

Analyses of drowning deaths in Brazil over the last 34 years reveal a sharp decline

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In 2012 the Brazilian population was 194 million inhabitants, of which 1.1 million died in that year. External causes were responsible for 13% of all deaths, and were among the first two reasons of death for people aged between 1-44 years old. Drowning was responsible for 6.369 deaths (3.3/100.000 inhabitants) and was the second leading cause of death for all deaths of children aged 1 to 9 years old, the third among people aged 10 to 19 years old, and the fourth among people aged 20 to 25 years old. The aim of this study was to determine the drowning profile in Brazil along the past 34 years (1976-2012) and understand if any progress is being made in reducing the number of deaths and the risk of death by drowning.

Methods

Drowning rates among Brazilian residents were determined using death certificates (1976-2012) based on DATASUS – the Public Health Mortality System Information of the Brazilian Government <www.datasus.gov.br> using International Classification of Disease for drowning (ICD9 [1976-95] and ICD10 [1996-2012]).

Results

Over the past 34 years (1979-2012), there were 240.235 of drowning deaths (4.6/100.000 inhabitants), including all causes (intentional and unintentional), averaging 7.066 deaths per year, in Brazil. There was an overall decrease in incidence of drowning, from 5.4(1979) to 3.3(2012) per 100.000. The cause for 88% of the drowning deaths was of unintentional, 2% intentional (homicides-0.7%; suicides-1.3%) and 10% were classified as being of unknown cause. The incidence of unintentional cases decreased from 3.9 to 2.8 deaths per 100.000 over the period. The unknown intention (Y21) cases decreased along these 34 years from 27% to 11%. Among unintentional drowning, natural waters were the most frequent setting (40%). Pools were responsible for 2% of cases(49% residence pools) but, among children aged 1 to 9 years old, pools represented 53% of all deaths in that age group. Deaths occurring in bathtubs represented 0.2% (72% in residence) but proportion increased to as much as 38% of all deaths among children under 4 years old. Drowning deaths were higher in adolescents aged 15-19 year-old (16,4%;4.7/100.000hab), followed by people aged 20-24 (13%), 10-14 (10,5%), 25-29 (9.7%) and 1-4 (8.6%). Considering all ages, males died by drowning 5.3 times more frequently than females and represented 84% of all deaths. Considering the year 2012, there were no differences between death rates of males and females for children aged under 1 year old, but males drowned 17 times more in the age group 25 to 29. A huge imbalanced on the risk of death by drowning was observed among different regions and states in Brazil, ranging from 1.7/100.000 at Federal District (central region) to as high as 8.9/100.000 in Amapa (Amazon region).

Discussion

Brazil has one of the largest aquatic recreations areas in the world. This study has demonstrated a significantly decrease of 39% in drowning deaths from 1979 to 2012($p<0.0001$). Drowning deaths were predominantly of unintentional nature (88%). Additionally, the observed reduction of drowning deaths categorized as of unknown intention indicates a significant increase in the effectiveness of the reporting of death. Pools and bathtubs locations were not important when considering all ages affected overall, but were significantly over children aged 1 to 9 years-old. Preventive education on drowning is the most effective action that can be undertaken to reduce these numbers but resources are limited. Educational campaigns should be focused on the groups and locations mostly affected or at highest risk, such as young males with special attention to natural bodies of water, in the north region of the country.