Drowning among older people

Risk factors for falls into water

ROYAL LIFE SAVING AUSTRALIA

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OUR VISION

A water-loving nation free from drowning.

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ABOUT ROYAL LIFE SAVING

Royal Life Saving is focused on reducing drowning and promoting healthy, active and skilled communities through innovative, reliable, evidence based advocacy; strong and effective partnerships; quality programs, products and services; underpinned by a cohesive and sustainable national organisation.

Royal Life Saving is a public benevolent institution (PBI) dedicated to reducing drowning and turning everyday people into everyday community lifesavers. We achieve this through: advocacy, education, training, health promotion, aquatic risk management, community development, research, sport, leadership and participation and international networks.

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The drowning prevention research of the Royal Life Saving Society – Australia is proudly supported by the Australian Government.

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Drowning among older people: Risk factors for falls into water

116

Between 2009/10 and 2018/19
people aged 65 years and over drowned in Australia as a result of a fall into water

72% were males

Age

- **37%** 65-74 years
- **63%** 75 years and over

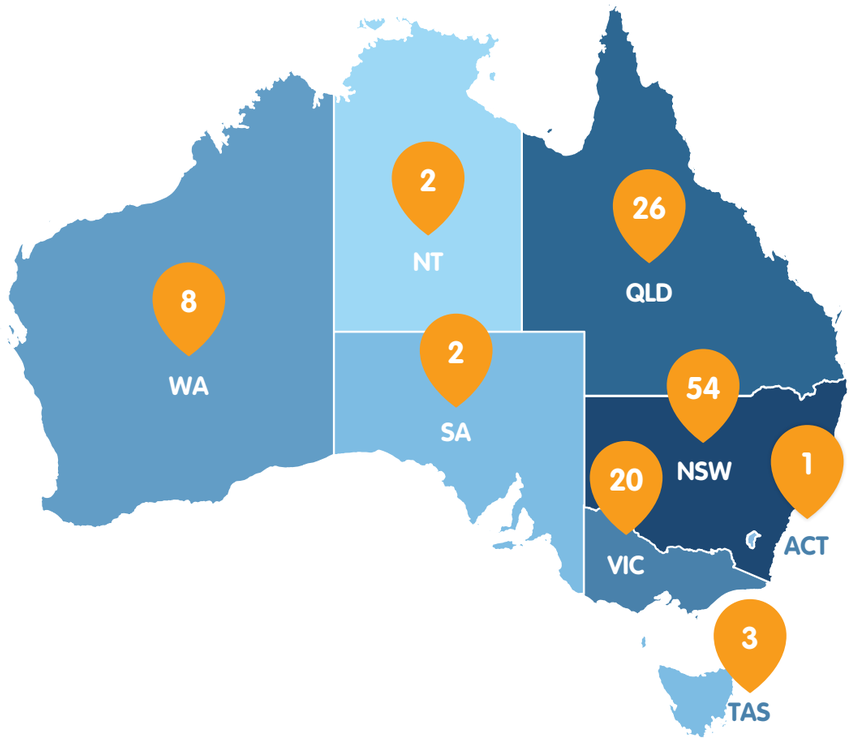
Location

- **32%** River/creek
- **32%** Swimming pool

Driving time between resident and incident location

- **50%** At home
- **35%** Within 15 minutes of home

State and Territory breakdown



Risk factors

89% Pre-existing medical condition

19% BAC ≥ 0.05%

60% Medication

24% Impaired mobility

13% Mobility aid

14% History of falls

6% Visual impairment

19% Environmental hazard

84% Wearing regular clothes

Background

The Australian Water Safety Strategy (AWSS) 2030 identified older people aged 65 years and over as a priority population (1). Like most developed nations, Australia has an ageing population due to a decreasing fertility rate and increasing life expectancy (2). Between 2000 and 2020, the proportion of the Australian population aged 65 years and over increased from 12.4% to 16.3% (3). An increase was observed across all States and Territories, making this a critical issue of national importance (3).

Physical activity is important for the maintenance and improvement of physical, mental and emotional health (4), particularly in the later years of life when increased quantity of life does not guarantee increased quality. Aquatic activity is low impact, meaning it is suitable for older people who may have physical limitations and injuries to consider, however, the drowning risk in this demographic is increased by pre-existing medical conditions, medication usage and reduced physical capacity (1).

Previous research has identified an increasing risk of drowning among older people and noted the high proportion of falls into water in this age group (5). While unexpected falls into water are a common cause of drowning later in life, physical activity has been shown to reduce the risk of falls and fall-related injuries in older people (4), again demonstrating the importance of remaining physically active throughout the lifespan.

The AWSS 2030 calls for closer relationships with the healthy ageing and falls prevention sectors, such as the alignment of messaging and policy development (1). Lessons can be learnt from the falls prevention sector, which has identified interventions to reduce falls in the community. These include specially designed exercise programs and modifications to the home environment, as well as medical interventions related to the management of chronic conditions and medication regimes (6).

The risk factors for falls among older people include a prior history of falls, impaired mobility, reduced muscle strength, gait or balance deficit, visual impairments, living alone, impaired cognition, sedentary behaviour, specific pre-existing medical conditions, use of identified medications and a fear of falling (7). All of these factors can be considered intrinsic, while extrinsic risk factors include environmental hazards, footwear, clothing and inappropriate mobility aids (7). The final factor considered in the literature is the exposure to risk, noting the relevance of different lifestyles and activities (7). This study will focus on the risk factors related to falls into water among older people.

Objectives

This study aims to:

- Investigate drowning deaths among older people with a focus on those who fell into water
- Identify the risk factors for falls into water among older people
- Provide recommendations to reduce fall-related drowning among older people

Results

Between 1 July 2009 and 30 June 2019, 596 people aged 65 years and over died from drowning in Australia. Of these, 20% fell into water.

Overview

Between 1 July 2009 and 30 June 2019, 116 people aged 65 years and over drowned in Australia as a result of a fall into water. This is an average of 12 fall-related drowning deaths among older people each year (Figure 1).

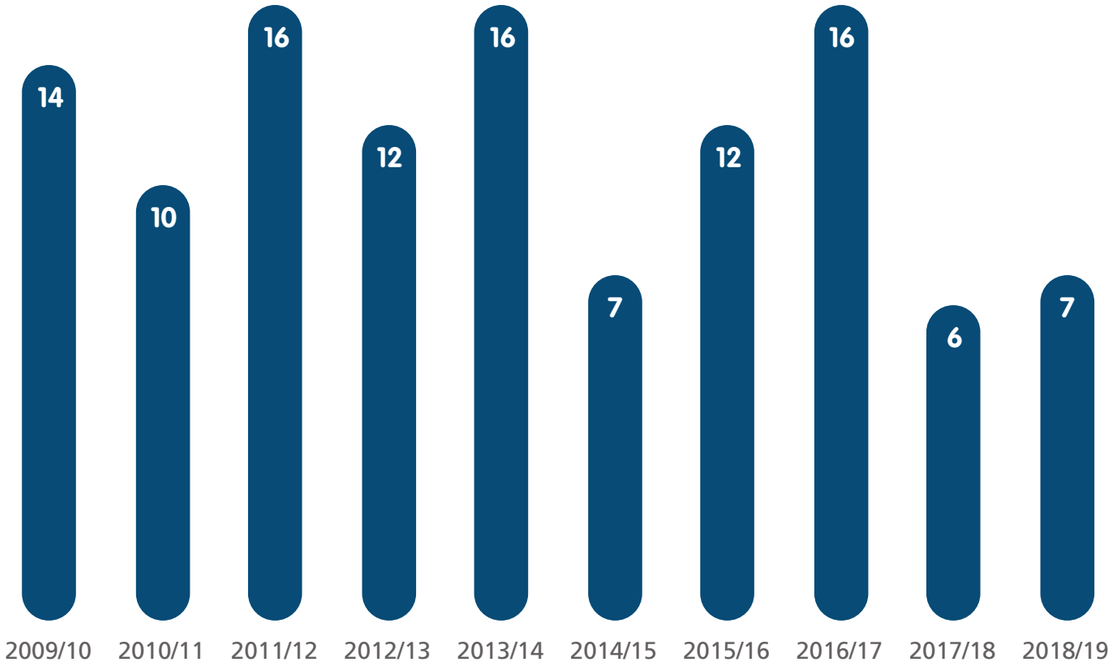


Figure 1: Fall-related drowning deaths among older people by financial year, 2009/10 to 2018/19

Who drowned?

Of the 116 older people who drowned, 37% were aged 65-74 years and 63% were aged 75 years and over (Figure 2). Of these, 72% were male, 43% were born overseas and none identified as Aboriginal or Torres Strait Islander.

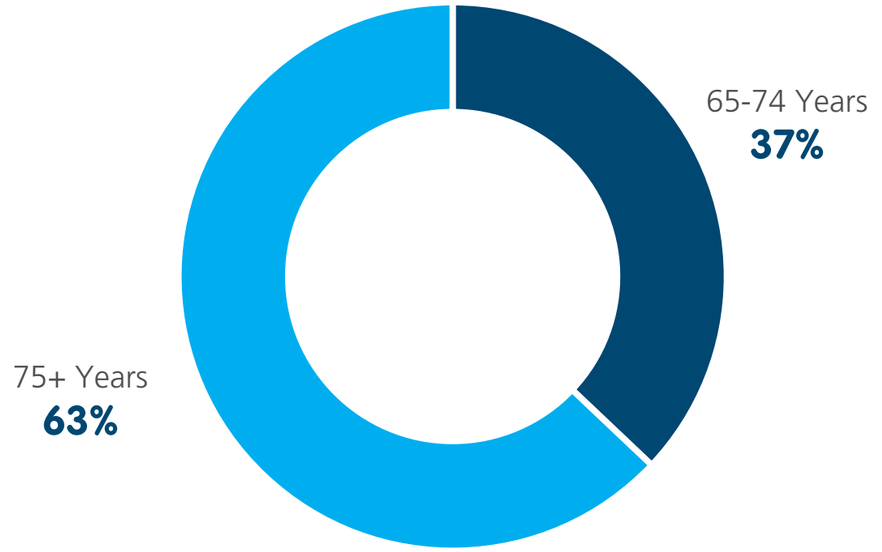


Figure 2: Fall-related drowning deaths among older people by age group, 2009/10 to 2018/19

Where did they drown?

The largest number of fall-related drowning deaths occurred in NSW (47%), followed by Queensland (22%) and Victoria (17%) (Figure 3). River/creek environments and swimming pools accounted for 32% of deaths each (Figure 4). Of the 37 deaths in pools, all occurred in home swimming pools/spas or temporary residences, there were no deaths recorded in public pools. Half of older people drowned at home (50%), with a further 35% drowning within 15 mins of their home and 62% of deaths occurred in major cities (Figure 5 and Figure 6).

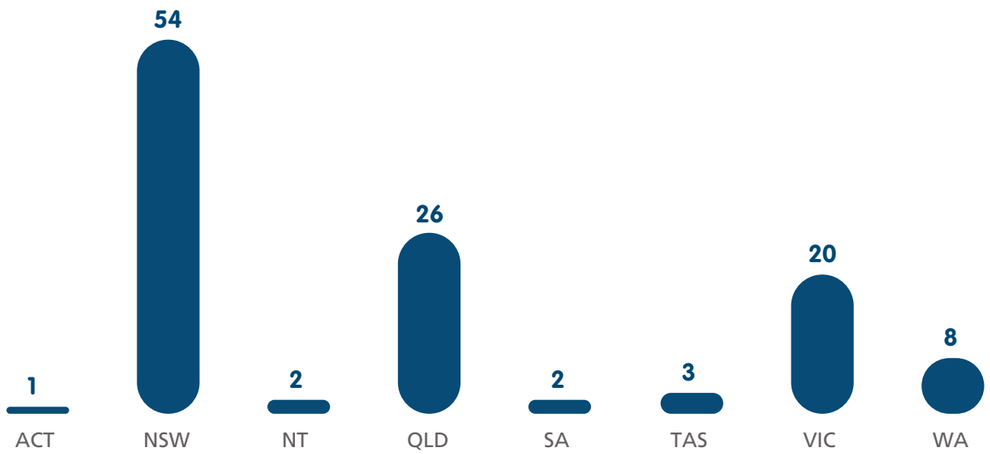


Figure 3: Fall-related drowning deaths among older people by State or Territory, 2009/10 to 2018/19

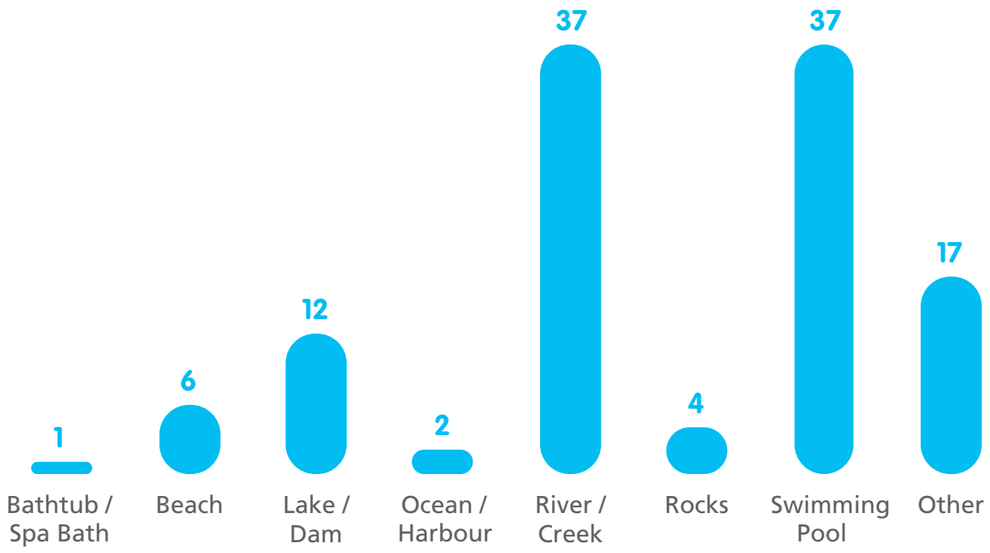


Figure 4: Fall-related drowning deaths among older people by location, 2009/10 to 2018/19

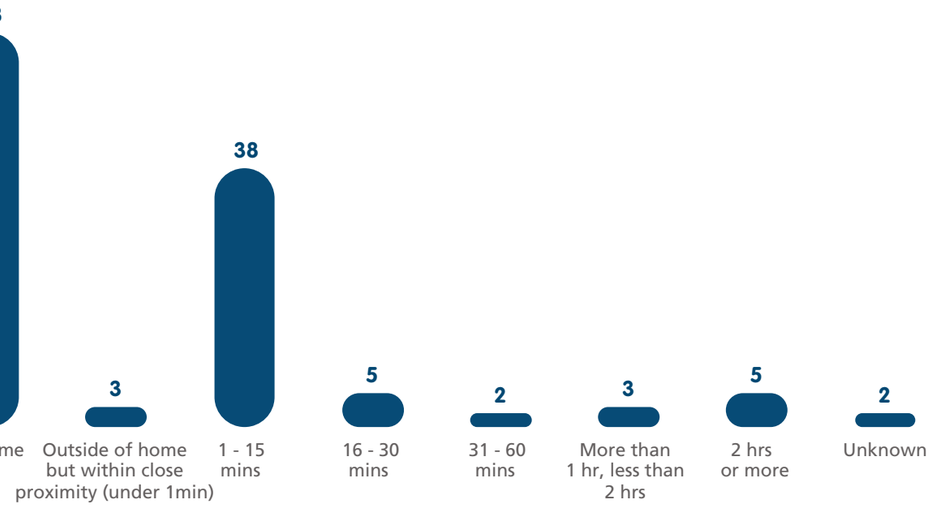


Figure 5: Fall-related drowning deaths among older people by driving time between resident and incident location, 2009/10 to 2018/19

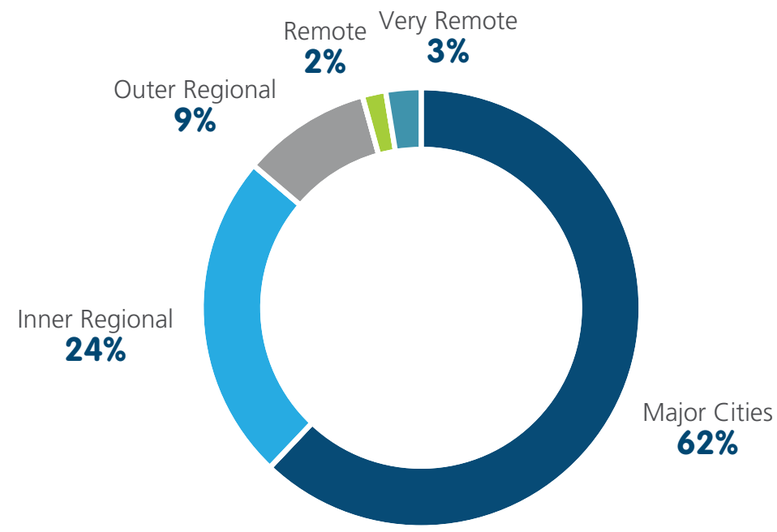


Figure 6: Fall-related drowning deaths among older people by remoteness classification, 2009/10 to 2018/19

When did they drown?

Almost one third of older people drowned during summer (31%) or spring (31%), with the largest number of incidents occurring in February (15%) (Figure 7 and Figure 8). Fall-related drowning occurred on all days of the week, with 40% of incidents recorded during the afternoon between 12:01pm and 6pm (Figure 9 and Figure 10).

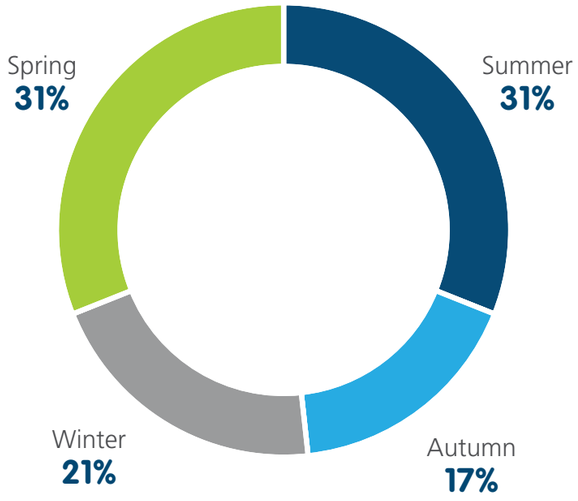


Figure 7: Fall-related drowning deaths among older people by season, 2009/10 to 2018/19

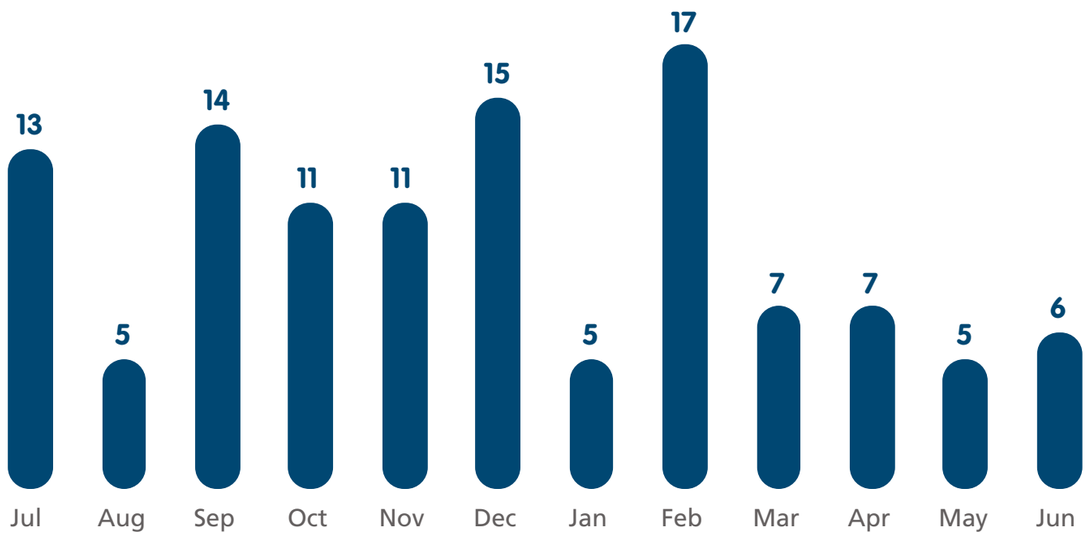


Figure 8: Fall-related drowning deaths among older people by month, 2009/10 to 2018/19

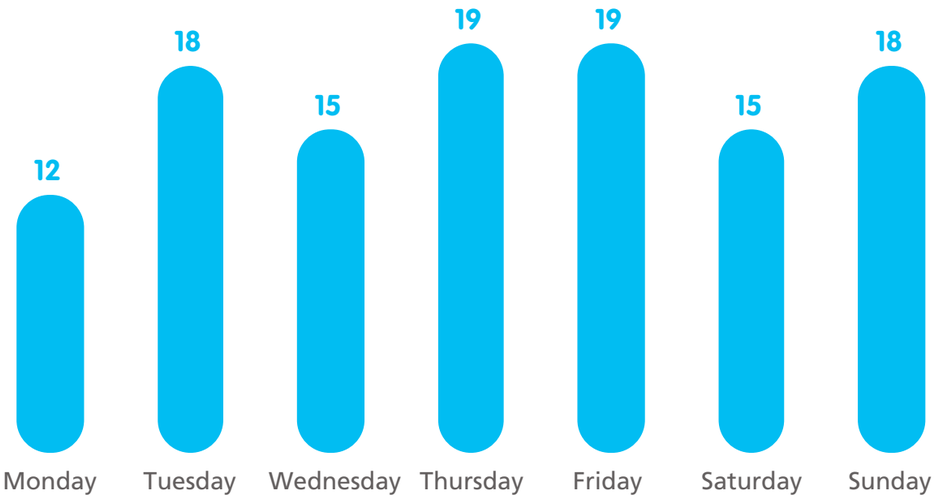


Figure 9: Fall-related drowning deaths among older people by day of the week, 2009/10 to 2018/19

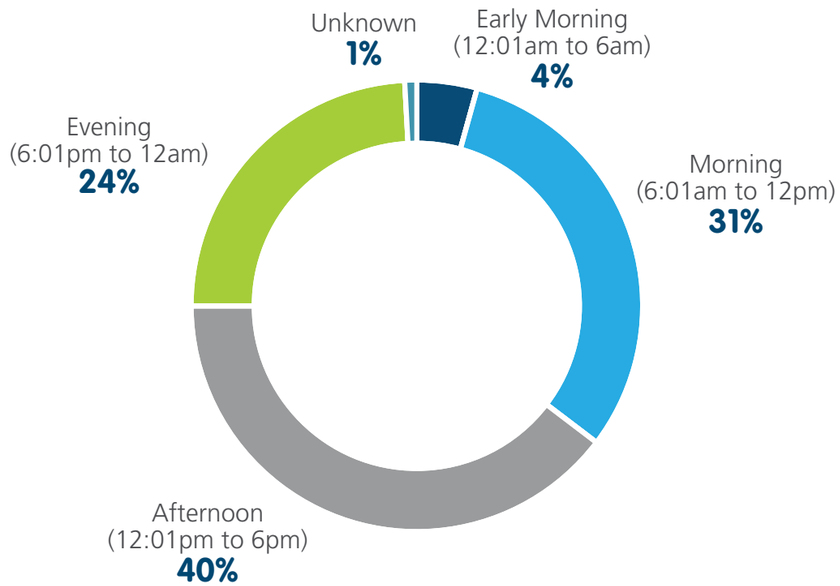


Figure 10: Fall-related drowning deaths among older people by time of the day, 2009/10 to 2018/19

Risk Factors

89% Pre-existing medical condition

A pre-existing medical condition was known to be present in 89% of drowning deaths. Most commonly these were cardiovascular disease (72%) and dementia (22%). Other notable medical conditions included mental health conditions (18%), musculoskeletal conditions (17%), diabetes (9%), Parkinson's disease (6%) and epilepsy (3%).

19% BAC ≥ 0.05%

60% Medication

Blood alcohol concentration (BAC) was greater than or equal to (≥) 0.05% in 19% of deaths, while medication was present in 60% of deaths.

24% Impaired mobility

13% Mobility aid

In almost a quarter of cases, the person who drowned was known to have impaired mobility (24%), with 13% of people reported to use a mobility aid such as a walking stick or frame. References to impaired mobility included people who were frail, weak, unsteady on their feet or lacked balance and experienced episodes of dizziness or light-headedness.

14% History of falls

A history of prior falls was documented in 14% of cases.

6% Visual impairment

A visual impairment was documented in 6% of cases.

19% Environmental hazard

In 19% of cases an environmental hazard was noted to be present. This included surfaces which were steep or slippery, areas which were poorly lit and the presence of obstacles representing a trip hazard.

84% Wearing regular clothes

The majority of people who drowned were wearing regular clothes at the time of the incident (84%) and 3% were noted to be wearing footwear which was in poor condition.

Discussion

Falls into water are the second most common activity prior to drowning among people aged 65 years and over. Given the unexpected nature of this occurrence, trends related to the timing of incidents were not observed, with drowning deaths recorded across all months and days of the week. A larger proportion of incidents occurred during summer and spring, and during the morning and afternoon, possibly a reflection of the times when older people are more likely to be out and about.

The most populous states (New South Wales, Queensland and Victoria) recorded the largest number of incidents. Clear trends regarding the location of falls into water were apparent, with river/creek environments and swimming pools accounting for almost a third of deaths each. Falls into rivers and creeks occurred while walking near the river or creek, with environmental hazards such as steep or slippery embankments leading to difficulty. Falls into swimming pools occurred in residential locations, commonly while walking near the pool or cleaning the pool. Fall-related drowning largely occurred in and around the home environment, with the majority of incidents occurring within 15 minutes of the person's residence.

The vast majority of older people who drowned were known to have at least one pre-existing medical condition. Several of the most commonly reported conditions could increase the risk of a fall by impairing physical or cognitive ability. Similarly, the use of some prescription medications may contribute to the risk of a fall into water. Approximately one fifth of cases were known to have a Blood Alcohol Concentration (BAC) which was deemed relevant (≥ 0.05%). It is vital that older Australians attend regular medical checkups with their doctor and take any prescribed medication as directed. It is important to be mindful of any limitations which occur as a result of a diagnosed medical condition or prescribed medication. Older people should be advised to speak with their doctor or pharmacist to obtain individual advice relevant to their lifestyle.

Documentation indicated an impaired level of mobility in almost a quarter of cases. This was expressed as difficulties with balance, gait and strength, or episodes of dizziness and light-headedness. This was considered separately to those who had a pre-existing medical condition which was likely to have impacted movement on a daily basis. Some of those who drowned were required to use a mobility aid, such as a walking stick or frame. In some cases the person who drowned had a history of falls, a known risk factor for further falls (7). It is likely the proportion of people who drowned with impaired mobility was higher than reported due to a lack of detail in coronial documents. Vision impairment was recorded in a small number of cases.

Environmental hazards included steep or slippery surfaces near water, poor lighting resulting in low visibility and obstacles which would have posed a trip hazard. It is likely the proportion of falls which were related to an environmental hazard was higher than reported due to a lack of detail in coronial documents. In the majority of cases people who drowned were wearing regular clothes as they did not expect to be in the water. Normal attire is likely to have made extrication from the water difficult. In a small number of cases investigators referenced the poor condition of footwear, which may also have contributed to the fall.

The risk factors for falls into water were noted to be very similar to those related to falls more broadly, suggesting significant overlap between preventing fall-related drowning and falls in other locations (7). For this reason, establishing partnerships with the healthy ageing and falls prevention sectors is critical. Integrating drowning prevention strategies with existing policies and plans related to preventing falls among older people will enhance uptake of safety messaging and promote collaboration among the relevant sectors.

Conclusion

Unexpected falls into water are common among people aged 65 years and over. Drowning deaths most commonly occur in river/creek environments and swimming pools, usually close to home. Older people with pre-existing medical conditions and impaired mobility are at increased risk of falls into water.

Reported medical conditions could increase the risk of a fall by impairing physical or cognitive ability, while frailty, dizziness, weakness or unsteadiness on the feet likely contribute to reduced mobility among this demographic. These risks can be exacerbated by environmental hazards, such as steep or slippery surfaces. Other risk factors include the consumption of alcohol and use of prescription medications.

RECOMMENDATIONS

Research

- Prioritise ongoing monitoring of drowning trends among older people
  - In the context of an ageing population, fall-related drowning deaths will require sustained attention and responsiveness
- Explore ways to engage older people in aquatic activity, including an assessment of the suitability of existing programs and facilities which cater towards this demographic
- Evaluate existing drowning prevention programs which aim to reduce risk among older people

Policy

- Integrate drowning prevention with healthy ageing and falls prevention policies and plans
  - Partner, and align messaging, with healthy ageing and falls prevention sectors
- Review opportunities to incorporate aquatic activity into physical activity guidelines for older people, highlighting the low impact nature of water-based exercise and demonstrated benefit of exercise in reducing falls risk

Advocacy

- Raise awareness of drowning risk among older people, particularly the risk of unexpectedly falling into water rather than deliberate entry for recreational purposes
  - Ensure education is also directed towards medical professionals who are often best placed to raise awareness of drowning among their patients
- Encourage older people to attend regular medical checkups with their doctor and take any prescribed medication as directed
  - Older people should be advised to speak with their doctor or pharmacist to obtain individual advice relevant to their lifestyle
- Promote aquatic facilities as safe venues for physical activity and rehabilitation in a controlled environment
  - Recreation and exercise at aquatic facilities can provide physical, mental and emotional health benefits while reducing the risk of drowning due to the presence of lifeguards and reduced environmental hazards

Methods

The Royal Life Saving National Fatal Drowning Database was used to examine unintentional drowning deaths among people aged 65 years and over from 1 July 2009 to 30 June 2019 (2009/10 – 2018/19).

Data in the Royal Life Saving National Fatal Drowning Database have been collated from the National Coronial Information System (NCIS), State and Territory Coronial offices and year-round media monitoring. Only deaths which resulted from a fall into water were included.

Information contained within the NCIS is made available by the Victorian Department of Justice and Community Safety.

Drowning deaths as a result of suicide or homicide, deaths from natural causes, shark and crocodile attacks, or hypothermia have been excluded from this report. All information presented in this report relates to drowning deaths or deaths where drowning was a contributory cause of death.

Figures may change depending on ongoing coronial investigations and findings. As of 20 February 2022, 97% of cases were closed (i.e., no longer under coronial investigation).

Available documentation was used to collect specific information related to risk factors for falls. Text references which were used to collect this information are outlined below.

- **Mobility** – reference to impaired or poor mobility, frailty, weakness, unsteadiness on the feet, lack of balance, episodes of dizziness or light-headedness, history of prior falls
- **Mobility aids** – reference to use of or instruction to use walking stick, frame or similar
- **Environmental** – reference to steep or slippery surfaces, presence of lighting or lack thereof, presence of obstacles which represented a trip hazard
- **Clothing** – reference to regular clothes (everyday attire) or swimwear, status of footwear

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