

DROWNING CHILD. PREVENTION STRATEGIES

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Abstract

Drowning is a major public health problem worldwide, being a leading cause of death and disability among children. There are a series of risk factors favoring drowning and pediatricians can play an important role in preventing those factors. In order to determine the effectiveness of the first aid intervention in drowning children, the authors conducted a research which included 86 patients with a diagnosis of drowning, focusing on demographic data, circumstances of drowning, clinical aspects, treatment, outcome, complications, prognosis, sequelae. Rates of drowning varied with age, gender, location, socio-economic background, level of adult supervision, seasons, certain medical conditions, swimming abilities, use of protective equipment. The highest rate of drowning was in children older than 5 years, males being at greater risk. Age is an important determinant of drowning location. Prevention is very important because if applied correctly it will save children's lives. A series of preventive measures against drowning in children are reviewed in this paper.

Key words: drowning, child, prevention strategies

INTRODUCTION

Drowning is a major public health problem worldwide, ranking third as the leading cause of death from unintentional injury, accounting for 7% of all trauma deaths. It is also a leading cause of death and disability among children. Socio-economic status also plays an important role, with most such accidents affecting children in lower middle-income countries. The site of drowning varies with age, being represented by bathtubs, water buckets, pits, ponds, canals, water tanks, wells, swimming pools, running water, lakes, seas and oceans. Risk factors that favor drowning are the lack of a closer surveillance of infants and young children, inappropriate safety measures around pools or open bodies of water, poor swimming skills, educational deficits (lack of awareness about the risk of drowning), physical or neuro-psychiatric disorders, substance abuse (alcohol or drugs), water transportation, natural disasters (floods).⁽¹⁾ Various strategies are available to prevent these tragedies. As educators and advocates for children's interests, pediatricians can play an important role in preventing drowning, helping them and their parents to become aware of the dangers that water can pose in different situations and at different ages.⁽²⁾

MATERIAL AND METHODS

In order to determine the effectiveness of the first aid intervention in drowning children, we conducted a clinical, retrospective and comparative study, which included 86 patients with a diagnosis of drowning, which were divided into 62 deceased children and 24 surviving pediatric patients during January 2002 and December 2017. A Case Report Form was filled for each patient, containing the following data: demographic data, circumstances of drowning, clinical aspects, treatment, outcome, complications, prognosis, sequela. After the inclusion of patients in the research group, the study protocol comprised an evaluation of patients based on patients' files, including statistical and descriptive analysis of data and finally interpretation and comparison of statistical results obtained.

RESULTS AND DISCUSSIONS

Rates of drowning varied with age, gender, location, socio-economic background, level of adult supervision, seasons, certain medical conditions, swimming abilities, use of protective equipment.

The highest rate of drowning was in children older than 5 years, males being at greater risk. Among drowning victims younger than 15 years, two-thirds of deaths occurred from May through August, more than half happening on the weekend (52.6%). Of total 86 drownings, 73.25% occurred in fresh bodies of water (rivers, creeks, lakes, ponds, canals, quarries), 11.62% occurred in artificial pools, and 15.11% occurred in the home (bathtubs, buckets). Age is an important determinant of drowning location. Most cases of drowning were recorded in rural areas (62.79%), the highest frequency having accidents while bathing and involving an unsupervised child (59.30%). Better swimming ability, as reported by the parents, was associated with lower drowning risk; most drowned children in our research did not have swimming skills (66.7%). Behavioral disorders were present in 38.37% of the cases, 15.12% of children were suffering from underlying somatic chronic medical conditions, while in 8.14% drownings alcohol or drug abuse was recorded.

Making these observations in our research, we consider that it is of great importance to implement certain preventive measures against drowning in children, methods that are reviewed hereinafter.

DROWNING PREVENTION METHODS

Surveillance of young children around any accumulation of water is an essential preventive strategy, but possible negligence, lack of attention, sometimes inevitable, make just the supervision itself, insufficient.

Installing protective fences around the pools and the presence of lifeguards in the swimming pools area can protect children and young people from drowning. Other strategies include teaching children to learn survival techniques suitable for swimming; informing parents and caregiver about the importance of close supervision of children who are engaged in water activities; stressing the need to wear life jackets while sailing; discouraging alcohol or drug consumption among adolescents while participating in water activities; learning and mastering first aid and cardio-respiratory resuscitation techniques. Experts recommend that more layers of protection be considered to prevent drowning, as applying a single strategy is unlikely to prevent trauma and drowning.⁽³⁾

Constant close supervision

To reduce the number of deaths by drowning among children, the most effective method is to prevent unintentional and unsupervised access to water. Whenever the child is in or near the water, it is essential to be constantly monitored. To avoid a tragedy, it is very important not to engage in other activities that could distract from the child's supervision, such as using a cell phone, working in the yard, or drinking alcohol^{(1),(5)}. The recommendations of the American Academy of Pediatrics are that, when spending time in or near water, one adult supervisor should constantly maintain close contact (“touch supervision”) with the child. Ensuring careful and constant surveillance in and around the water is necessary even if there is a lifeguard nearby. Whenever it is decided to stop activities in the water, it is important not to leave the child alone in the water, even if lifeguards are also present.^{(6),(4)}

According to statistics, 19% of drowning deaths in children occurred in public places with certified lifeguards present at the scene. However, professionally trained lifeguards have had a positive effect in preventing drowning in the United States, including avoiding dangerous behaviors by assessing potentially risky situations. Children often drown quickly and cannot draw attention to themselves when they are in extreme situations. Such cases occur in overcrowded pools, lakes, parks, beaches, so that the assignment of additional tasks to lifeguards leads to a decrease in their efficiency. In order to avoid undesirable events, the competent authorities have decided to install warning signs with the message "No bathing, danger of drowning". So, the recommendation is to take a bath only in specially designated swim sites. Most of the time, just following the rules can save our lives.⁽⁷⁾

Learning swimming skills

Swimming lessons for all children and even for their parents / guardians, are a very effective way to prevent drowning and give both parties safety in or near water. Recent studies show that training in water survival skills and swimming lessons can help reduce the risk of drowning for all children, including those aged 1 to 4 years. When deciding to start swimming lessons, it is recommended to take into account a variety of individual factors, including the child's emotional maturity, how often the child can be around the water, his physical and developmental skills, how comfortable he feels in the water, but also his interest in learning to swim. The pediatrician, along with a psychiatrist or psychologist, can outline a psychological profile of the child that provides valuable information about these essentials. Children should be encouraged to learn to swim, but these lessons should not give parents a false sense of security. Baby water accommodation programs do not prevent submersion injuries and are potentially dangerous because they give parents a false sense of security if they think the baby can swim.^{(8), (11)}

Also, all individuals involved in watercraft activities should know how to swim, should use special protective equipment when on the boat, should avoid the use of alcohol and recreational drugs, especially in the presence of children who they must be constantly monitored. Children under the age of 14 should not ride personal watercraft without being supervised by an adult. In 2002, more than 189 children under the age of 14 had accidents with personal watercraft.^{(12), (13), (14)} In 2000, only a third of children in this age group wore life-saving and protective equipment. Since 2009, 38 states have adopted navigation safety regulations, requiring children to wear authorized protective equipment at all times while on boats or in high water.^{(15), (16)} All children should be taught to swim in company, to check for danger warnings and to carefully check the depth of the water and the presence of possible dangerous objects before diving into the water; they must know their swimming limits, and to avoid playing dangerously in areas with natural water accumulations, in pools or on decks around swimming pools.⁽¹⁷⁾ Another strategy that would have a significant impact on children is to teach basic swimming and rescue skills safely in kindergartens and schools. A 2009 batch clinical trial concluded that participation in formal swimming lessons reduced the risk of drowning by 80%. Parents should be informed about the objectives, limitations, methods and purpose of these courses for their children.^{(20), (21), (22)}

Establishing protective barriers to keep the child safe

Research suggests that restricting access to water can prevent more than half of all drowning deaths among children. 69% of drownings in children under 4 years of age occur as a consequence of events unrelated to swimming or organized activities in the water.⁽²³⁾ Pools, including large, above-ground inflatable pools and other temporary pools, should be completely surrounded by a fence on all 4 sides.⁽²⁴⁾ Thus, the recommendation is to mount a fence with a suitable height, without any opening under it or between the plates, which does not allow climbing, having a gate with automatic closing and self-locking that opens outside the pool. The gate must also be permanently locked and checked frequently for the safety of its functionality.^{(25), (26), (27), (28)}

Equally important in eliminating the risk of drowning is to keep inflatable toys / items out of the pool area when not in use, so that children are not tempted to try to reach them while they are not properly equipped for swimming or how long they are unattended.⁽²⁹⁾ For the full safety of the child, it is essential to always cover and enclose / delimit wells, ponds, swamps, water pits, septic tanks, any place with water that could endanger the child's life. Even filled and open water containers must be carefully monitored, and when not in use, all liquids in them (tub, bucket, barrel, etc.) must be completely emptied.⁽³⁰⁾

The bathroom can be a risky place for children because they can spill their heads in the toilet bowls or in the full bathtubs, or they can be flushed with too hot water. The installation of locking devices for toilet lids, as well as the removal of the drain plug of the tub when not in use, can be considered additional methods of protection, thus avoiding filling the tub if the child turns on water unintentionally.^{(23), (30), (31)}

Supervision of the child during the bath is essential, so he should never be left alone in the bathtub or in the care of another child. Since 1983, there have been at least 104 deaths and 126 non-fatal drownings in the United States involving improperly supervised bathing chairs.⁽³²⁾

Use of life jackets or personal floatation devices (PFDS)

Whether or not the child has minimal knowledge of swimming, he should always wear life jackets / personal floatation devices when in or around the water. These drowning preventing devices must be properly fitted and suitable for each child. Exceptions to wearing this equipment are children who are specially trained and prepared for this sport, but even so, the supervision of a parent / person is important given the unpredictability of children.⁽³³⁾

CONCLUSIONS

Drowning is a public health problem with a significant impact on children, which is an unpleasant experience because children have to swallow water for a few seconds, most children being left with neurological and other sequelae. Prevention is very important because if applied correctly it will save children's lives.

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