Drowning Epidemiology in Bahrain (2003-2015)

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Objective: To evaluate the epidemiology of drowning mortality in the Kingdom of Bahrain.

Design: A Retrospective Descriptive Study.

Setting: Ministry of Health, Bahrain.

Method: All deaths due to drowning from 1 January 2003 to 31 December 2015 in Bahrain were included.

Result: Two hundred eight deaths were recorded with an annual average of 16 deaths. One hundred thirty-seven (66%) deaths were in non-Bahrainis, and 158 (76%) deaths were in males. The age-standardized incidence death rate per 100,000 population for the year 2014 was 0.4 deaths per 100,000 population.

Conclusion: Developing a national water safety strategy is necessary to decrease age-standardized unintentional drowning mortality rate in Bahrain.

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Drowning is a major public health hazard worldwide. Globally, the age-standardized unintentional drowning mortality rate decreased from 7.5 deaths per 100,000 population in 1990 to 5.1 in 2010, but still, an estimated 372,000 people died from drowning in 2012[1,2]. More than 9% of the total global mortality is caused by injuries; the third leading cause of unintentional injury is drowning, accounting for 7% of all injury-related deaths[2].

All countries suffer from drowning deaths; 91% unintentional drowning occur in low- and middle-income countries. Drowning death rates are highest in the WHO African Region and are 10-13 times than that of those seen in the United Kingdom or Germany respectively[2]. The annual mortality rate of drowning is 3.1 per 100,000 population in the Arab world[3]. This has decreased by 45% since 1990, an average of 2.0% a year[3].

Age is one of the major risk factors for drowning[4]. Increased access to water is another risk factor. Drowning accounts for 75% of deaths in flood disasters[2].

An increased risk of drowning is associated with lower socioeconomic status, lack of higher education, infants left unsupervised around water, alcohol abuse near or in the water, medical conditions, such as epilepsy and tourists unfamiliar with local water[2].

The aim of this study is to evaluate the epidemiology of drowning mortality in the Kingdom of Bahrain.

METHOD

All deaths due to drowning from January 2003 to December 2015 were calculated from the records of Health Information Directorate, Ministry of Health. Medical notifications of the cause of death due to drowning were reviewed from the Birth and Death Office, Public Health. Data analysis was performed using Microsoft Excel.

RESULT

The total number of deaths in the 13-year period was 208 with an average of 16 deaths per year. In 2006, a peak in the number of deaths was noted. One hundred thirty-seven (66%) deaths were among non-Bahrainis, see figures 1 and 2.

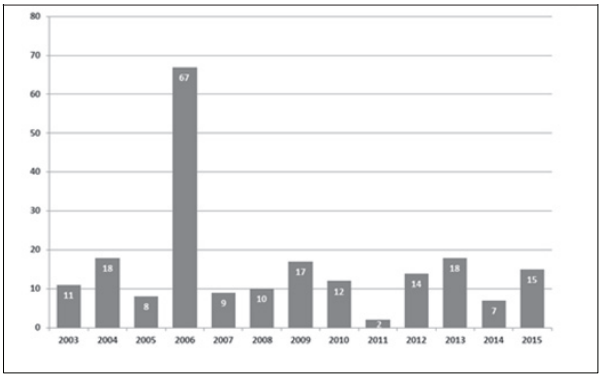

Figure 1: Drowning Deaths in Bahrain from 2003 to 2015

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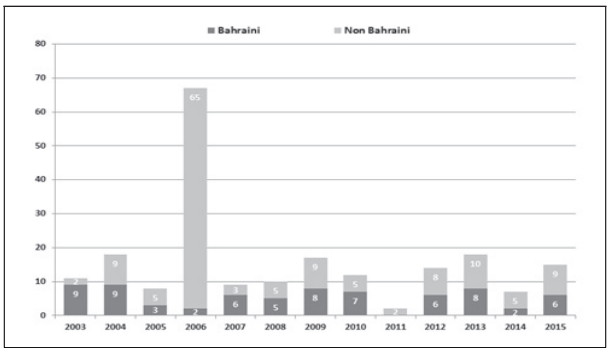

Figure 2: Drowning Deaths in Bahrain by Nationality from 2003 to 2015

One hundred fifty-eight (76%) of the deaths were males, see figure 3. One hundred twenty-seven (61%) were above 25 years old, see figure 4. One hundred thirty-five (64.9%) occurred in the sea, 30 (14.4%) were in pools, and 28 (13.5%) were unknown (not written or specified in the medical notification of death), see figure 5.

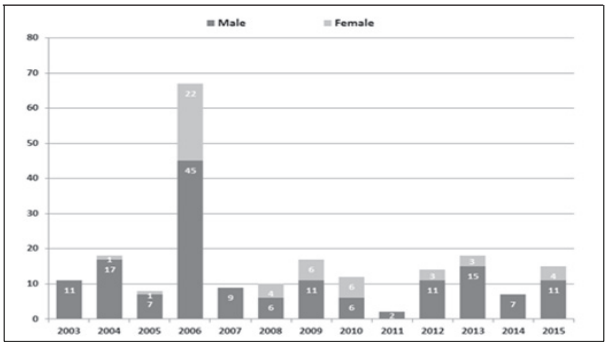

Figure 3: Drowning Deaths in Bahrain by Gender from 2003 to 2015

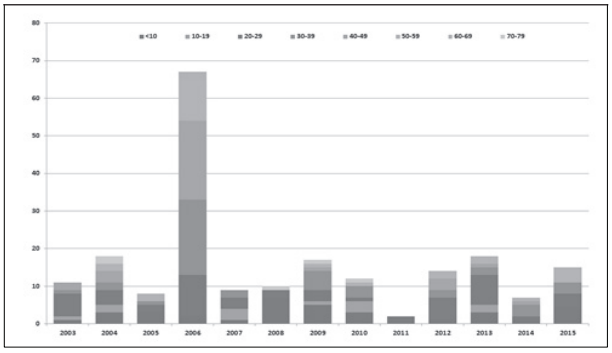

Figure 4: Drowning Deaths in Bahrain by Age Group from 2003 to 2015

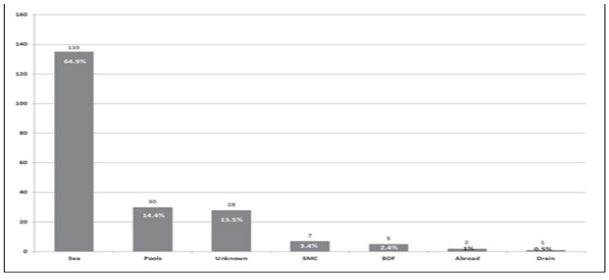

Figure 5: Drowning Deaths in Bahrain Based on the Place of Death from 2003 to 2015

The age standardized incidence death rate per 100,000 population in 2014 was 0.4 deaths per 100,000 population.

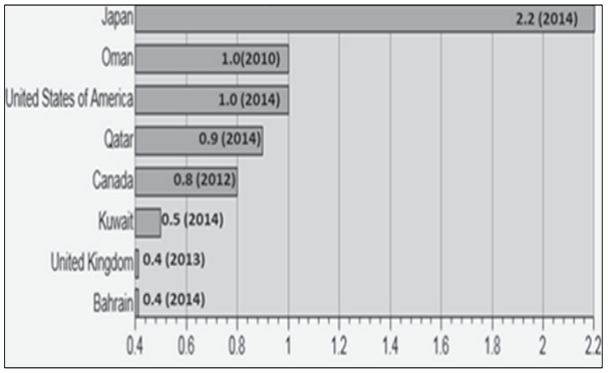

Figure 6: ASDR per 100,000 – Accidental Drowning and Submersion in Both Sexes

DISCUSSION

The age-standardized incidence death rate (ASDR) for the year 2014 was 0.4% deaths per 100,000 population, which is low compared to Japan (2.2%), USA (1.0%) and Canada (0.8%) but similar to that of the UK. The ASDR in Bahrain is less than other GCC countries, Oman (1.0%), Qatar (0.9%) and Kuwait (0.5%)[4].

In 2006, a peak in the number of deaths was noted, this was due to the sinking of a ship (Al-Dana)[5]. Personnel under the influence of alcohol or drugs who get access to unsupervised swimming are also at risk. In this study, 66% of the deaths were among non-Bahrainis who were unfamiliar with currents and water conditions.

In Bahrain, 76% of the deaths were among males. Worldwide, drowning death in males is twice that of females[6].

Increased exposure to water-related recreational activities and risky behavior such as swimming alone or under the influence of alcohol and inexperienced boating may explain the higher drowning rates among males[2]. In the Arab world, drowning mortality rate in males is highest at age 80+ and lowest at ages 50-54. The mortality rate of drowning in 2013 for males was higher compared to females with 12.6 deaths per 100,000 men and 4.8 per 100,000 women[3]. In the Arab world, drowning mortality rate in females is highest at age 80+ and lowest at ages 54-59[3].

In Bahrain, 61% were above 25 years; this could be explained by the Al-Dana incident where most victims were in the age group of 20 to 64 years.

Worldwide, children aged 1-4 years have the highest drowning rate, followed by 5-9 years. In the WHO Western Pacific Region, children aged 5-14 years have higher drowning frequency as to any other cause of death[2].

Approximately 64.9% of drowning in this study occurred in the sea,14.4% in pools and 20% were unknown (not written or specified in the medical notification of death).

Worldwide, increased access to water is another risk factor for drowning. Individuals with occupations such as fishing are more prone to drowning**.** Children who live near open water sources are at higher risk of drowning[2].

CONCLUSION

Drowning is a public health hazard with impacts on children and youth. Drowning prevention strategies implemented in the household, community and on a national level could significantly reduce the risk of drowning.

Developing a national water safety strategy is necessary to decrease age-standardized unintentional drowning mortality rate in Bahrain.

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Competing Interest: None.

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