





## DISCUSSIONS

In this research we compared the evolution of children, victims of drowning distributed as deceased children and surviving children. Following the similar studies, we found that almost half of the cases of drowning in children were located in the running water, which means that these children remained unattended. Drowning is a serious public health problem that causes 372,000 deaths a year worldwide. Of these, over 90% are predominantly in low- and middle-income countries. There are many effective strategies to prevent drowning, which can be implemented not only at home but also in society, for example: enrolling children in swimming lessons, installing barriers to limit access to water (e.g. swimming pools) and placing safe places for children at home etc. (11).

Following the distribution of cases by years, there was a relatively slight decrease in time of drowning cases, so that between 2003 and 2008 the annual average is higher compared to 2009-2017 where the annual cases it's more decreased. This difference does not reach the threshold of statistical significance, but there is a significant decrease over time in cases of drowning (12).

The study observed a 100% predominance of cases of drowning in the tub among infants, an aspect corroborated with data from the "World Report on the Prevention of Injuries in Children" according to which infants most often drown in the bathtub, children 1-4 year olds drown in swimming pools and other children over 5 years old drown in streams, lakes or swimming pools (13,14,15). The main cause of death among accidents in the US is drowning, in children aged 1 to 14 this is also the second leading cause of death, and the mortality rate is higher in children of immigrants, African Americans and those from families disadvantaged people over the age of 4 (16,17).

Depending on the time of drowning, out of the 86 cases studied, 64 cases of children drowned in the range of 14-22 were identified, observing indisputably the increased incidence of drowning cases during the day (18).

The present study allowed me to evaluate the report on the number of drowning cases and

drowning survivors and on the other hand the minimum and maximum knowledge of the parents regarding the provision of first aid in such situations, and the purpose of retrospective clinical research was not only the analysis and interpretation, but also the comparison of epidemiological, clinical, paraclinical data and the evolution of cases of children surviving drowning with current data from the literature. Half of the cases collected and illustrated in the present study were victims of drowning with children drowned in bathing, and 30.23% were secondary to lack of supervision from parents or adults. Usually the survival of the drowned child depends largely on the speed and efficiency of first aid and the intervention with which action is taken on the spot because they can have important long-term repercussions, especially in improving the prognosis of the child drowning (19).

## CONCLUSIONS

Following the survey, we found that most children died after they drowned in the river.

Death was more common while bathing and in cases of unsupervised children regardless of the place and time of the drowning.

The age most commonly involved was over five years-age group.

No survivors were recorded in the case of accidents associated with seizures and alcohol consumption.

Regarding the survival rate of the drowned children, it depends to a large extent on the speed and efficiency of first aid intervention taken on the spot, because they can have important long-term repercussions, especially in improving the prognosis of the child drowning.

The conclusions of this research should be a warning for public health services in terms of prevention and intervention methods for rescuing drowning children.

We consider it useful to make the population aware about the possibility of the child drowning, by publicizing the cases, the rescue measures that are required and the prevention ones.

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## REFERENCES

- Berger LR, Wallace LJ, Bill NM. Injuries and injury prevention among indigenous children and young people. *Pediatr Clin North Am.* 2009;56(6):1519-37.
- Kyriacou DN, Arcinue EL, Peek C, Kraus JF. Effect of immediate resuscitation on children with submersion injury. *Pediatrics.* 1994; 94(2 Pt 1):137-42.
- Brenner RA, Taneja GS, Haynie DL, Trumble AC, Qian C, Klinger RM et al. Association between swimming lessons and drowning in childhood: a case-control study. *Arch Pediatr Adolesc Med.* 2009; 163(3):203-10.
- Christophe C, Fonteyne C, Ziereisen F, Christiaens F, Deltenre P, De Maertelaer V et al. Value of MR imaging of the brain in children with hypoxic coma. *AJNR Am J Neuroradiol.* 2002;23(4):716-23.

5. Kawati R, Covaciu L, Rubertsson S. Hypothermia after drowning in paediatric patients. *Resuscitation*. 2009;80(11):1325-6.
6. Fisher B, Peterson B, Hicks G. Use of brainstem auditory-evoked response testing to assess neurologic outcome following near drowning in children. *Crit Care Med*. 1992;20(5):578-85.
7. Baci G. Expertiza medico-legală a cadavrului și persoanei (Ghid practic). Ministerul Sănătății al Republicii Moldova, USMF "Nicolae Testemițanu", Chișinău, 2008;25-44.
8. Beliş V. Tratat de medicină legală. Ed. Medicală, București, 1995:66-68;85-126.
9. Mihalache G, Buhaș C. Compendiu de medicină legală pentru medici generaliști și stomatologi. Ed. Universității din Oradea, 2007:23-36.
10. Sava CN, Ritti L, Balmos AB, Iuhas AR, Marian P, Motorca MA, Lele LA, Straciuc O, Zaha DC, Jurca MC, Niula L, Negrut N. Unusual extramedullary relapses in a case of common B-cell acute lymphoblastic leukemia. Case report and review of literature. *Rom J Morphol Embryol*. 2019;60(1):249-254.
11. Van Beeck EF, Branche CM, Szpilman D, Modell JH, Bierens JJ. A new definition of drowning: towards documentation and prevention of a global public health problem. *Bull World Health Organ*. 2005; 83(11):853-6.
12. Brenner RA, Trumble AC, Smith GS, Kessler EP, Overpeck MD. Where children drown, United States, 1995. *Pediatrics*. 2001; 108(1):85-9.
13. Orłowski JP. Drowning, near-drowning, and ice-water submersions. *Pediatric Clin North Am*. 1987;34(1):75-92.
14. U.S. Consumer Product Safety Commission. Safety Barrier Guidelines for Home Pools. Cited Mar 2007.
15. Thompson DC, Rivara FP. Pool fencing for preventing drowning in children. *Cochrane Database Syst Rev*. 2000;CD001047.
16. Suominen P, Baillie C, Korpela R, Rautanen S, Ranta S, Olkkola KT. Impact of age, submersion time and water temperature on outcome in near-drowning. *Resuscitation*. 2002;52(3):247-54.
17. Van Beelen ME, van Beeck EF, den Hertog P, Beirens TM, Raat H. Correlates of unsupervised bathing of infants: a cross-sectional study. *Int J Environ Res Public Health*. 2013;10(3):856-66.
18. Jan MM. Pediatric near-drowning and drowning. *Saudi Med J*. 2013; 34(2):119-22.
19. Rahman A, Shafinaz S, Linnan M, Rahman F. Community perception of childhood drowning and its prevention measures in rural Bangladesh: a qualitative study. *Aust J Rural Health*. 2008; 16(3):176-80.