish Lifesaving Federation, San Sebastián de los Reyes, Spain

Background

Since 2015 the Royal Spanish Lifesaving Federation has been collecting information on deaths in the aquatic environment with the aim of generating a basis of awareness of the problems generated in this context, and from this work arose the I.N.A. (National Drowning Report).

Description

It is proposed to use the I.N.A. data for a purpose that goes beyond the merely descriptive. Therefore, an analysis of the casuistry extracted from the I.N.A. data is proposed, arriving at a series of "target" population on which to generate knowledge transfer actions.

Lessons learned

After the analysis carried out, it is concluded that one of the target population is the age range between 2 and 7 years old and between 55 and 70 years old. Therefore, the actions to be developed should be focused on these age groups.

Conclusions

The lines of action will gather four main articulating ideas and from them a proposal for each age group will come out.

- The proposals should be personalised to the target age group
 1. Information adapted with easy-to-understand infographics for children.
 2. Awareness-raising talks for older adults in their places of action.
- Proposals should be as tangible as possible.
 1. Implementing architectural barriers in private swimming pools.
 2. Carry out practical workshops on beaches to learn about currents, etc. in situ
- That proposals include direct solutions to what the data reflect.
 1. Establish protocols for the use of aquatic facilities.
 2. Establish bathing protocols for older adults.
- The proposals should be measurable over time.
 1. Compare the data after two years to evaluate results in both age groups.

Holidays - who is really at risk on the coast on public and school holidays?

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Surf Life Saving Australia, Sydney, Australia

Introduction

Holidays are periods generally associated with fun and excitement. However they may also represent periods of heightened risk. This study highlights the impact of school, public holidays and long weekends on the risk of drowning and non-drowning deaths on the Australian coast.

Methods

Two retrospective case-control studies were conducted using relative risk ratios and Z-scores to compare all unintentional fatalities on the Australian coast between 2004-21 to a longitudinal representative survey sample of the Australian public and their coastal usage.

Results

Overall, the coastal mortality risk increased by 2.03 times for public holidays (95%CI=1.77-2.33,p<0.0001), 2.14 times for long weekends (95%CI=1.85-2.48,p<0.0001), and 1.39 times for school holidays (95%CI=1.32-1.46,p=0.00019). Children <16 years had the highest increased risk of death on public holidays and long weekends, while residents who were born overseas had a higher risk of death compared to those born in Australia. For school and public holidays, the greatest increase in risk was for swimming/wading and bystander rescues, while for long weekends it was for scuba diving and snorkelling. School holiday mortality risk increased significantly for activities undertaken in the company of others.

Discussion

Holiday periods in Australia increase the risk of both drowning and non-drowning deaths on the Australian coast, which differed by demographics and activities. These results highlight periods of risk when targeted coastal safety messaging to high-risk demographics (particularly children and overseas-born residents), and provision of surf lifesaving resources can be increased.

The effect of rural and remote residence on drowning rates: A review of the literature

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Background

Rural populations have higher rates of drowning, positively correlated as rurality increases.(1-3) Rural drowning fatality rates have remained steady over time, with limited research exploring the epidemiology of drowning specific to rural Australians. This review examines the incidence, risk factors and determinants of fatal and non-fatal drowning in rural populations.(1)

Methods

A systematic literature review was undertaken. Using Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines,(4-5) databases were searched for studies exploring fatal and non-fatal unintentional drowning by remoteness (limited to literature since 1990). Epidemiological data, common factors and prevention strategies were extracted and mapped to Australian standard geographical classifications.(6) Level of evidence was assessed using Grading of Recommendations Assessment, Development and Evaluation and prevention strategies aligned to the hierarchy of control.(7)

Results

Thirty-two studies satisfied inclusion criteria (66% reporting epidemiology; 59% risk factors; and 44% prevention strategies). All included studies were assessed very low against GRADE.(7) Findings indicate rural populations (ie, excluding major cities) have higher rates of drowning positively correlated with increasing remoteness. Common factors included age (child)(8,9), natural water bodies, undertaking boating/watercraft activities and alcohol consumption.(10-11) Highlighted risk factors included patterns of behaviours by both carers and young children including socioeconomic status, water awareness, water competency levels of both the child or carer, demographic (age, sex, residency, rurality), and environmental conditions. While a range of prevention strategies were proposed, only one study outlined a rural drowning prevention strategy which had been implemented and evaluated. Strategies were generally low on the hierarchy of control.(12)

Conclusion

Rural populations are proportionately overrepresented in drowning statistics. Proposed prevention strategies have unknown efficacy. Greater research into rural drowning of Australians is needed exploring behavioural motivations, program delivery, cost-effectiveness and evaluation. Development and use of a standard definition for remoteness are recommended. Rural populations use water extensively; therefore, there is an urgent need to keep them safe. This study calls for further investigation into rural drowning taking into account the complex socioeconomic and demographics in rural Australia, as well as the challenges faced translating effective preventative actions into rural settings.

Drowning among children 5-14 years: Risk factors for children in varying stages of development

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Background

Drowning prevention research on children has largely focused on young children aged 0 – 4 years, due to their high rates and numbers of drowning, and due to the vulnerability on parents/carers in regard to supervision. This ten year report was conducted to better understand any long-term trends and to identify key risk factors affecting drowning in older children aged 5 – 14 years.

Methods

The Royal Life Saving National Fatal Drowning Database was used to examine unintentional drowning deaths among children aged 5-14 years from 1 July 2011 to 30 June 2021.

Results: Between 2011/12 and 2020/21, 105 children aged 5 – 14 years drowned in Australia. 75 males and 30 females drowned. The top three activities leading to drowning deaths across all ages were swimming and recreating (52%), fall (14%) and bathing (8%). Swimming pools were the leading location for these deaths (including public and home pools), followed by River/Creek and Lake/Dam locations. Children aged 5 – 9 represented the highest number of drownings (62%). Drownings across all ages occurred primarily in Summer, on Saturdays in the afternoon hours of noon-6 pm .

Conclusion

Drowning deaths in school children aged five to 14 have remained stubbornly high over the past decade (2011/12 to 2020/21). Male children in the five to nine years age group continued to be at most risk of drowning. It has promoted a call for parents to re-enrol children in swimming lessons, especially older children who have not yet reached the national benchmarks for their age groups. As children grow and gain independence, they and their caregivers may over-estimate their swimming abilities. With all children missing out on swimming lessons during COVID-19 swimming pool closures, there is a need for children of all ages to re-enrol in swimming lessons. Factors for drowning deaths among children aged 5-9 include increased risk of falling into water and having poor swimming ability. Factors for drowning deaths among children aged 10 – 14 include less supervision and more independence when swimming and recreating in pools and inland waterways.

Are International Surfing Association (ISA) Surf coaches effective Bystander Rescuers? Global insights into Drowning Prevention.

Andrew Joyce

International Surfing Association, San Diego, USA

Background

Bystander rescues conducted by surfers, play a large role in drowning prevention (1,2,3,4,11,12,13). They are increasingly recognised often as the only opportunity for rescue outside patrolled locations and times (6,8). Research has found that the rescue capacity of these bystanders is enhanced by their amount of surfing experience, as well as training in rescue and 1st aid (1,2,3,4,6, 8,11,12).

This study attempts to discover if ISA coaches are effective bystander rescuers and gain insights for future drowning prevention and policy.

Methods

The author sent the ISA coach network a survey created on Mailchimp (7). It collected information about the respondents' demographics, water safety training, number and type of rescues they'd been involved in as a bystander. ~6.5% of the network responded to the survey (N=169) from 51 countries. The data was compiled and analysed using MS Excel software.

Results

Similar to findings in other Bystander rescue studies (1,2,3,4,11,12,), most respondents were males, under 45, and all had water safety training. They generally self-rated as strong swimmers, rescuing over half the time on non-lifeguarded beaches and/or out of patrol hours. A majority acted after observing the situation without a call or signal for help, rescued confidently using a flotation device.

Significant differences: A greater percentage of rescues were in non-lifeguard patrolled areas and required CPR/first aid treatment. Coaches in 9 of the 51 countries surveyed conducted on average more than 9 rescues per person. These coaches reported in their cases, only 15.38% of the time there were lifeguards present.

Conclusion

If the number of rescues carried out by the respondent group was extrapolated across the ISA Coach database, they could have performed in the region of ~15,000 rescues globally.

In many locations globally, ISA surf coaches appear to be one of the only rescue resources available. As they are already in place, trained and provide training to others, the author suggests that Drowning Prevention organisations consider supporting the development of this resource. Further research focusing on the high rescue per person rate in countries would be beneficial to find out why these surfers are doing so many rescues.

The development of an innovative multi-purpose vehicle to support lifeguard services and education in coastal areas with low infrastructure.

Sam Rahman

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Across the Kingdom of Bahrain, many of our public beaches lack basic infrastructure to support lifeguard services and education programs. These include elevated supervision points, shading or rest areas for lifeguards, a first aid room, or anywhere to store rescue equipment such as IRB's, which means equipment must be stored off site each day.

To address these challenges, we have been developing multi-purpose vehicle using a 7.2m chassis and a custom-built cabin. The main features of the vehicle include a retractable stage/platform and awning, collapsible railings on the roof to provide an elevated vantage point for lifeguards, an adjustable rack system to carry rescue boards and other equipment, collapsible wall mounted first aid bed, IRB engine rack and a frame to carry 2 inflated IRB's. The cabin also has a hydraulic rear ramp for wheelchair access and is fully airconditioned. The vehicle also has a generator which powers sockets, a cold-water dispenser, and enables us to use a projector and laptop without the need for an external power supply.

Many community partners such as schools lack the capacity or suitable facilities to enable first aid training and workshops at their venues. The design of the vehicle will allow us to use outdoor spaces including beaches, playgrounds and car parks to deliver a high-quality training experience to the community by utilising the stage and the capacity to show videos and presentations on the side of the vehicle.

The vehicle is currently under construction, however we have made several alterations since the initial concept in order to maximise the versatility of the vehicle, while trying to minimise the overall weight.

We believe that this vehicle will significantly increase our capacity to offer innovative training in a range of environments and allow us to offer a more complete lifeguard service at swimming events and coastal areas, where the installation of infrastructure is costly or unlikely. We believe that this concept has applications internationally in areas of the world facing similar challenges.

New ring buoy (life ring) sensors that curb theft and vandalism of rescue equipment in Ireland.

Roger Sweeney

Water Safety Ireland, Galway, Ireland

Background

A ringbuoy (life buoy) is thrown to a person to provide buoyancy and prevent drowning. Ringbuoys are in place at hundreds of locations on Ireland's coastline, rivers, canals and lakes, providing a safe way for people to conduct a rescue without entering the water. Unfortunately, they are often vandalised, stolen or tampered with, rendering them unavailable when they are required most. This initiative was developed to address the problem of theft and vandalism and to ensure that ringbuoys are available when needed. In one city alone, fifteen ringbuoys go missing every week, costing more than €20,000 per year to replace. Ringbuoys have the potential to save lives, but only if they are present.

Description

A smart solution was needed to address the challenge of vandalised and stolen ringbuoys. A low-cost, retrofit, technology solution was developed and deployed. A sensor is attached to the ringbuoy housing. It monitors and alerts local authorities when ringbuoys go missing. Real-time alerts remove the delay in detecting that they are stolen and speeds up replacement.

This new digital initiative has been rolled out to ensure that ringbuoys are ready to save lives at Ireland's waterways. To date, more than 600 sensors have been installed. The sensors are paired with a mobile, map-based platform that has real-time monitoring, to notify the local authority.

This project is an example of tackling a community challenge with an innovative approach that aims to future-proof regions from vandalism to rescue equipment.

Lessons Learned

Getting all local authorities to engage was a challenge but an innovative procurement framework that piloted several technologies before deciding on a successful solution, now allows additional regions to introduce these solutions without beginning a new tender process.

With the increased number of visitors to our waterways, there is more emphasis on having lifesaving equipment in place. Traditionally a ringbuoy inspection on all locations is carried out every two weeks but can take most of the day. This technology removes inspection times.

Conclusions

A stolen ringbuoy can mean a stolen life but this system introduced in 2022 is addressing vandalism of public rescue equipment.

The implementation of the most resilient municipality in drowning in Torres-RS

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1FIRE DEPARTMENT RIO GRANDE DO SUL, TORRES-RS, Brazil. 2SOBRASA, RIO DE JANEIRO, Brazil

Introduction

According to the World Health Organization, an average of 372,000 people worldwide die each year. In Brazil 5,700 each year, with more than 75% in rivers, lakes, and dams where there is no lifeguard supervision. This is a tragic reality, so it is essential to create resilience mechanisms for these places, with the municipalities as central actors, to better carry out the management of drowning risks in their geographic areas.

Objective

To suggest to the municipality of Torres-RS measures to prevent drowning through the drowning prevention program called "Município + Resiliente em Afogamento" of SOBRASA, the Brazilian Lifesaving Society.

Description

The United Nations Organization project "Building Cities Resilient" in collaboration with several organizations has developed a series of "local urban indicators" for cities to assess their capacity for resilience. Torres in Rio Grande do Sul (RS) – Brazil has been participating in the project since March 2015, but it has not implemented a program on risk prevention and management in aquatic areas. SOBRASA together with the Fire Department of RS will provide a program on risk prevention and management in aquatic areas. This content will be offered free of charge to the municipality upon adherence to a cooperation agreement called "Municipality + Resilient in Drowning", where the city undertakes to manage the risk of drowning in the geographic area of the municipality through the creation of a municipal council for the prevention of drowning and developing a drowning contingency plan.

Conclusion

When the Municipality of the coast provides its population with measures to mitigate disaster risks and does not provide tools for risk prevention and management in aquatic areas, it is failing in this regard. This time, SOBRASA and Fire Department of RS seek through the implementation of the "Municipality Resilient in Drowning" so that Torres/RS establishes actions in the coming years in this indicator.

Bystanders as everyday lifesavers: Reducing fatal bystander rescues on the coast.

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Introduction

At unpatrolled locations or in the absence of surf lifesaving services, it is often bystanders – members of the public, or friends and family – who may be the only form of assistance to those in trouble. Bystanders perform many rescues, providing a significant and valuable service to the community. Tragically, it is not uncommon for the bystander rescuers themselves to get into trouble or drown while trying to rescue someone.

Methods

Coastal bystander rescuer fatalities recorded between 1 July 2004 and 30 June 2023 will be presented in conjunction with current and future public safety interventions to reduce bystander rescuers.

Results

Between 2004-2023, 89 deaths of bystanders attempting to rescue someone on the coast, an average of five a year. Most rescuers were male (84%), 35-49 years old (31%) and were rescuing a family member or loved one, usually a child under the age of 18 (63%). Rip currents were a significant factor in three quarters of fatal bystander incidents (72%), and 49% occurred in NSW. Alarmingly the overwhelming majority (97%) did not take a flotation device when they attempted the rescue.

Discussion

Our results suggest future safety intervention approaches should target males, parents and carers visiting beach locations in regional locations during holiday times and should focus on the importance of flotation devices when enacting a rescue and further educating visitors about the rip current hazard. Providing a flotation device to a drowning patient has been identified as a priority intervention that interrupts the drowning process and is crucial for mitigating effects on rescuer safety. In closing we will present current approaches to reduce these tragic events.

Protocol for assisting victims of drowning on the beach with submersion of up to 60 minutes.

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Introduction

The Military Fire Department (MFD) of Rio de Janeiro rescued 16,027 people in 2022 on the beaches, with 11 searches for submerged victims. At a beach rescue with submersion, several specialties work together. To establish a rescue protocol for this submerged drowning victim is necessary to increase the chance of survival.

Objective

To create a protocol for rescuing people at sea with a submersion time up to 60 minutes. Method: On exploratory research in 16 MFD around Brazil that had data from used protocols for victims of submersion on the beach, November to December 2022. Four procedures were found; then, a commission of specialists with professional experiences.

Result

(1) LG2 will carry out the rescue at sea, LG1 will remain in a dry area. (2) LG2 must mark, with references, the last seen point of the submersion (LPS), execute the "Submerged Victim" gesture to the LG1 and start diving. (3) LG1 will mark the LPS, will start the victim's background time (BT) and request support. (4) The communication will trigger the unit's resources: LGs, Ambulance, Watercraft or Inflatable Rescue Boat with sonar, Helicopter and Divers. (5) The support team must mark with a rescue tube the LPS. (6) When the victim is found, LG1 must stop the BT. (7) The military personnel who find the victim, LG3, must approach the victim with a float. (8) If it is not responsive and BT is less than 15 minutes, it must do 10 insufflations and after transporting to a dry area, without interruptions. (9) LG4 should assist in approaching and floating during ventilation. (10) The LG4 after ventilations, must make a "support" sign for the transport support teams according to the availability of the resource, evaluating the one with the greatest safety and shortest response time for the dry area. (11) After transported using the Australian method. (12) Start treating the victim according to the drowning protocol. (13) Upon arrival of the advanced support, he must assume the treatment.

Conclusion

The protocol was performed by MFD in simulated and real rescue, which led to a decrease in the response time of care for the victim, which suggests an increase in the survival of a submerged victim.

Mortality, behaviours, and perceptions of young men: A high-risk coastal safety demographic

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Introduction

Coastal environments are dynamic with many risks and hazards, resulting in ~121 coastal drowning and 61 unintentional non-drowning deaths annually (2013-23), with men overrepresented – especially younger males (15-39 years). This increased risk is attributed to greater participation in coastal activities, inflated confidence levels that don't reflect actual abilities (1), and social determinants (i.e. peer pressure). This period is also recognised as a life stage more likely to engage in risk-taking behaviours.

Method

National fatality and survey data was used to explore mortality, participation, attitudes and behaviours of young men (15-39 years) around Australia over the 10-year study period.

Results

Between 2013-23, 564 young male coastal deaths were recorded, 76% due to drowning (n=426). This equates to 56 young male coastal deaths annually, an economic loss of AU\$69 billion (2). Most occurred while swimming or wading (28%; n=156), at beaches (47%; n=263) and >1km away from a surf lifesaving service (78%; n=438). Rip currents were known contributors in 21% of young male coastal deaths (n=121), but this could be much higher with 25% unknown (n=141). Similarly, alcohol and drugs were contributing factors in 20% of young male coastal deaths (n=111). Alcohol intoxication (BAC greater than 0.05g/mL) was reported in 9% (n=52), while illicit drugs were recorded in 10% (n=57). The average BAC for alcohol-related deaths was 0.15/mL –three times the legal driving limit! SLSA's National Coastal Safety Survey (NCSS) explores the behaviours, attitudes, and perceptions of young males on coastal safety and hazards. NCSS2023 reported that 25% young males (16-34) have been unintentionally caught in a rip, yet the coast is perceived to be more hazardous than the beach. 54% of young males are unable to swim 50 metres in the ocean without touching the bottom, but more have done so in 2023 than Australian adults overall. Surf lifesavers/lifeguards were identified as the main source of safety information for 45% of young males, highlighting their importance in communicating risk, increasing awareness, and changing behaviour within this high-risk demographic.

Discussion

Understanding these risk factors and behaviours help to develop strategic steps to continue increasing awareness within this high-risk demographic.

Report on Fire Department of Rio de Janeiro (Lifeguards) activities on the search for victims on a Sepetiba Bay shipwreck – experience report

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On the early evening of June 7, 2018, a group of 21 friends hired two trawlers: "Milemar", with nine people, and "Lucas Mar", with twelve people, to hold a celebration and fish in the Sepetiba Bay, Rio de Janeiro, Brazil. But, after intense bursts of wind and rain throughout the night, around 11:30 p.m., the two boats careened and sank. Despite the low visibility, strong winds and intense rain, the first rescue team was able to rescue nine lives on the scene. Efforts were made to find the remaining 12 victims[1]. By this time, it was dawning.

During the four days of uninterrupted operation, which ended on June 11, 2018 at 4:45 p.m., 13 sea rescues boats and two helicopters were engaged.

Every day an average of 50 lifeguards were on duty, including divers, sea rescue vessel operators, lifeguards and helicopter pilots.

The search strategy was based on reports of survivors, nautical chart reading and meteorological, oceanographic and topographical conditions, such as waves, sea currents, tidal variations and topographic characteristics of the Bay. The search methods used to find the boats and the victims were: "inline sweeping with hooks" with rescue boats and fishermen civilian boats; helicopter overflights; use of the Sidescan device; and, the underwater search method of "increased range", made by divers. The survivors reported that during the intense storm, many looked for shelter in their respective boat cabins and two victims were found in these compartments, possibly trying to find protection; the last fatal victim (the twelfth) was found 15 km from the site of the wreck. However, all fatalities were without life jackets.

These actions addressed the following situations: the documents of the vessels and drivers should be valid; no alcohol intake by drivers; periodic maintenance of electrical parts, hulls and engines; fire extinguishers and personal floatation devices should be in good condition and easily accessed by crew members/passengers, especially those of mass transport; check weather conditions and tide tables before drawing a route and the navigation rules to avoid collisions.

The Development of Stingray Sting Treatment and Injury Guideline (STING) in Response to Their Increased Prevalence on Coastal South Carolina Beaches

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Barrier Island Ocean Rescue, Charleston, USA

Barrier Island Ocean Rescue is a beach emergency services agency serving Kiawah and Seabrook Island as an Advanced United States Lifeguarding Association Organization with Basic Life Support certification from the South Carolina Department of Health and Environmental Control serving over 20 miles of beach. On these two beaches combined, 164 stingray stings were reported to Barrier Island Ocean Rescue (BIOR) making up a total of 3% of total interactions BIOR had with the public during the time. They also encompass 37% of the total minor medical calls from BIOR. Stingray stings are highly painful wounds often occurring to the lower limb when a patron is wading in the ocean. They are a high-priority case as the toxin associated with the injury is known to have serious effects if left untreated. This data comes from May through September of 2022 through internal reporting from the lifeguards. This data also shows an average response time of 4 minutes and 45 seconds for each call. In treating stingray stings, it is important to begin the treatment protocol as fast as possible to ultimately denature the heat-labile toxin that was injected into the patient. BIOR aimed to decrease the time it took for patients to receive this crucial therapy by adding a cooler of hot water to their trucks. The analysis of the results of this added intervention is ongoing however, patients were able to be moved and treated faster. This is beneficial as resource management for any service is critical. Further data analysis looks to examine weather and water conditions as well as the geographic location of these stings to better understand the prevalence behind the issue. Moving into the next season, Summer 2023, BIOR looks to continue to modify and further improve STING (Stingray Treatment and Injury Guideline) that addresses this environmental hazard with low-cost improvements ultimately benefitting patient care strategies and patron experience.

Assessing Lifeguard Scarcity At Coastal Resorts In The United States

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Since the Coronavirus epidemic, popular media has reported a “lifeguard shortage” in the United States (1)(2)(3). This media coverage largely focuses on swimming pools which can be closed or subject to reduced hours due to low staffing. Coastal resorts may not share the ability to close areas to bathing and unguarded beaches are likely subject to bather drownings. This study presents the results of interviews of a large convenience sample of managers of coastal lifeguard agencies geographically spread along the coasts of the United States. The focus of the interview is recruitment and hiring through the summer seasons of 2022 and 2023. The validity of the media perception is discussed as well as differing resources and constraints faced by lifeguard agencies and best practices in lifeguard recruitment. Incentives and trade-offs faced by potential workers traditionally discussed in labor economics are explored and discussed.

SALT- Surfers' Awareness in Lifesaving Techniques

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Background

Surfers' Awareness in Lifesaving Techniques (SALT) addresses the precedent of surfers affecting rescues and assisting lifeguards. SALT trains bystanders in rescue techniques that can be employed in an emergency, as long as their personal safety is not compromised. SALT is an awareness training targeted at surfers who often have a better understanding of conditions and hazards. The aim of SALT is to increase awareness of ocean hazards and provide safe rescue techniques that surfers can use in an emergency.

Description

SALT is a 2-hour course taught by lifeguards who teach the awareness training and practice in-water rescue skills with participants. SALT highlights various ways surfers can assist others in distress, from verbal coaching to full-contact rescues. The first hour involves an engaging presentation that includes actual rescue footage, hazard and victim recognition, and outlines rescue techniques. The second hour is spent in the water with lifeguards to practice techniques for conscious/unconscious victims. The in-water portion of SALT is crucial so the first time the techniques are used is not during an emergency.

Lessons Learned

The SALT curriculum can be replicated in many settings and tailored to the local community. SALT was created in 2016 and continues to garner attention with multiple beaches in California teaching the program to educate the surf community. It was presented at the WCDP 2019 in South Africa, so this will provide an update on the program and identify progress and challenges.

A major benefit of the SALT program is scalability based on the skill-level of the audience. Many of our participants have assisted someone in distress both before and after the training. Many people have taken the class multiple times to continue to work on their skills and bring friends and members of their surf community with them.

Conclusions

Surfers are in the water from sun up to sun down, often well before and long after lifeguards are on-duty. Surfers travel to remote places to catch waves without the crowds. They may be the only ones able to provide assistance if an emergency occurs and this program will help them to prepare.

Immersive virtual reality for safety training with children – A systematic literature review

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Background

Despite the increasing quantity and improving quality of public health strategies for injury prevention, unintentional injuries, such as drowning continue to be the biggest contributor to the global burden of death and disability among children (1). Educators and researchers worldwide are exploring the use of advanced technology, including immersive virtual reality [IVR] to enhance teaching practices for improved safety training to minimise the risk of accidental injury (1, 2). Such technology has potential for use in water safety education without placing children in high-risk aquatic situations. However, there are limited studies analysing the application of IVR for safety training with children.

Methods

Scopus and PubMed databases were searched to identify empirical studies published from January 2001 to March 2023 that evaluated the effectiveness of IVR technology as a tool for safety training with children aged 1 to 14 years. The methodological quality of the articles was evaluated using a validated instrument (3).

Results

Using the PRISMA protocol, this study identified eleven papers that evaluated the effectiveness of IVR technologies for safety training with children across the following domains: road safety (n=9), fire safety (n=1), and water safety (n=1). The studies aimed to impart either motor or cognitive skills to participants, or a combination of both. Most studies (n=8) did not use a control group. Standardised and non-standardised instruments were utilised to measure knowledge, behaviour, immersion, interest and enjoyment, and usability. The studies used differing qualities of IVR technologies offering varying levels of interaction or no interaction at all. Only two papers compared the effectiveness of IVR technologies to traditional methods of safety training.

Conclusions

There is much enthusiasm around IVR technology being promoted as a promising tool for health education and behaviour change in the safety training field, however, more work is required to demonstrate the effectiveness of IVR technology on learning outcomes, with the use of more robust study designs, particularly, the use of validated data collection instruments, and control groups. These findings will inform the development of IVR-based water safety programs, especially as the technology facilitates safety training without placing children in high-risk aquatic situations.

'Lifesaving education for children in Japan (Water Safety education) in practice'

Saori Ishihara

The Japan Lifesaving Association, Tokyo, Japan

The following are the findings of a survey issued by the Consumer Safety Division of the Consumer Affairs Agency in March 2021 at the 2020 Liaison Conference of Relevant Ministries and Agencies on the Prevention of Accidents to Children: 'Trends in the occurrence of unintentional accidents involving children - from the Demographic Survey by the Ministry of Health, Labour and Welfare'.

As these results indicate, there is an urgent need to educate children between the ages of 5 and 14, as well as their parents and guardians, about water safety.

The Japan Lifesaving Association has been continuously conducting Water Safety education at local lifesaving clubs and schools throughout Japan for about 30 years to protect children from water-related accidents. Even though COVID-19 did not allow us to gather children together for activities, we have not stopped Water Safety education, but have developed and provided tools that allow anyone to learn about Water Safety anytime, anywhere by using "e-Lifesaving (digital contents to be released in June 2020)" and "Junior Lifesaving Karuta (Japanese card game of words and pictures in June 2020)" and other tools.

In addition, the Junior Lifesaving Badge Test (June 2020) was released as a way to check the children's water safety skills and to help them move on to the next stage.

In FY2021, 19 clubs, or 12.4% of the total, are implementing Water Safety Education, and local issues vary. We will continue to focus on solving issues in each region, such as training instructors and supporting equipment, so that 87.1% (136 clubs) of JLA member clubs will be able to implement the program by 2031.

How Does a Fear of Deep Water Turn into Resilience? By Experiencing Independence inside The Deep Water Scaffold.

Andrea Andrews¹, Torill Hindmarch², Milton Nelms^{3,4,5}

1Personal Capacity, Wallingford, United Kingdom. 2Norwegian Lifesaving, Oslo, Norway. 3Swedish Center for Aquatic Research, Lund, Sweden. 4World Aquatic Development Conference, Lund, Sweden. 5Shane Gould Swimming Project, Bicheno, Australia

Background

This poster outlines the culmination of long-running research into how a strong sense of deep water self-efficacy is psycho-physiologically constrained by a developmental need to experience independent spatial safety at rest in deep water and why an embodied knowledge of the 'deep aquatic patience' that results becomes such a powerful scaffolding tool for drowning prevention practitioners.

Methods

Scientific information on what makes us feel fundamentally safer in deep water from inside and outside of Aquatics has been drawn from open-sources of published research and recorded sources of reflective experiential knowledge since 2011. Research into key deep water insights and how to successfully communicate them to other practitioners has evolved from a pivotal life experience through practical involvement in many aspects of Aquatics, extensive reading of scientific discourse of a multidisciplinary nature and reflecting upon the outcomes of visuographic presentations at conferences.

Results

When child and adult novices are learning to swim in guarded settings they are rarely given fully independent authority to explore in water which is deeper than their own crown head height without buoyancy/flotation aids and particularly in the earlier stages of their swimming lessons. The reason why deeper water access is restricted for recognizable novices in this way is based upon normal operating procedures for organizational accident prevention. This ubiquitous safety protocol comforts us but it is worth considering how such a sensible management of natural environmental risk also contributes to a natural reduction in wider cultural experiential insights flowing from deeper water settings. This poster attempts to illustrate the critical psycho-physiological benefits of being scaffolded safely to fully embody independent calm and very slow skills in deep water in order for Drowning Prevention to start retrieving valuable, non-verbal and therefore previously inaccessible insights from natural Human Aquatics.

Conclusions

Drowning prevention research will benefit increasingly from a powerful new research relationship with developmental phenomenology if aquatic practitioners are proactively shown how to notice, explore, expand, use and share the findings of personal embodied deeper water insights.

Who Has Shone a Light before on the Deep Need to Feel Stillness in the Heart of Human Aquatics?

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Background

This poster shines a light on a universal but hidden need to experience an embodied sense of independent safety when engaging with slower and still forms of activity in deeper water. It makes the case for a new policy proposal of officially recognizing the existence of an elite aquatic technology that emerges specifically from slower and deeper water engagement, facilitative aquatic approaches and ecological settings. Human Aquatics has had difficulties bestowing sufficient attention or vesting enough prestige upon the positive sources of ecologically purposed and deeper aquatic insight and the powerful engagement they generate in non-competitive settings. This imbalance has the draining effect of continually reducing operational & cultural access to some of the most important and effective information for drowning prevention to emerge from Human Aquatics in recent years. Fears of sharing the positive side of deep water insight therefore need to be addressed.

Description

Throughout recorded history the elite insight for fully encountering space in controlled deeper water settings has been repeatedly felt and lost in wasteful cycles of discovery followed by attrition due to the practical difficulties in transmitting non-verbal and sometimes non-visual insights between aquatic practitioners. More aquatic indigenous cultures were conveniently ascribed by exploitative powers as second class sources of human knowledge in the past despite the superior physical intelligence they often displayed innately in water. Human disconnection from nature or 'self-domestication' generates behavioural risks in all advanced civilizations and an inevitable process of 'territorialisation' needs actively combatting with deliberate strategies for retaining cultural access to deeper aquatic insights.

Lessons Learned

Today, a growing thirst for and renewed research efforts are being made globally to share instinctive learning technology and powerful methods for the safe entrainment of deep water engagement by tapping the psycho-physiological science of it. Drowning prevention measures will evolve far more efficiently with this phenomenological input from deeper water insights.

Conclusion

It takes more energy to effectively share a clear understanding of the requirements of deeper water elite technology than it does for the elite technology of competitive performance. We must mitigate for this by preserving natural aquatic wisdom and lore effectively.

Safety and training during the Covid-19 pandemic: the role of lifeguards.

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Background

Due to COVID-19, the majority of swimming pools in Italy had to close on March 1, 2020. In properly sanitized pools, risks were not associated with water transmission of the Sars-CoV-2 virus, but rather with challenges in controlling physical distance and with cleaning in exterior pool areas.

Description

Since June 2020, rules created by the Italian Swimming Federation (FIN) and the Italian National Institute of Health (ISS) have permitted the reopening of indoor pool facilities. Several lifeguard-training classes for 66 participants total were completed in The Metropolitan City of Rome (June-October 2020). Each participant received 950 hours of water training.

Lesson learned

The procedures have been changed to comply with the regulations, particularly with regard to the distance in the changing rooms and the use of masks. The minimal free chlorine concentration in pool water was raised from 0.7 to 1.0 mg/L according to the ISS guidelines (1). Students and instructors for lifeguards at the entrance of the pool have worn masks.

Those in the water have complied with the norm of 7 square meters per person, and in each lane, the number of students has been kept at the maximum number of 5 making maintaining a minimum of one meter during the activities. The training program established by regulations of the Lifesaving Section of FIN (2), with exercises and simulations with direct contact between the student/rescuer and student/figurant-unsafe, was carried out:

- using the dummies provided for in the lifesaving competition;
- or by appropriately changing the techniques while maintaining a minimum distance of one meter between the heads of the students and in any case for a time less than 15 seconds.

In the final stages of the training course, when students have shown that they have acquired suitable skills, are engaged in using the dragging or transport techniques normally used with the precaution of performing the exercise for short stretches and remaining in a condition of "apnea".

Conclusions

The lifeguard courses have not experienced pandemic outbreaks thanks to the measures that were taken in accordance with the regulations outlined in the ISS and FIN guidelines.

Why Indian fishing youth and coastline habitants need Swimming & Water Safety training

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INDIAN LIFESAVING & LIFESAVING SPORTS FEDERATION, CHENNAI, India

Drowning is one of the most common causes of death among young children in coastal India. Swimming skills & open water rescue training were NOT part of the possible prevention strategies for drowning. Having the basic water survival skill in ocean would provide the bread earner (fishing community family member) with the required skills and knowledge to keep themselves safe. However, there is limited study to understand how fishermen in coastal area develop their swimming skill. The intervention activity aimed to develop the need of survival swimming skills and beach safety program of fishing youth in rural coastal setting of Tamil Nadu, India and to explore the opportunity to train and develop employment opportunities at beach along the coastline for the community. Personal meetings were conducted in three groups of stakeholders; Fishing youth active in daily work without swimming skills, the coastal families, and the community leaders in coastal districts of Tamil Nadu, India. The discussion notes were transformed into action plan and organised programs for training and mentorship of the youth. The activity results revealed that fishing youth described their water safety training as a life and additional employment skill which they do not learn during performing their work. Lack of information, sustainability, training knowledge, and instructor were found as the reasons for the shortfall and hence the action was fully skilling based. Majority of fishermen (Seniors) developed their swimming skill in surf zone, ocean and natural water bodies taught by peers, family members. Lack of infrastructures and willingness to gain safety skills in the rural coastal region is one of the barriers to promote swimming skills among fishing community in rural setting. The swimming and beach safety program in the community has been started in collaboration of stakeholders where available infrastructure.

Behavior of drowning victims: a mini-review

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Introduction

Drowning can occur quickly and quietly, when the victim may be unable to shout for help.

Objective

To analyze some forms of behavior of drowning victims, through a literature review.

Methods

Literature review by PubMed and specialized sites, using the following keywords: drowning, freezing and fearfulness. Therefore, seven studies were analyzed, published between 1980 to 2022. Results: The majority of drowning victims have characteristic behaviors: fearfulness, voluntary apnea, "standing swimming", immersing and emerging in an upright position, swimming against the current, waves cover up the victims who usually have their arms on the side in order to press the surface of the water to breathe(1). To avoid immersion many struggle, even involuntarily, to stay on the surface to be able to breathe(2). Still, over time, even at the surface, the victim can enter central fatigue, driving neuromuscular junctions to fail, as a result from changes in the neural signal that reaches the muscle, and peripheral fatigue, with a marked decrease in the mechanisms of ATP production leading to the incapacity to produce work, in the face of too much neuromuscular effort(3,4). On the other hand, others victims present the freezing state, which is a reaction to the situation of danger, escape or struggle, as a defence strategy(5). This freezing response is the partial or total absence of skeletal muscle movements, when the body is unable to perform voluntary acts (like hitting the water with the hands, waving the arms or legs asking for help), not occurring, therefore, in the smooth and cardiac muscles responsible for respiration and cardiac contraction, respectively(6). The levels of defence presented by some victims of drowning provide two different behavioral situations, first: direct contact with the threatening stimulus (liquid medium), second: after having identified the stimulus, it begins the behavior of trying to disengage, eventually reaching immobility and rigidity (freezing)(7).

Conclusion

The immediate recognition of the drowning victim is of utmost importance to prevent drowning. In this context, actions to prevent drownings should be conducted so that the victims do not enter in those phases that precede, sometimes, the act of submersion.

The role of water safety programs in the health and wellbeing of children and adolescents diagnosed with ASD and their families

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On average, 273 people fatally drown in Australia annually (1). The Australian Water Safety Strategy 2030 identifies key populations, locations, activities and risk factors for reducing drowning by half by 2030 (2). Swimming and water safety skills are a priority area for drowning prevention, particularly among children and communities considered to be at higher risk of drowning, including those with medical conditions. In Australia, children with medical conditions such as Autism Spectrum Disorder (ASD) have been found to be at heightened risk of drowning than children without (3, 4). One study reported that epilepsy increases the relative risk of drowning among children aged 0 – 14 years compared to the general population (3). Another Australian study suggested that children aged 5 – 14 years are three times more likely to drown than children without ASD with 0 – 4 year olds recording the highest rate. International research suggests that children with ASD are up to 160 times more likely to drown than children without ASD (5,6).

Royal Life Saving South Australia operate the Inclusive Swim program, which is a leading program for participants on the Autism Spectrum to learn in a safe, sensory friendly environment. Operating since 2017, the program is currently going through a growth phase due to increased infrastructure to deliver programs. The program bridges water safety, stroke development, and physical development within aquatic environments. Providing over 90 participants between the age of 2-20 years of age with weekly services that are tailored to their needs.

RLS SA have developed four research questions

1. To identify the physical, behavioural and social benefits of water therapy and/or water safety programs for children with ASD
2. To identify best practice for teaching children with ASD
3. How to transition children from 1:1 programs to group settings
4. What are the long-term outcomes of these programs

Education in the knowledge and skills of open water safety: a training experience in Taiwan

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Background

Globally, drowning is a significant public health issue. Taiwan's water safety education has placed great emphasis on swimming skills and personal water survival ability, and indeed drowning accidents among students have fallen significantly. However, when it comes to open water, it is totally different situation. Most Taiwanese students have insufficient opportunity to participate in an open water training. Some confident students may overestimate their swimming abilities therefore may underestimate the danger of the open water activities.

Description

A case study was undertaken to explore an open water training experience in Taiwan, and to evaluate how participants improve their water safety knowledge and skills after undergoing a designed open water training program.

Lessons learned

The findings showed that open water safety education can be a crucial factor in the prevention of drowning accidents as open water field training is the most practical way to implement water safety education, and to the narrow the gap between open and closed water environments. Meanwhile, under proper guidance, even those who have not previously learned any water self-rescue skills are still able to achieve the outcome of the training.

Conclusions

To effectively drowning prevent it is recommended that students are taught related knowledge to complement their practical skills, and thus improve their understanding of how to use drowning prevention techniques in real world situations. However, there are other important issues that will be encountered in the future, such as the hiring of supervision personnel and teaching staff, and the willingness of schools to collaborate with field training programs. One solution might be a partnership between the public, academic and private sectors. Further, this study recommends expanding the target group of participants from students to the general public, and providing a set course for them to follow.

Discussion on Strategies for Risk Management of Drowning among Students in Taiwan - 2018-2020 Media Reports as an Example

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The main purpose of this study is to analyze the reports of student drowning incidents in Taiwanese media from 2018 to 2020, as a reference for future student drowning prevention work. The research adopts secondary data collection method and content analysis method. Aiming at students from elementary schools to colleges from 2018 to 2020 as the research object, the data provided mainly from the official websites of the Fire Department of the Ministry of the Interior and the Sports Department of the Ministry of Education, as well as the news materials collected from major media from Google search engines are used as the content analysis basis. Through the analysis of risk management theory and corresponding strategies of water area risks. The results found that: from 2018 to 2020, there were a total of 174 drowning incidents, and 113 were rescued. Rescued was greater than death, and male drowning incidents were greater than females. Most of them occurred in June and July. The areas where drowning incidents occurred were roughly distributed in the north. Most of the water types are streams and rivers, and most of the drowning identities are college student. The drowning coping strategies presented in media reports are mostly risk self-acceptance, followed by risk reduction. It is recommended to continuously strengthen drowning prevention education and practice, and enhance students' ability to take risks.

Visualisation model of aquatic competency progression

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Introduction

Since Stallman et al. [2017], it is uncontested that learning to swim is no longer skill-oriented but a process of competence progression. However, a research gap is evident in the general [2] and swimming sport-specific literature [3] in terms of a depiction of a progression framework of competency. Therefore, a grid visualisation of competence development derived from the competence dimensions is missing. The previous descriptions are theoretically correct, but aesthetically too formal and static.

Aims

The aesthetic editing of the formally applicable developed competence concepts enables an extended possibility of reception. The aim is to make the complex interconnectedness of the dimensions and contextual references of the different capabilities visible. Consequently, the activation of teachers' professional knowledge is expected, making it possible to realise competence development is didactically justified in teaching situations [1, 4].

Methods

A visualisation model is developed based on a hermeneutic analysis of the academic literature. The reception of research on the genesis of comprehensive aquatic core motor skills compared with current publications [6] shows that a contextualising synopsis - what follows why from what - does not exist as a visual research desideratum. Therefore, the visualisation presented in this paper was extended based on the discourse in the field.

Results

The chart lists on the left, linearly downwards, the overarching competencies. The competencies mentioned are differentiated, and their relationships and interdependencies declined. E.g. that, breathing in water consists of the developing subskills shown in Figure 1, from which the competence of "being able to breathe adapted to the habitat of water/ adjusted breath" becomes. Stallman et al. [2017] refer to this as breath control competence, Integrated and effective breathing. However, this is not a coherent requirement for novices and learners but is initially broken down into segments.

Conclusions

As a result, these sections, partial abilities and partial skills, can reveal the interlinking condition structure behind the competencies for developing self-empowering movement competence in the physical space of water. This enables didactic access to basic skills in order to be able to design lessons for swimming beginners that are tailored to their needs and goals.

Learning CPR and defibrillation at school: comparison of different training strategies for a lay-public.

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To increase bystander CPR in case of sudden cardiac arrest, the WHO promotes CPR training at school (1). In Europe, CPR is mandatory in Flemish schools of Belgium, in France, Portugal, Denmark and Italy (2,3). Nevertheless, there is great heterogeneity in regional implementation rates of CPR at school (4, 5, 6, 7). Barriers for teachers to teach CPR are: a lack of knowledge, perceived skills and low self-confidence, a lack of time and the cost of CPR-training (8,9,10,7). Support of staff members, pupils and parents facilitate CPR implementation (6, 11,12). The presented work is a PhD-study that originates in the difficulty to implement CPR training at school. It evaluates learning outcomes of CPR and AED training strategies that use cheap and accessible alternatives for CPR lessons. Each study of the PhD aimed to tackle one or more barriers for CPR and AED implementation at school and discusses results from an educational perspective. Additionally, it led to a conceptual framework that helps teachers to implement a feasible training strategy that meets the educational context. Three studies are presented: the first study compared 4 teaching strategies of CPR, using self-made and low-cost didactical tools to replace a resuscitation manikin. It also compared the difference in learning outcomes of a real-time instruction, provided by the teacher compared to a video-instruction in the classroom. The second study evaluates items of CPR and AED that can be trained without hands-on training. The final study is a systematic review that compares face to face settings with blended learning settings. It aims to prove non-inferiority of the latter compared to the traditional setting for CPR and AED training. Results suggest that using an AED and performing chest compression can be learned with cheap and accessible training equipment. Some basic lifesaving actions, such as the assessment of the victim, calling 112 and placing the AED pads, can be learned autonomously. To conclude: CPR implementation at school could benefit from using cheap and accessible training materials. Besides the importance of content to teach and the instructor skills, methodology and medium to teach should be aligned.

An Indonesian qualitative study of parents' and community perception of child drowning

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Background

The highest rate of drowning mortality in Indonesia was identified to be among the under-5 male population.¹ Despite the importance of evidence-informed interventions to prevent child drowning in Indonesia, a paucity of information on drowning preventive efforts to reduce the risk of drowning among Indonesian children has been observed.² This study aims to investigate Indonesian parents' and community perceptions and practices regarding child drowning risk and prevention in and around home, according to the Health Belief Model³.

Methods

Focus group discussions are to be conducted with representatives from three different categories of people in the community, including mothers, fathers, and community leaders. Purposive and snowball/chain sampling are to be carried out to recruit parental couples and community leaders across coastal areas of West Nusa Tenggara Province, Indonesia. Prior to focus group discussions, relevant demographic, personal and social data of participants, including caregiving activities, home environment, access to open water reservoirs, occupation, and education, will be collected. An interview guide was developed and trialled to explore the perceptions and practices of parents and community leaders regarding preventing drowning among young children. The thematic analysis will be guided by Braun and Clarke's framework to identify, understand, and relate key themes emerging from the data.

Conclusions

There is an urgent demand to increase parents' and community awareness of the high risk of child drowning in Indonesia and to facilitate individual and community participation and action to make the communities safer for children. A deeper understanding of parental and community perceptions and practices around child drowning prevention will inform the development of contextualized and localized drowning prevention strategies to reduce drowning in children of Indonesia.

Starting and Building a Sustainable Poor Children's Water Safety and Drowning Prevention Program in Low and Middle Income Countries: Eight Years of Experience in Thailand

John Schorr

Chiang Mai International Rotary Club, Chiang Mai, Thailand

This poster presentation documents how we have planned, implemented, and expanded a sustainable Children's Water Safety and Drowning Prevention Program in Thailand. We began in Chiang Mai with one school and 25 children eight years ago (2015) and this year (2023) our program in Chiang Mai and others we have started in Phrao, Phuket, and BanYa Village Migrant Learning Centre. This year we will serve 30 schools and over 800 children. The poster focuses on how we accomplished this and how we plan to continue our expansion. We believe our experiences, both positive and negative, will be very useful for organizations attempting to address drowning deaths in poor and middle-income countries.

NOT JUST WHAT WE TEACH BUT THE HOW WE TEACH. Insights from grassroots data on developing Aquatic Readiness. Combining pupil centered activity with teacher guidance in safe and challenging spaces where exploration and pupil led learning can produce resilient swimmers.

Torill Hindmarch

Norwegian Lifesaving Society, Oslo, Norway

Development in pedagogy in recent years opens for experiment and discovery. Child initiated learning has long been part Norwegian pre-school curriculum (1). Research has identified fifteen skills for keeping safe or regaining safety in unexpected situations in water (2). By using these skills as a lens, it is possible to identify multiple pathways to water competence (3)(4). Developing strategies from day one can ensure that learners with different starting points and baggage feel safe and in control.

Developing aquatic movement precludes good motor skills including sensitivity, flexibility and agility. The aquatic environment also exerts pressure at an emotional level that can often be invisible to the teacher and create a barrier to successful outcomes.

The NLS developed teacher courses to include exploratory play, providing space and strategies for innovation within each pupils motor and emotional boundaries (3). Playful learning scenarios double as safe organizational structures, skills such as bobbing, orientation, even treading water could be achieved from day one.

Observation revealed that learners find effective movements reflecting their physical and emotional boundaries. Nonverbal feedback from the learner and teacher skills in reading nonverbal messages is vital in facilitating a positive learning environment.

Activities in a vertical position pool side gave opportunities for transitional awareness between different orientations, including transitional phases from horizontal to vertical alignment. Being relaxed in a vertical position, deep water at the pool side, facilitated a positive realization, many children remarked that they "sank upwards". A feeling for the water is fundamental in achieving control and balance, to experience this in deep water is the ultimate test.

Balance and propulsion while lying sideways allowed easy breathing without losing "horizons". This proved an excellent alternative for developing effective propulsion for the cautious learner.

Pairing learners with differing levels of confidence enabled pupils with different starting points to reach the same goals.

The teacher plays an important role in extending the process of discovery and learning within a playful structure toward success.

More research is needed in this area, sharing of knowledge among practitioners with long experience and from differing cultures is an invaluable asset in drowning prevention.

Which Stroke Next? Essential Strokes for Intermediate and Advanced Swimmers

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We have explored the “beginning strokes” all of which are candidates for any given learner’s first stroke (1). We also argued that after mastering their very first stroke the learner should learn the other “first strokes”. This broadens the base for the learning of other strokes as the learner advances to intermediate and advanced levels. Here we explore these other strokes, chosen as essential because of some unique quality which makes them the best solution in some specific situation. In that situation, no other stroke would serve as well. We consider this a valid argument for “all around aquatic development” (aka ‘watermanship’). These strokes should be included in any comprehensive, proactive aquatic educational program. It is difficult to describe (as is often done) the following strokes as either intermediate or advanced. We argue that they are of roughly equal importance and equal difficulty and that all should be learned. The designation of intermediate or advanced more correctly describes the level of economy of effort and technical efficiency achieved for each stroke.

The following strokes are in several ways unique enough to satisfy some special need. They thus qualify for selection as essential in the forming of a competence profile offering maximal protection (skills other than strokes are also considered essential). We must also remember however, that they all must comply with the same laws of physics. Thus, the execution of these strokes also has much in common. The following strokes are introduced in no specific order. The “All Stroke Iowa Method” (2) describes how there is considerable benefit from approaching several strokes at approximately the same time thus opening the door for possible transfer of learning and for balanced progress (3)(4). They also confirmed the importance of achieving a broad skill base including a wide variety of strokes.

Other “Essential” Aquatic Psychomotor Competencies

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In this article we explore psychomotor competencies other than strokes, which are also considered an “essential” part of the psycho-motor aspect of water competence. One is not well protected against aquatic accidents without the full profile of these essential psychomotor competencies and which, at the same time are integrated with the cognitive and affective competencies (i.e. the full profile of ‘water competence’) (1) (2).

In this article we focus on the essential psychomotor competencies other than strokes. We remind the reader that while many people think of swimming as stroking, it is indeed far more. We have chosen to treat the essential psychomotor competencies in three parts to allow us to cover the wide variety of these competencies in more detail. In reality, the beginning strokes (Part I), the other essential strokes (Part II) and these supporting/ foundational competencies discussed in this article (Part III), are inseparable. Because they are integrated in reality (e.g. a potential risk scenario), they should be integrated when teaching. Essentially, we need to imitate typical risk scenario as the learner progresses. An excellent example would be the pairing of entry and exit. One cannot exist without the other. Having entered, at some point in time one must exit.

What was once called “watermanship” can be described as a profile which covers virtually all possible physical needs, especially regarding safety. In addition to the essential strokes, this profile also includes orientation, safe entry, breath control, buoyancy control, survival floating, balance, surface diving, swimming under water, treading water, safe exit, and more.

Make the Right Call: A campaign to prevent drowning in inland waterways among young men aged 25 to 45 years in Australia.

Monique Sharp, Belinda Lawton

Royal Life Saving Society - Australia, Sydney, Australia

Men taking risks and overestimating their abilities continues to be our greatest challenge in drowning prevention, with males continuing to account for more than 80 per cent of all drowning deaths in Australia.

Recent data showed that men aged 25 to 44 years are especially prone to drowning; in the 2020/2021, over 88% of those who drowned in this age group were males.

The Make the Right Call Campaign was devised in response to the significant fatal drowning burden in males aged 25-45 years in Australia.

Addressing this high-risk age cohort, Royal Life Saving launched the Make the Right Call Campaign highlighting the dangers of risk-taking behaviour around aquatic environments to educate and stimulate behaviour change with the focus on the:

1. Impact of drugs and/or alcohol around water
2. Lack of lifejacket use
3. Complacency around water with falls and swimming alone.

The creative direction tapped into the quintessential Aussie trait of always looking after your mates. The campaign highlighted a common-sense approach and advocated simple safety precautions to prevent drowning.

With the campaign now in market for five years, this presentation will evaluate the programs performance including lessons learned, and alternative approaches to targeting at-risk groups within the community who do not engage with most traditional media.

With higher income countries seeking to contribute to the overall reduction of drowning deaths in line with the current United Nations Resolution and the Australian Water Safety Strategy 2030, tackling groups with stubbornly high drowning burdens is critically important. This presentation will highlight important lessons which can be applied to future drowning prevention efforts.

Building Awareness among communities to save children from Drowning during floods and cyclones

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Bangladesh because of its geographical locality is prone to the adverse impact of climate change such as cyclones, floods, etc. During such calamities, people en mass become vulnerable where the children and young people become exposed to drowning. Climate change poses major threats to their health, nutrition, and education, and thus interrupts the normal course of life destructing future growth. The number of people exposed to hazards is rising with the increased frequency and severity of flood disasters and unplanned urbanisation. Climate change threatens the lives and futures of over 19 million children in Bangladesh[1]. Drowning risks increase with floods, where people live in flood-prone areas and the ability to warn, evacuate, or protect communities from floods is weak or just developing.

Over 1.5 million children are at increased risk of waterborne diseases, drowning and malnutrition due to extensive flooding in north-eastern Bangladesh. Over four million people in five districts of north-eastern Bangladesh – Sylhet, Sunamganj, Habiganj, Netrokona, and Moulvibazar – are affected by extensive flooding[2].

Members of the National Alliance for Drowning Prevention (NADP) have conducted an intensive campaign by distributing an especially designed poster having awareness messages to aware Relief Workers, authorities in the shelter homes, communities, and parents. Recently the government has recognised the poster and urged for ensuring greater circulation using government and non-government agencies.



WORKSHOPS

Workshop: Translating research into practice: Developing an implementation plan for drowning prevention

Jaz Lawes¹, Sean Kelly¹, Mary Kennedy², Bernadette Matthews³, Shane Daw¹

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As new and novel approaches in drowning prevention emerge and the evidence base of best practice interventions becomes more robust, little is being done to consider how effective intervention strategies can be transferred from trial-based conditions and effectively implemented into the real world. Impacts of innovative strategies depend not only on the intervention effectiveness, but also on how successfully it is implemented into a community.

Implementation research is the scientific study of methods which lead to the widespread adoption of evidence-based interventions within targeted settings, in turn, leading to improved population health outcomes. It seeks to evaluate methods to increase the uptake of research findings and expert knowledge into routine practice by both identifying strategies to overcome perceived barriers to implementation and enhancing factors known to facilitate adoption.

As researchers and water safety practitioners continue to work to address current and emerging issues in drowning prevention, it is vital that we address factors limiting the integration of research insights into water safety practice. We would like to organise and facilitate a discussion and interactive workshop with the aim of helping participants develop implementation plans using evidence-based implementation science tools.

Workshop Length: 2 hours

Format: Expert led workshop

30 minutes: Overview of implementation science across injury prevention

What is implementation science? Why do we care? What are common barriers and what can we learn from other fields.

Describe what an implementation science plan is and what the benefits are with previous examples.

Introduction of RE-AIM tool and examples of how it is used to develop an implementation plan—we can use the WHO global report here provide an overarching example

1-1.5 hours: Desktop exercise

Creation of an implementation plan for your organisation using the RE-AIM framework will be the focus for this exercise. Think about a particular program or initiative that you would like to improve. By the end of the workshop, you will have created an implementation plan for your chosen program/initiative for future use that considers the specific barriers and facilitators you face in your organisation.

Workshop on flood disaster strategic management

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Globally flooding is a leading cause of disaster-related mortality and morbidity [1]. In addition, flooding causes homelessness and results in significant economic losses. The United Nations Sendai Framework for Disaster Risk Reduction 2015–2030 estimates that in the decade between 2005 and 2015, 700,000 people have lost their lives and 1.4 million people have been injured [2]. In addition, 23 million people have been made homeless with the total economic cost of flooding amounting to \$1.3 trillion dollars between 2008 and 2012 [2]. More recently, it is estimated that the 3,254 floods between 2000 and 2019 resulted in 104,614 deaths [3].

In future, estimates of flooding from researchers in numerous countries predict an increase in incidence and severity due to the effects of climate change [4]. This risk is compounded by over 600 million people living less than 10 m above sea level [5,6]. Drowning is a leading cause of mortality and morbidity during times of flood [1] and, as such, the increased likelihood of aquatic disasters impacting individuals and communities will mean an increase in fatal and non-fatal drowning.

Although there can be challenges associated with multi-agency responses, including communication, coordination and leadership [7], it has been argued that as the frequency and intensity of flooding increases, there is a need for coordination and collaboration between government, non-government organisations and the private sector in order to best respond to these emerging challenges [8,9,10,11,12.]

Continuing the early efforts from Durban WCDP the 1 day workshop will give insights in helping countries in the national management, of flood disaster training, and policy The workshop will show case the collaboration work of the UK and Australia in creating a national framework for flood/ lifeguard teams that can be adopted and utilised. This framework allows other countries to see what a good well practiced model looks like and examines the levels of capabilities for resources to be trained and managed.



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