

RESEARCH

Open Access



Drowning prevention strategies for migrant adults in Australia: a qualitative multiple case study

Stacey Willcox-Pidgeon^{1,2*} , R. C. Franklin^{1,2}  and S. Devine² 

Abstract

Drowning is a global public health issue, with minority populations, including migrants, experiencing significant disparities in drowning. The World Health Organization recommends learning to swim as a strategy to reduce drowning. In Australia, migrants are identified as a priority population for drowning prevention, accounting for approximately one-third of all drowning deaths.

This study aimed to identify swimming and water safety programs aimed at adult migrant populations in Australia and to explore how these programs are meeting the needs of migrant adults.

Using a qualitative multiple case study methodology a desktop review was conducted of 30 publicly accessible swimming and water safety programs across Australia aimed at migrant communities. From this review, six programs were purposively selected for in-depth analysis. Interviews and focus groups with 63 participants (program, managers, swim teachers and program participants), were conducted, guided by the Health Belief Model and Theory of Planned Behaviour. Data was thematically analysed using a deductive approach.

Four overlapping key themes with 14 sub-themes were identified: (1) Motivations for establishing programs for migrant adults, (2) Perceived barriers to participation, (3) Addressing cultural and socio-economic determinants of health and (4) Factors and challenges to program success. Findings revealed that drowning among migrant communities was the catalyst for establishing programs, and that staff consciously design these swim programs to make programs accessible and relevant to migrants. This includes offering single-gender programs, providing culturally appropriate swimwear, having bilingual teachers, low or no cost participation fees and ensuring training pathways to employment in the aquatic industry.

Swimming and water safety programs that acknowledge and respond to migrants' needs and characteristics offer multiple benefits beyond drowning prevention, including improved physical, social and mental health, and positive settlement experiences. These programs highlight the importance of acquiring water safety awareness, knowledge and skills, and how this can influence generational attitudes and behaviour towards drowning risk and water engagement. Drowning is a complex public health issue, with collaboration among multisectoral stakeholders required to create an impact and reduce inequities, especially for vulnerable populations such as migrant adults.

*Correspondence:
Stacey Willcox-Pidgeon
spidgeon@lssa.org.au

Full list of author information is available at the end of the article



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

Keywords Migrants, Swimming, Case study, Drowning, Determinants of health

Introduction

Approximately 295,000 people fatally drown worldwide each year, with the burden concentrated in low-and-middle-income countries (LMIC) [1], particularly among males and young children [2, 3]. Recently, there has been growing recognition of other vulnerable populations especially in high-income countries (HIC's). These include people (mainly adults) from lower socio-economic backgrounds, those living in regional and remote locations, First Nations communities, and migrant populations [1, 4]. The World Health Organization (WHO) recommendations for drowning prevention range from national level policies to developing swimming and life-saving skills at the community and individual level. The global commitment to increasing access to swimming and water safety education for children across HIC and LMIC's is commendable [3, 5]. However, it is equally important that adults are provided with opportunities to develop fundamental water safety and survival skills to keep themselves safe around water, in various contexts, including employment, living environments and for recreational and leisure activities. Globally, 75% of adults in HIC compared to only 27% of adults in LMIC's report being able to swim [4].

Most drowning prevention interventions aimed at adults focus on influencing knowledge, attitudes and behaviour through public awareness campaigns, such as and addressing risk-taking behaviours such as drinking alcohol and swimming [6]. In some countries, water is more commonly associated with work and everyday living rather than for recreation and leisure. In HIC's such as Australia, New Zealand, the United States, and Canada, water safety education and structured swimming lessons often begin in childhood and are integrated into primary school education curriculums [4] and is often a cultural expectation for community members of high education and income levels. Although swimming and water safety programs for children are now widespread in many LMIC's, such as Bangladesh, India, Thailand and Vietnam [7], these initiatives are relatively recent. As a result, many adults may not have received formal water safety education. Research suggests that people from culturally diverse communities in HIC's are less likely to attend swimming and water safety programs compared to other communities, for a range of reasons [8].

Children's swimming programs generally follow a set curriculum to develop skills over a set number of lessons, with a qualified swimming teacher [9]. While swimming and water safety programs for adults are available in Australia [1, 10], little is known about their design and approach, or the impact these programs have on

the participants' swimming ability and knowledge, particularly adults from migrant backgrounds (in both the short and long term) [11]. Research indicates that these programs provide holistic benefits, especially for adults from migrant backgrounds, including increased physical, mental, and social health and well-being, employment benefits, and positive settlement outcomes [4, 12]. However, further understanding of the characteristics of these programs, the experiences of participants, and perceived benefits of engaging in these programs, is required.

Setting

On average, 285 people fatally drown in Australia every year. Over the last two decades, overall drowning rates in Australia have decreased by 26%, with the most significant reduction of 50% seen in children aged 0–4 years, with less progress seen in adults [13]. In Australia, approximately 50% of the population was born overseas or had a parent who was. The largest growing communities in Australia originate from India, China Nepal, and the Philippines [14]. These changing demographics are now reflected in drowning statistics, with one-third of fatal drowning occurring among people born overseas [15]. Migrants are identified as a priority population for drowning in the Australian Water Safety Strategy 2030 [16].

This study aimed to:

- Explore the characteristics of swimming and water safety programs aimed at adult migrants in Australia.
- Understand the perceived benefits of participating in swimming and water safety programs for adult migrants.
- Describe the experiences of study participants delivering and participating in these programs.

Methods

A multiple case study approach was utilised to examine swimming and water safety programs (programs) aimed at migrant adults in Australia. A multiple case study is a qualitative research method that explores a phenomenon by exploring the differences and similarities between individual cases, enabling the researcher to compare different settings and contexts to draw conclusions [17]. This method was chosen as it *'enables the researcher to answer "how" and "why" type questions, while taking into consideration how a phenomenon is influenced by the context within which it is situated'* [17]. This study design allowed for analysis of process, with minimal opportunity for the researcher to manipulate or control the implementation of the intervention, (i.e. swim program) [17].

The researchers had no influence on the design or delivery of the programs included in this study, enabling an in-depth exploration of multiple cases within a particular context, such as the experiences of adults learning to swim in Australia. Examining multiple cases, enhanced the robustness and generalisability of the findings [18, 19]. This study is part of a larger research project exploring drowning risk among migrants in Australia and builds on a pilot study of migrant women in Australia learning to swim [12]. Multiple case study methodology is widely used in public health and health promotion research, with examples including a national injury prevention program in the United Kingdom [20], and school health promotion programs in Austria [21]. To the authors knowledge, case study methodology is rarely applied in drowning prevention.

Case study identification

An internet-based desktop review was conducted in September 2020, to search for swimming and water safety programs in Australia delivered to migrant adults and was repeated in February 2021. Keywords used included: Swimming, water safety, drowning prevention, life-saving, learn to swim AND adult, migrant, culturally diverse, multicultural. Key swimming and water safety organisation websites were manually searched, including Swimming Australia, AUSTSWIM, Royal Life Saving– Australia. Identified programs were entered into a database and duplicates were removed, resulting in the identification of 30 publicly accessible programs. From this review, a purposive sampling approach was utilized to identify six programs; in qualitative research this means purposefully selecting cases that are worthy on in-depth study and are likely to produce rich information to draw conclusions from [17]. Thus the six cases were deliberately selected to include a diverse range of programs based on factors such as availability of female and male-only programs, delivery location (across Australia, metropolitan/regional), large-and small-scale programs, how long programs had been established (long-term and very recently established), and diversity in the types of organisations delivering programs and program participants (e.g. recent migrants, people from refugee backgrounds, parents, students etc.).

Participants and recruitment

A key contact from each program was approached by the lead investigator (SW-P) with follow-up phone or online video call held with program managers interested in participating in the study. Program managers (including founders and coordinators) then shared the study with their program participants and staff for recruitment into a focus group or interview. Once study participants were identified, all communication was between the lead

researcher (SW-P) and the individual study participants. Written and verbal consent was obtained prior to participating in any focus group or interview.

Data collection

Data collection occurred between May and November 2021, commencing with in-person focus groups and interviews in Brisbane, Queensland in May, and Perth, Western Australia in June 2021 (Table 1). The focus groups in Queensland were predominantly with people with low levels of English so translators were utilised (Farsi, Dari, Somali and Vietnamese). In Perth, focus groups and interviews did not require translators. Individual interviews were held for program managers and swim teachers. Due to COVID-19 travel restrictions across Australia from June 2021, the remainder of the study was conducted individually via telephone or online teleconferencing interviews (Zoom or Microsoft Teams) ($N = 18$).

Interview questions were developed and tested in a pilot study previously published [12], utilising the Theory of Planned Behaviour (TPB) [22] and Health Belief Model (HBM) [23]. The TPB hypothesises that people's intended, and actual behaviour, can be predicted based on their attitudes, their subjective norms and, their perceived behavioural control towards that behaviour [22]. The HBM assesses an individual's likelihood of engaging in specific behaviour, based on their perceived susceptibility and severity to a specific outcome; and assessing the benefits and barriers of performing or undertaking a certain behaviour [23]. Both have been utilised in drowning prevention research to gain an understanding of the beliefs toward susceptibility and vulnerability of drowning, and cues to action towards safer behaviour [12, 24]. The pilot study identified the need to include perspectives from key informants, including swim teachers, program managers, and male program participants, who are included in this study [12]. The same questions from the pilot study were used for both the **program** participant focus groups and interviews. For the managers and swim teachers study participants, questions were amended to focus on program development and delivery specific to migrant adults (Supplementary Table 1).

Analysis

Focus groups and interview audio recordings were transcribed verbatim and coded by the first author (SW-P). Data were thematically analysed using Braun and Clark's [25] six-stage approach using a deductive approach, underpinned by the TPB [22] and HBM [23]. The lead researcher (SW-P) listened to the audio recordings and read the transcripts to become familiar with the data, followed by coding and categorising the data thematically. Themes and sub-themes were identified from the coding

Table 1 Case study characteristics

| | Case study 1 | Case study 2 | Case study 3 | Case study 4 | Case study 5 | Case study 6 |
|-------------------------------|---|---|---|---|---|---|
| Type of org | Water Safety Organisation | Water Safety Organisation | Social enterprise | NFP community group | NFP community group | Registered charity |
| Metro/Regional | Metro (some reach into regional areas) | Metro (some reach into regional areas) | Metro (some reach into regional areas) | Metro | Metro | Regional |
| Year established | 2007 | 2012 | 2010 | 2020 | 2016 | 2018 |
| Target Audience | Young adults from multicultural backgrounds | Adults from multicultural backgrounds | Adults from migrant and refugee backgrounds, previously international students | Men and boys from culturally diverse backgrounds, predominantly Muslim backgrounds | Adult women from all backgrounds | Adults and teenagers from migrant and refugee backgrounds recently settled in the local area |
| Primary purpose | Settlement support, cohesion & water safety for young people from multicultural communities | Provide adults from multicultural backgrounds opportunities to learn swimming and water safety skills | To bridge the gap between learning about Australian culture and settlement in Australia through teaching swimming and water safety skills | To provide opportunities for males from their community to learn swimming and water safety skills within a culturally and religiously safe environment | To inspire women from all backgrounds, fitness levels, shapes and sizes to go out for a swim and have water safety skills for themselves and their families | To remove barriers to learning to swim and participation in aquatic activities for refugee and migrant and disadvantaged people in the area and mentoring into aquatic pathways |
| Secondary purpose | Provide opportunities for young migrants through the aquatic sector and creating role models within communities | Programs also available for children from MC backgrounds | To deliver culturally appropriate programs to newly settled migrant and refugee communities to keep themselves and their families and children safer around water | To create generational change and reduce drownings among the community | To advocate for access for women from all backgrounds to learn to swim in a safe and social environment | Provide free swimming lessons, aquatic memberships and courses to participants. |
| Summary of programs delivered | Multiple programs and locations: • Water safety education • Swimming lessons (group) • Beach and open water safety sessions • Mentoring into pathway programs into employment in the aquatic industry | Multiple programs and locations: • Mixed-gender Group lessons • Women's Only Programs • Men's Only • Multicultural Youth Programs | Multiple programs and locations: • Group mixed-gender lessons • Women's only programs • Men's Only programs • Aqua aerobics classes | One program running at a single location: • Male group swimming and water safety lessons in a culturally safe environment • Swimming lessons in the pool • Beach safety training | Pool based programs at two locations: • Female swimming and water safety lessons in a culturally safe environment • Mums and bubs program • Ocean swim program at one location • Focus on developing skills and confidence in the pool and transitioning to the ocean swimming • Non-formal social swimming every Sunday at an open water location | One program running at a single location: • Tailored small group or 1:1 lessons for men and women • Mentoring pathways into other aquatic clubs and activities |
| Skills being taught | Information not provided | • Stage 1 beginner to Stage 5 (swim 25 m) based on the Royal Life Saving Swim and Survive Program curriculum | • Very beginner swimming classes to more advanced classes, designed to develop key swimming & water safety skills | • Beginner Level 1 • Intermediate | • Swimming lessons cater to beginners to advanced • Ocean swim program to develop skills and confidence for ocean swimming | Information not provided |
| Cost | Free or subsidised | \$65 for 8-week block of lessons | Free or subsidised | \$250 for a term | Varies depending on funding | Free |

Table 1 (continued)

| | Case study 1 | Case study 2 | Case study 3 | Case study 4 | Case study 5 | Case study 6 |
|------------------------|---|---|---|--|--------------------------------------|--|
| Recruitment | Website Multicultural com- munity partners | Website Multicultural community partners | Social media / Website Local education agencies Multicultural community partners | Word of mouth Social media Website | Word of mouth Social media | Local settlement services and edu- cation agencies |
| Bi-lingual teachers | Yes | No | Yes | Information not provided | Information not provided | No |
| Scale of programs* | 25,000 per year, number of par- ticipants increases annually across the state | 20,000 per year across the state | 3,000 per year | 50–60 men, with a waiting list | 100 regular participants annually | 60 participants in the first year |

*Approximate annual participation numbers at the time of the study (during 2021).

Table 2 Characteristics of study participants

| Case study / Program | Location | Program participants | Program manager | Swim teachers | Total Study participants | Gender | Age range | Language |
|-------------------------|------------------------------|-------------------------|--------------------|------------------|-----------------------------|------------------------|--------------|--|
| 1 | Queensland (metro) | 31 | 1 | 3 | 35 | 60% female 40% male | 18–50's | English Farsi Dari Vietnamese |
| 2 | Victoria (metro) | 3 | 1 | 1 | 5 | 60% male 40% female | 25–30 | English |
| 3 | Western Australia (metro) | 5 | 2 | 3 | 10 | 100% female | 21–35 | English |
| 4 | NSW metro | 2 | 2 | 1 | 5 | 100% male | 19–32 | English |
| 5 | NSW metro | 2 | 1 | 1 | 4 | 100% female | 28–40 | English |
| 6 | NSW regional | 2 | 1 | 1 | 4 | 80% male 20% female | 18–35 | English Chin (Burmese) |

process using NVivo V12. Second author (RF) reviewed the transcripts and coded for similar themes. Author SD independently read and coded six transcripts to ensure consistency. Discrepancies in coding were discussed, and the research team agreed upon final themes. Member checking was undertaken with program managers and swim teachers after the initial data analysis to ensure the correct interpretation of quotes.

In this study, perspectives were gathered from three key participants groups (program managers, program participants, and swim teachers) to triangulate the findings. Due to Covid-19 travel restrictions, program field notes could not be collected; instead, additional program information was sourced from program websites or social media pages. Triangulation of data sources, data types or researchers is a key strategy in case study research supporting the principle that phenomena should be explored from multiple perspectives [17].

Ethics

Ethics approval was granted by the James Cook University Human Research Ethics Committee (Approval number H7945). All study participants provided informed written and verbal consent to participate in this study, including consent for their de-identified data (responses)

to be published in academic publications and reports. Consent forms are available on request. At no stage are case study sites (programs) or study participants identified. This study was conducted in accordance with the Australian National Statement on Ethical Conduct in Human Research (2023) and the Declaration of Helsinki.

Findings

Six case study sites and 63 individuals across Australia were involved in this study. Focus groups and interviews were held with *program* participants ($n=45$), program managers ($n=8$) and swim teachers ($n=10$). Characteristics of study participants are presented in Table 2.

Case studies 1 and 2 are large **state-based** water safety organisations that deliver programs for all ages and communities, hence the large program participant numbers. Case study 3 is a non-profit social enterprise, solely delivering programs to migrants introducing Australian culture through swimming and water safety. Case study 4 is a program for multicultural men, and Case study 5 is a female-only program, both established by community leaders. Case study 6 is a small, social enterprise catering to recent arrivals in a regional area. Case studies 1, 2 and 3 had been established for over a decade. Table 1 presents the characteristics of the case study (program).

Overall themes

Four key themes were identified with several sub-themes: (1) Motivation for establishing programs for migrants; (2) Perceived barriers to participation; (3) Addressing determinants of health; (4) Factors and challenges to program success. Refer to supplementary tables for further quotes supporting the key themes (Fig. 1).

Motivation for establishing swimming and water safety programs for migrants

This relates to the motivations and triggers for establishing of programs, including drowning within migrant communities, a perceived lack of culturally appropriate programs, and the need for female and male programs. This theme reflected cues to action, perceived susceptibility and severity (HBM) of drowning from both program staff and individuals' perspectives (Table 3; Fig. 2).

Responding to drowning among migrant communities

Programs were established primarily in response to drowning incidents among migrant communities.

'It was a response to multicultural drownings in the early 2000s...So the motivation was water safety...we thought that can also affect settlement for new

arrival, refugee, or international students, and social cohesion.' Program manager, case study 1.

One program manager was motivated to address a perceived lack of water safety knowledge and skills after hearing about a potentially life-threatening incident among his community.

'A religious leader from a local mosque that I attend, relayed a story about him taking a father son group for a dip at an unpatrolled beach, and quickly found themselves in dire trouble. If it weren't for nearby campers who were off duty lifeguards, who rescued all of them, it could have ended very differently. That personally gave me that catalyst to try to get something up and running.' Program manager, case study 4.

Lack of culturally appropriate programs

All managers identified a perceived lack of culturally appropriate programs available to migrant communities. They described characteristics of suitable programs, such as being delivered by people from culturally and religiously diverse backgrounds, and male or female-only programs. Having instructors who could speak the same language and people who could relate to participants was

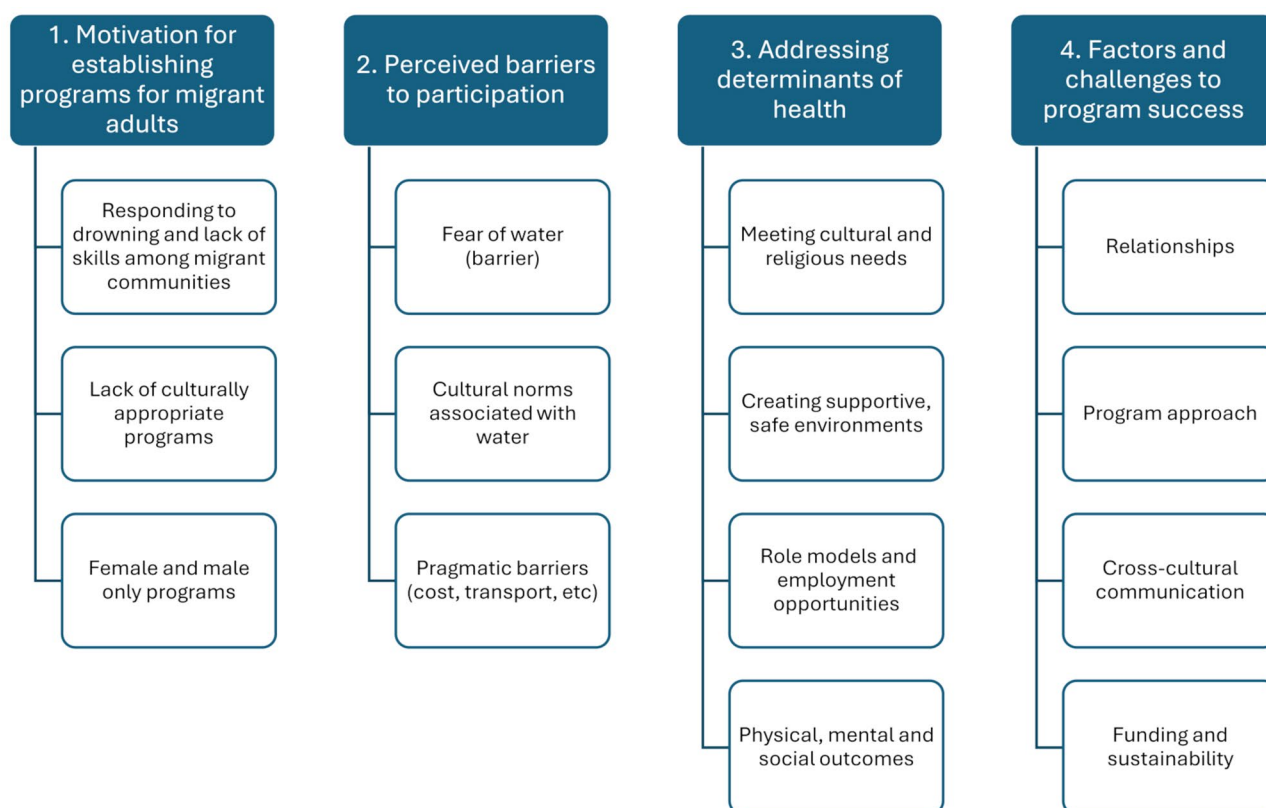
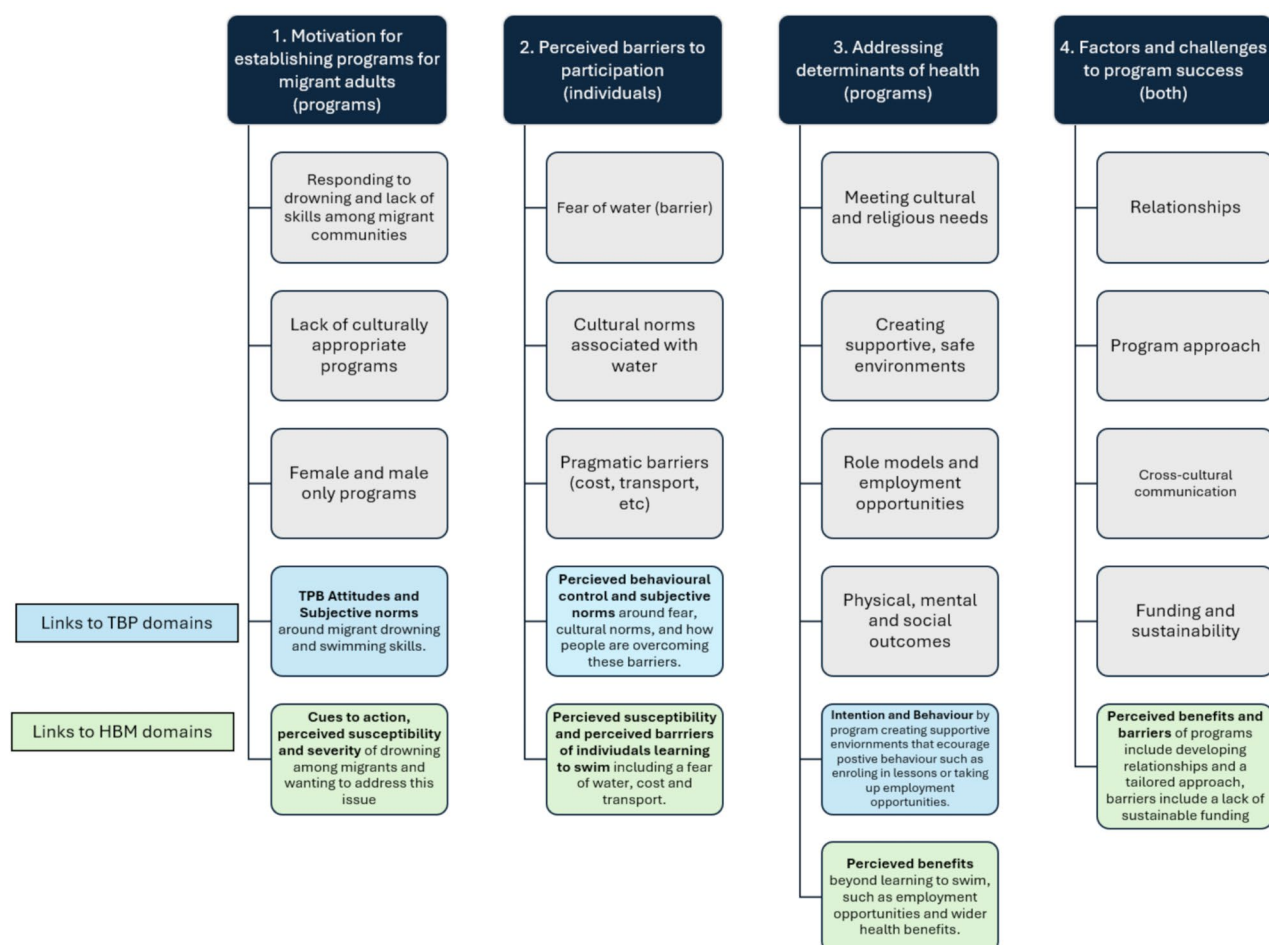


Fig. 1 Key themes and sub-themes

Table 3 Key themes, sub-themes linking to TPB and HBM domains

| Theme | Sub-theme | Theory of Planned Behaviour constructs | Health Belief Model constructs |
|---|--|---|--|
| 1. Motivation for establishing programs for migrants (programs) | <ul style="list-style-type: none"> Responding to drowning and lack of skills among migrant communities Lack of culturally appropriate programs Female and male only programs | Attitudes Subjective norms | Cues to Action Perceived susceptibility Perceived severity |
| 2. Perceived barriers to participation (individuals) | <ul style="list-style-type: none"> Fear of water (barrier) Cultural norms associated with water Pragmatic barriers (cost, transport, etc.) | Perceived behavioural control Subjective norms | Perceived susceptibility Perceived (individual) barriers |
| 3. Addressing determinants of health (programs) | <ul style="list-style-type: none"> Meeting cultural and religious needs Creating supportive, safe environments Role models and employment opportunities Physical, mental and social outcomes | Intention Behaviour | Perceived benefits |
| 4. Factors and challenges to program success (both) | <ul style="list-style-type: none"> Relationships Program approach Cross-cultural communication Funding and sustainability | | Perceived benefits Perceived (program) barriers |

**Fig. 2** Sub-themes mapped to the TPB and the HBM domains

important, whether sharing similar cultural backgrounds or experience learning to swim.

'There's definitely something unique to [X program] as opposed to public swim programs. The fact that the majority of us are Muslim. That's, first and foremost, consideration that we have. I think that helps remove one of the main barriers for the lack of swimming that we see in our communities.' **Program manager, case study 4.**

Female and male-only programs

Study participants expressed the need for female and male-only programs, to ensure everyone has access to swim in an environment where participants felt safe to be themselves. This was seen in helping to overcome barriers that some adults may face, not just people from a particular cultural or religious background.

'Just because we're women only doesn't mean we're Muslim women only...there are women who've had bad experience, they want a safe space...we're about providing safe spaces for whatever reason that they may have, they will prefer female only environments...feeling safe should be a priority.' **Participant 8, case study 5.**

'As we started going to the pools, other guys were just swimming casually, some of them were trying to teach themselves...we picked up very quickly the need to have a male only program.' **Program manager, case study 4.**

Perceived barriers to participation

Challenges identified that prevent some migrants from participating in programs included a fear of water, perceived cultural norms around water, affordability of programs and childcare.

Fear of water

A fear of water was commonly cited as a perceived barrier to learning to swim. Participants were able to overcome this fear over time as the programs provided an environment where they felt safe and supported.

'It can be a lot slower if adults have a fear, they will keep trying to get through a fear barrier. They constantly need support and reassurance. Trying to make them understand that they can put their trust in you, building rapport, supporting them...Need to create a supportive environment within the class.' **Program instructor, case study 2.**

Perceived cultural norms associated with water and swimming

Program participants perceived cultural norms in Australia to be closely associated with water. Swimming, going to the beach, and participating in water activities were perceived as integral to participating in Australian society. Several program participants saw swimming as way to feel included, as described by one participant:

'It's [Swimming] seen as something that is unattainable for people who come from migrant communities...there has been a lack of access, lack of privilege...people feel like they want to be included in mainstream Australian society. And swimming is a way to feel included, they don't want to go to the beach and be embarrassed by the fact that they can't swim...the beach is a massive part of Australian culture.' **Participant 8, case study 5.**

Several program participants stated they were embarrassed to admit that they could not swim, which prevented them from fully participating with their friends.

'I wanted to hang out with my mates and go to the beach. I was always too scared to go to the water...it's always been a real sticking point for me...I really wanted to learn how to swim for a long time.' **Participant 6, case study 4.**

Family attitudes and behavioural and subjective norms towards swimming influenced migrants' participation in swimming. One participant discussed being motivated by her sister to learn to swim, prioritising this by taking time off work to attend the program.

'My mum and my dad don't know how to swim. My sister learnt to swim about three years ago, and I thought, 'If you're going to learn to swim, I should too,' but [I] never really took the time, because working full-time, running the household, all the excuses you can imagine. And now, I actually take the time off work for four days to be here.' **Participant 5, case study 3.**

Pragmatic barriers (perceived barriers)

All programs addressed the financial barrier of learning to swim by offering fully funded (free) or subsidised cost (paying a reduced cost). Program participants and managers explained that adults value learning to swim and are willing to pay, however some may find it unaffordable to pay full price, often prioritising children's lessons. One program manager suggested that by offering subsidised instead of free lessons, adults may be more likely to

continue swimming and visit their local pool after their initial program.

'Something that I've advocated for is the multicultural community are capable [to pay], while some may need assistance, let's work hard to empower the communities to do for themselves. The fact that they pay for their lessons is great...Those that have been with us for a while transition into the mainstream lessons, they will continue to pay casual entry at the local pool.' **Program manager, case study 2.**

Several programs offered childcare, which was appreciated, particularly mothers who knew that their children were safe.

'Our program runs Tuesday in the middle of the day and includes free creche, they [participants] know that they don't have to worry about their children.' **Program instructor, case study 2.**

Addressing determinants of health

This theme highlights cultural and socio-economic determinants that need consideration to ensure equity in accessing swimming and water safety programs.

Meeting cultural and religious needs

All programs in this study attempted to provide a culturally safe environment in varying degrees. This included having staff from the same cultural or religious background, or who spoke the same language, providing a private environment for single-gender programs, and allowing culturally appropriate swimwear.

Study participants explained that for some communities, modest swimwear is a cultural and religious requirement for both females and males, especially if a private environment is not available. This requires swimwear that covers the entire body and is not tight fitting. Several programs provided culturally appropriate swimwear for their participants.

'We give guys a short sleeve top, for females we give them a long-sleeved, we have some swimming pants that we hand out, it should be more common if we want to involve younger females from our culture.' **Program instructor, case study 1.**

Other ways programs were meeting cultural and religious needs was acknowledging that people may not participate due to cultural and religious ceremonies/events such as Ramadan; and accepting that females may not swim while they are menstruating, allowing them to make up lessons another time.

Creating supportive and safe environments

For program staff, creating an environment where their participants felt comfortable, safe and supported, and enjoyed their swimming experience was important. All staff voiced genuine passion for teaching adults and supporting them in achieving their goals. Staff expressed satisfaction and a sense of reward in seeing the progress of their adult participants. In turn, participants highlighted that staff motivated them to improve their skills and confidence in the water.

'It's pretty crazy to see someone that's only started swimming, and all their struggles, him on the verge of giving up and quitting the program. Watching him swim five or six laps of an Olympic sized swimming pool, it's really encouraging. And it just proves that what we're doing is working.' **Program manager, case study 4.**

Staff discussed the importance of making aquatic centres welcoming places for everyone. One program manager described what aquatic centres should be doing to make patrons feel welcome, particularly those from migrant backgrounds.

'A centre that has staff that are polite, display great customer service staff, that understand the cultural sensitivities of different groups and can address different issues on the ground ...For those that are learning English, when they go to a centre, it's forcing them to speak the language they're practicing. So be patient, listen and slow it down a little bit.' **Program manager, case study 2.**

Participants further emphasised the importance of a safe and welcoming environment, with some recounting negative experiences when trying to join mainstream adult swimming programs where they felt uncomfortable and chose not to return. Others highlighted that learning to swim placed them in a vulnerable position, making sense of safety essential.

Creating employment opportunities and community role models

Several programs provided training pathways to employment as pool lifeguards or swim teachers, offering participants a means to support themselves. This had several advantages and perceived benefits to the community: addressing a lack of instructors from migrant backgrounds and increasing the diversity of the aquatic workforce, better representing the community.

'Ideally, we'd want to see more diversity amongst swimming instructors so that there's less of a bar-

rier...we hope to bridge that gap in diversity in the aquatic space.' **Program manager, case study 5.**

Several participants discussed their motivation towards becoming swim teachers to make programs more affordable in their communities, as access to swimming lessons was often perceived as a privilege.

'I've started the [swim teacher] trainers' course myself...I want to provide more affordable swim training for people because the prices are just a bit crazy. It seems to me that swimming has become more of a privilege than a right...I've seen rates where I think there's no way in hell, they can afford that...my ultimate goal is to provide lessons for free, that would be a wonderful way to give back to the community.' **Participant 9, case study 4.**

These training opportunities empowered young people to become role models for their communities. One female participant from a Muslim background became a paid pool lifeguard after completing her initial swimming program. She described an empowering moment in her job where a young girl from her community saw someone that looked like her working at the local swimming pool.

'One day, I had this little girl come up to me at the pool with her mum, and she looked up at me and she said, 'Mum, See? I told you.' And I was like 'what'? And she pointed to her mother 'She told me I couldn't become a lifeguard', 'See Mum, she's a lifeguard.' I said, 'Honey, you can become anything you want. You can do anything you want...And I felt so empowered. I showed this girl and her mother a different path. It was a door that was open for a lot of other people [females] after me.' **Participant 1, case study 1.**

Physical, mental and social health outcomes

Participants reported positive health outcomes, emphasising mental health benefits over physical ones. One participant described swimming as having a transformative effect on her mental health and wellbeing.

'One of my doctors kept telling me go outside, do some exercise...when I got back into the pool, immediately I had a transformative effect, I don't know why I stopped swimming for so long...Now I'm not on antidepressants... swimming was definitely a huge factor in that.' **Participant 8, case study 1.**

Participants discussed the social benefits of the programs, including making social networks and friendships which helped them settle into their new community.

'I've made friends that I still am in contact with when I first joined...it really helped with the settlement, getting to know more people, you build connections along the way, you never know when you're going to need them.' **Participant 2, case study 1.**

Factors and challenges to program success

Factors to program success were discussed, such as developing relationships and tailored program approach. Challenges identified were sustainability, funding, staffing and communication.

Relationships (success)

All study participants identified that relationships played a key role in the success of their programs by supporting engagement and ongoing participation. Building genuine connections and trust was important for both staff and participants.

'I'm a relationship kind of person. I need to be able to connect, you can't motivate me, you can't engage me if I don't connect with you on some sort of personal level.' **Participant 7, case study 4.**

Program managers who were not from a culturally diverse background, recognised that building relationships with migrant communities were a key difference in recruiting and retaining adult participants compared to children's swimming programs.

'I feel like if you don't connect with the community, then what are you really doing? In some respects, you're just running another Learn to Swim program.' **Program manager, case study 2.**

Program approach (success)

All programs took slightly different approaches in how and what they delivered to migrant communities. The larger programs offered group lessons, whereas the smaller programs delivered small group or 1:1 lessons. Some programs offered multiple education options outside of the pool, including classroom water safety sessions, and others incorporated beach safety programs. Several programs focused on mentoring and employment pathways, as swim teachers, pool lifeguards or surf lifesavers.

Flexibility in program delivery was identified as a key factor for success. One long-term program manager recommended having no set expectations when delivering programs for migrant communities, and they may not run as smoothly as expected. Examples included more people attending than expected, communication barriers, inappropriate swimwear, and not understanding 'pool etiquette'.

Several programs aimed to create generational change by instilling the importance of water safety within their communities, where it is not currently seen as a priority or a serious threat, and recreational swimming is not the cultural norm.

'The concept of generational change is changing water safety, attitudes, in men amongst multicultural communities, particularly, heads of families, fathers, uncles, sons, having them have the confidence and the skill sets to then be able to relay those messages onto their families. Success will be having a cohort of men from culturally diverse backgrounds who obtain their bronze medallions, who are swim instructors.' **Program manager, case study 4.**

Cross-cultural communication (challenge)

Language barriers were perceived as a challenge; however, solutions were found by working with community members. Several swim teachers stated that they learnt basic language skills to build rapport and to explain key concepts.

'We were trying to relate to them and understand them in their culture. They also wanted the English version because then they could fit in with us more. They like the fact that we were trying both words not just sticking [to English]' **Program instructor, case study 6.**

Funding and sustainability

Program sustainability and funding were a challenge regardless of how long the program had been established. Staff discussed how funding dictated program delivery, including number of participants, duration, locations. Program managers described having to source funding annually from multiple sources. Long-term funding was seen as key to sustaining these programs.

Program managers acknowledged that while these programs are important, challenges exist in balancing the demand for community programs with the delivery of other Learn-to-Swim programs, where participants pay full cost. They explained that when temporarily closing a facility to the public for gender specific programs, ensuring the availability of appropriate staff is challenging. This includes having all-female/male staff, including receptionists, lifeguards, swim teachers.

'It's nice of [agency] and the council to be doing that [female-only] program...It actually takes a lot of work. Finding female lifeguards at night...And, kicking out all the males from the centre...It's much more challenging to lifeguard during women's only than normal times, because 99% of those women

don't know how to swim.' **Program instructor, case study 1.**

Discussion

Adults account for much of the global drowning mortality [2], yet few studies focus on practical drowning prevention strategies for adults [6], especially for vulnerable adults, such as migrants [1]. Although Australia has one of the world's lowest drowning rates (0.7 per 100,000), migrants from countries with high drowning rates such as India, China and Nepal are increasingly reflected in Australian drowning statistics [2, 26]. The impact of drowning on families, communities and the economy are substantial [3, 27, 28], emphasising the need for prevention strategies that build resilience and maintain survival skills throughout life.

This multiple case study applied the Health Belief Model (HBM) and Theory of Planned Behaviour (TPB) to elicit insights from participants, program managers and swim teachers regarding water safety and learning to swim for migrant adults in Australia. Applying both models identified perceived benefits (such as health, social, employment) and pragmatic barriers to swimming participation for migrant communities, for example, fear of water and cost, which are consistently reported as barriers among minority populations globally [12, 29, 30]. Further insights will be discussed in the context of the following areas: (1) The need for tailored programs; (2) Program impact; (3) Cultural norms associated with water; and (4) Sustainability. Key recommendations are discussed and presented in Table 4.

The need for tailored programs and what this actually means

Australia's multicultural population, with over 8 million people born overseas, comprising diverse language groups, and religious and cultural affiliations [14] highlights the need for swimming and water safety programs dedicated to migrant communities. Participants in this study, identified their perceived susceptibility to drowning and sought out programs that met their cultural, social and physical needs, reinforcing the importance of tailoring programs to reduce barriers. Two key concepts of tailored programs emerged: the role of gender and importance of a supportive environment.

Role of gender

This study supports the need for single-gender programs, not only for cultural or religious reasons but also to create safe spaces for people from all backgrounds. This may include people who are body conscious or have health or personal reasons to swim in a female or male-only environment. These aspects may sometimes be overlooked when offering single-gender programs to the community

Table 4 Key recommendations for research, policy and practice

| Domain | Key Recommendations |
|--------------------------------------|--|
| Research | • Robust evaluation is required to assess the short-medium- and long-term impact of programs and to support sustainability. |
| Policy | • Long-term investment at an organisational or government level is needed to support and enable scalability of such interventions to develop community resilience and reduce drowning risks across the generations yet still be responsive to local needs. |
| <i>National / Organisation level</i> | |
| <i>Local level</i> | • Policies at the local level should address program cost and pool entry, including concessions or reduced cost where possible and respond to local needs. |
| Practice | • Partnerships are required to bridge the gap and raise awareness and susceptibility of drowning risk among communities. • Swimming and water safety programs should be incorporated into existing settlement and health promotion programs aimed at migrant communities. • Programs must address determinants of health (including gender, cultural, social and economic) in order to increase equity and access to programs and swimming pools. • Program managers and staff should actively create and promote a welcoming environment that supports physical, social and cultural safety e.g. gender-specific classes, appropriate swimwear, and multilingual staff. • Program design should consider the motivations and barriers for adult migrants in learning to swim, including family and peer influences and fear of water. • Swim Teacher/Instructor training should include elements of empathy, cultural awareness and understanding specific to the needs of migrant adults. |

[12]. While males are overrepresented in drowning statistics, they are often harder to engage in prevention programs due to stigma and socio-cultural barriers. The study identified the lack of male instructors from culturally diverse backgrounds as a perceived barrier, reflecting research reporting that 85% of Australian swim teachers are female, with ~10% born overseas [31]. Several programs incorporated opportunities to become swim teachers or lifeguards. However, it is unknown how many males take up these opportunities or see these as additional benefits for themselves or their communities. To increase male participation and intentions to participate, male champions and role models are needed to change subjective and cultural norms, with males from the target communities needing to be involved when designing programs specifically for men [32, 33].

Creating a supportive environment

Participants highlighted the importance of a ‘safe space’ that fosters a sense of belonging, as learning to swim can be a vulnerable experience, especially for those who experience socio-cultural barriers to participating in water activities. This study reinforced that program staff were pivotal in providing a culturally safe, supportive learning environment, consistent with other physical activity research [12, 33]. *Cultural safety*, a common concept in healthcare, acknowledges people’s unique needs and considers the gender, age, cultural values, religious beliefs, and socio-economic status of patients/customers and employees [34]. Creating a culturally supportive environment should be a priority for all swimming program providers. Program staff perception of the susceptibility and severity of drowning risk for migrant communities shaped their program approach and teaching style to better meet the needs of the community. Empathy, cultural awareness and understanding from program staff are

important in helping migrants overcome fear, learn new skills, and gain confidence [12, 35], these elements should be included in instructor training [36].

Impact of programs

Programs in this study incorporated broader goals beyond just teaching swimming. Programs sought to address health, wellbeing and settlement outcomes, provide employment opportunities, increase diversity in the aquatic workforce, and develop relatable community role models. Several programs focused on instilling water safety knowledge, attitudes, skills and cultural norms and attitudes across generations, aiming to increase the future safety of children and families. Participants reported perceived benefits of the programs, including increased social cohesion and support, which aided their settlement into Australia. Incorporating swimming and water safety programs into existing settlement and health promotion programs could further benefit migrants by connecting them with community services and employment skills. Research suggests that migrants’ participation in sport and physical activities positively impacts their acculturation into their new communities [8]. Evaluations are needed to assess the long-term impacts of these programs.

Cultural norms associated with water

Our research reveals that migrant adults are motivated to learn water safety skills due to the perception of swimming as part of *Australian* culture. Participants expressed a clear desire and motivation to learn to swim, in order to fit in with Australian culture and to protect their families around the water, reflecting the TPB and HBM domains of subjective norms, control beliefs and cue to action. Previous research reported that migrants in Australia were less likely to perceive themselves as swimmers or

to enrol their children into swimming classes compared to people born in Australia [37]. A new perceived barrier identified was the cultural perception that learning to swim was a '*privilege*', particularly for those who are financially constrained. This contrasts with the Australian Water Safety Strategy (AWSS) vision that everyone in Australia should have equitable access to water safety programs [16]. Previous research has identified that children from higher-socioeconomic backgrounds are more likely to attend swimming lessons [9]. This perception reinforces the need for programs that address migrants' cultural and socio-economic determinants of health to ensure that everyone can develop the skills to participate in the water safely.

Sustainability

Program barriers, including funding and sustainability, limit the ability to provide comprehensive, sustainable programs for migrant communities. Long-term investment at an organisational or government level is needed to support and enable scalability of these programs. Multi-sectoral partnerships and high-level policies supporting community co-designed programs are required to address migrant's determinants of health and increase participation [38]. Policies addressing program cost and pool entry can help overcome the financial barrier faced by some communities.

Transferability of findings

Learning to swim is an essential life skill, as recommended by the WHO [3, 4, 7]. While this study was undertaken in Australia, a HIC, many of the key learnings, particularly around cultural norms and the role of gender in adults learning to swim, are applicable to other countries and settings, including LMICs. Key issues such as cultural attitudes, fear of water and the need for gender-specific programs and staff, are likely to be shared across diverse contexts. A key takeaway from this study is the importance of co-designing swimming and water safety programs, and drowning prevention interventions more broadly, with the target community. This participatory approach should be a key consideration for any programs, regardless of the country, setting or target community, ensuring cultural relevance and community support.

Programs for teaching children swimming and water safety skills have been successfully implemented in LMICs such as Bangladesh, India, Thailand and Vietnam for over the past twenty years [7]. However, despite the significant burden of adult drowning in LMIC [2, 5], opportunities for adults to learn to swim remain limited and often compete with work and family priorities. Understanding the impact that swimming and water safety programs offer for the wider community, including

employment opportunities as swim instructors and program leaders, and providing an income for their families, may be motivation and a culturally acceptable reason for adults learn to swim [4]. Further research is required to more clearly understand the scope and impact of swimming and water safety programs for adults in LMICs.

Future directions and recommendations

Australia's demography is shifting, creating a need for public services to proactively address the needs of a culturally diverse population. To achieve the AWSS goal of reducing drowning by 2030, swimming and water safety programs need to effectively reach migrant communities, who make up approximately 50% of the population. Sustainable funding is needed to develop community resilience and reduce drowning risks across the generations.

Multi-sectoral partnerships are required to bridge the gap and raise awareness and susceptibility of drowning risk among communities not familiar with the '*water-loving*' Australian culture and to guide cultural safety protocols within the water safety sector. Programs must address determinants of health (gender, cultural, social and economic) and increase equity and access to programs and swimming pools. Findings from this study highlight the need for program managers and staff to actively create and promote a welcoming environment that supports physical, social and cultural safety including gender-specific classes, appropriate swimwear, and multilingual staff. The demand for more single-gender programs should be accommodated, and ongoing participant feedback and robust evaluation is required to assess the impact of programs and support sustainability.

The TPB and the HBM are typically applied to individual behaviour and attitudes. This study however, applied the models retrospectively in a program context, examining three groups - program managers, teachers, and participants. This unique approach provided an in-depth understanding of program managers' motivations to establish culturally sensitive programs for migrant adults (e.g. cue to action, perceived susceptibility and severity of drowning risk) and swim teachers, who modified their teaching approaches to meet the needs of adults from migrant backgrounds (Table 3; Fig. 2). This study found that subjective norms and attitudes, play a role in swimming participation and water safety behaviour among migrant communities, regardless of their country of origin. The adult migrants in this study demonstrated a high awareness of perceived susceptibility and the severity of drowning risk along with a desire to positively influence generational change. Many adults were motivated to learn to swim by their families and peers, or by negative past experiences (perceived susceptibility and cue to action). Over time they were able to overcome their fears

(behavioural control). These factors should be considered when designed programs for migrant adults.

Strengths and limitations

This study examined six swimming programs designed for migrant communities in Australia, building on a pilot study exploring migrant women's experiences learning to swim [12]. A strength of this study was the inclusion of three voices: participants (including males), program managers and teachers, to triangulate findings and inform future program development. A further strength was the representation of study participants from across Australia [12]. This study applied the HBM and TPB, allowing insights on perceived enablers and barriers to participation (Table 3; Fig. 2). Using behavioural theories, not only enhanced the understanding of factors that may influence migrant adults' participation in swimming and water safety programs, but also identified how program managers and swim teachers have adapted their program approach to meet the needs of their adult migrant participants.

This study was conducted during 2021, during the COVID-19 pandemic, as such were only able to conduct focus groups with two of the six case studies and not all six as originally intended and we needed to switch to online interviews with limited field notes for the remainder of the study. As a result, approximately 50% of study participants were from two of the programs which may have skewed the findings. The number of water safety programs catering to migrant communities in Australia has likely grown, this research may not reflect the current environment. However, to reduce this impact, a diverse range of programs were included, including both recently established and long-term, and female and male-only programs. A lack of regional programs is a limitation with only one program delivered outside an urban area. As more migrant communities are settled in regional Australia [39], it is important to provide appropriate programs that meet their needs. While this study included a diverse range of programs targeting different migrant sub-groups, including people from both migrant and refugee backgrounds, it did not differentiate participant responses by migrant sub-group or factors such as residency time. These factors have been identified in other studies as contributing to heightened risk of drowning [26] and this omission may limit the interpretation of findings related to participants experiences. Translators and interpreters were used for the face-to-face interviews and focus groups possibly introducing interpretation bias. Participants self-selected into the study which could introduce selection bias, limiting the generalisability of findings. While this study did not evaluate program content (i.e. skills being taught), findings provide new learnings about how water safety agencies and community

leaders are responding to the needs of a culturally diverse, modern Australia, to provide lifesaving skills and reduce drowning.

Conclusion

The study findings support the need for dedicated swimming and water safety programs for migrant adults and provided new insights into the enablers and barriers to participation. This study highlighted how swimming programs can influence subjective norms towards swimming and water participation among migrant communities, with perceived benefits outweighing the perceived barriers. Beyond building swimming and water safety skills, collaboratively designed drowning prevention strategies can assist migrants in settlement, reducing their isolation and fostering community connections. Holistic public health programs integrating drowning prevention, alongside the creation of culturally safe, welcoming environments, may enhance program participation, ultimately reducing drowning risks and facilitating migrants' safe integration into communities.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12889-025-23104-5>.

Supplementary Material 1

Acknowledgements

We would like to thank the study participants for their time and insights provided for this study to inform drowning prevention efforts in Australia. We would also like to thank Justin Scarr for feedback to early drafts of the manuscript and the reviewers for their comments and feedback.

Author contributions

SWP, RCF, and SD conceptualised the study. SWP wrote the first draft. SP and RCF conducted the focus groups and interviews. SWP transcribed, coded and thematically analysed the data. RCF and SD checked the coding and data analysis. All authors critically revised the manuscript and approve the submitted version.

Funding

Lead author S W-P's doctoral studies are supported through an Australian Government Research Training Program Scholarship and the James Cook University Cohort Doctoral Studies Program.

Data availability

The de-identified data analysed during the study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethics approval was granted by the James Cook University Human Research Ethics Committee (Approval number H7945). This study was conducted in accordance with the Australian National Statement on Ethical Conduct in Human Research (2023) and the Declaration of Helsinki. All study participants provided informed written and verbal consent to participate in this study, including consent for their de-identified data (responses) to be published in academic publications and reports. Consent forms are available on request.

Consent for publication

Not Applicable.

Competing interests

SW-P is an employee of Royal Life Saving Society– Australia. RF is past employee of RLSSA and currently holds voluntary (unpaid) roles as Senior Research Fellow and a Board member. RF is also Board member of Kidsafe Australia.

Author details

¹Royal Life Saving Society– Australia, PO Box 558, Broadway, NSW 2007, Australia

²College of Public Health, Medical and Veterinary Sciences, James Cook University, Townsville, QLD 4810, Australia

Received: 23 November 2024 / Accepted: 8 May 2025

Published online: 23 May 2025

References

1. Willcox-Pidgeon S, Franklin R, Leggat P, Devine S. Identifying a gap in drowning prevention: high risk populations. *Inj Prev*. 2020;26:279–88.
2. Franklin R, Peden A, Hamilton E, Bisignano C, Castle C, Dingels Z, et al. The burden of unintentional drowning: global, regional and national estimates of mortality from the global burden of disease 2017 study. *Inj Prev*. 2020;26:183–95.
3. World Health Organization. Global report on drowning: preventing a leading killer Geneva. World Health Organisation; 2014.
4. Borgonovi F, Seitz H, Vogel I. Swimming skills around the world: Evidence on inequalities in life skills across and within countries. *OECD Social, Employment and Migration Working Papers*, No. 281, OECD Publishing, Paris.
5. United Nations. Global Drowning Prevention, A/RES/75/273. Seventy-fifth session of UNGA. New York, USA, 2021.
6. Leavy JE, Gray C, Della Bona M, D'Orazio N, Crawford G. A review of interventions for drowning prevention among adults. *J Community Health*. 2023;48:539–56.
7. World Health Organization. Preventing drowning: an implementation guide. Geneva: World Health Organization. 2017. Contract No.: ISBN 978-92-4-151193-3.
8. O'Driscoll T, Banting LK, Borkoles E, Eime R, Polman R. A systematic literature review of sport and physical activity participation in culturally and linguistically diverse (CALD) migrant populations. *J Immigr Minor Health*. 2014;16(3):515–30.
9. Willcox-Pidgeon S, Peden A, Scarr J. Exploring children's participation in commercial swimming lessons through the social determinants of health. *Health Promotion J Australia*. 2020;00:1–10.
10. Leavy JE, Crawford G, Leaversuch F, Nimmo L, McCausland K, Jancey J. A review of drowning prevention interventions for children and young people in high, low and middle income countries. *J Community Health*. 2016;41(2):424–41.
11. Savage MA, Franklin RC. Exploring the delivery of swimming and water safety teacher training to culturally and linguistically diverse communities. *Int J Aquat Res Educ*. 2015;9(3):241–56.
12. Willcox-Pidgeon SM, Franklin RC, Devine S, Leggat PA, Scarr J. Reducing inequities among adult female migrants at higher risk for drowning in Australia: the value of swimming and water safety programs. *Health Promotion J Australia*. 2020;n/a(n/a).
13. Miller L. Analysis of unintentional drowning in Australia 2002–2022: progress, challenges, and data to inform prevention. Sydney, Australia: Royal Life Saving Society – Australia; 2023.
14. Australian Bureau of Statistics. Australia's population by Country of Birth: Statistics on Australia's estimated resident population by country of birth Canberra: Australian Bureau of Statistics. 2024. Available from: <https://www.abs.gov.au/statistics/people/population/australias-population-country-birth/latest-release#australias-population-by-country-of-birth>
15. Pidgeon S. Who is drowning in Australia: 2013 to 2014. Sydney: Royal Life Saving Society – Australia; 2024.
16. Australian Water Safety Council. Australian water safety strategy 2030. Sydney: Australian Water Safety Council; 2021.
17. Baxter J, Jack S. Qualitative case study methodology: study design and implementation for novice researchers. *Qualitative Rep*. 2008;13(4):544–59.
18. Ebneyamini S, Sadeghi Moghadam MR. Toward developing a framework for conducting case study research. *Int J Qualitative Methods*. 2018;17(1):1609406918817954.
19. Harrison H, Birks M, Franklin R, Mills J. Case study research: foundations and methodological orientations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. 2017;18(1).
20. Errington G, Watson MC, Hamilton T, Mulvaney C, Binley S. Implementing a national programme at local level: findings from a multiple-site case study. *Int J Health Promotion Educ*. 2012;50(6):318–27.
21. Adamowitsch M, Gugglberger L, Dür W. Implementation practices in school health promotion: findings from an Austrian multiple-case study. *Health Promot Int*. 2014;32(2):218–30.
22. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process*. 1991;50(2):179–211.
23. Rosenstock IM. Historical origins of the health belief model. *Health Educ Behav*. 1974;2(4):328–35.
24. Irwin J, O'Callaghan F, Glendon AI. Predicting parental intentions to enrol their children in swimming lessons using an extended theory of planned behaviour. *Australian Psychol*. 2017;53(3):263–70. <https://doi.org/10.1111/ap.12303>.
25. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Res Psychol*. 2006;3:77–101.
26. Willcox-Pidgeon S, Franklin RC, Leggat PA, Devine S. Epidemiology of unintentional fatal drowning among migrants in Australia. *Aust N Z J Public Health*. 2021;45(3):255–62.
27. Mahony A, Barnsley P, Peden A, Scarr J. A thirteen year National study of non-fatal drowning in Australia: data challenges, hidden impacts and social costs. Sydney: Royal Life Saving Society – Australia; 2017.
28. Royal National Lifeboat Institute (RLNI). Operations research unit. Estimating the global economic cost of drowning Poole. Royal National Lifeboat Institute (RLNI); 2015.
29. Irwin CC, Irwin RL, Ryan TD, Drayer J. The legacy of fear: is fear impacting fatal and non-fatal drowning of African American children? *J Black Stud*. 2011;42(4):561–76.
30. Ross SR, Irwin CC, Irwin RL, Martin NT, Ryan TD. The development of swimming skills for African American youth: parent and caregiver perceptions of barriers and motivations. *Int J Aquat Res Educ*. 2014;8(3):219–39.
31. Jackson S, Houston R, Pickles K. National aquatic industry workforce report 2023. Sydney: Royal Life Saving Society– Australia. Sydney; 2023.
32. Oliffe JL, Rossnagel E, Böttorff JL, Chambers SK, Caperchione C, Rice SM. Community-based men's health promotion programs: eight lessons learnt and their caveats. *Health Promot Int*. 2019;35(5):1230–40.
33. Warbrick I, Wilson D, AB. Provider, father, and bro– Sedentary Māori men and their thoughts on physical activity. *Int J Equity Health*. 2016;15(22).
34. Williams R, Dune T, McLeod K. Principles of cultural safety. In: Dune T, McLeod K, Williams K, editors. *Culture, diversity and health in Australia*. New York: Routledge; 2021.
35. Lemonie Y, Light R, Sarremejane P. Teacher-student interaction, empathy and their influence on learning in swimming lessons. *Sport Educ Soc*. 2015;21(8):1249–68.
36. Ahmad N, Thorpe H, Richards J, Marfell A. Building cultural diversity in sport: a critical dialogue with Muslim women and sports facilitators. *Int J Sport Policy Politics*. 2020;12(4):637–53.
37. Della Bona M, Crawford G, Nimmo L, Leavy JE. What does 'keep watch' mean to migrant parents? Examining differences in supervision, cardiopulmonary resuscitation training and water familiarisation. *Int J Public Health*. 2019;64(5):755–62.
38. Jagnoor J, Kobusingye O, Scarr J-P. Drowning prevention: priorities to accelerate multisectoral action. *Lancet*. 2021;398(10300):564–66.
39. Piper M. Refugee settlement in regional areas: evidence-based good practice. State of New South Wales Department of Premier and Cabinet; 2017.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.