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ORIGINAL ARTICLE

UNNATURAL CHILDHOOD DEATHS IN TWO TERTIARY CARE HOSPITALS IN SRI LANKA: A RETROSPECTIVE STUDY

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ABSTRACT

Unnatural mortality in children is a global issue that varies widely from country to country and within the regions of a country. Natural deaths are usually disease-related, but unnatural deaths (UD) are due to various external factors, which are usually preventable. This study aims to identify the risk factors for UD and its proportion, for which preventive measures can be adopted. UD in children reported to two tertiary care hospitals (National Hospital Kandy and Provincial General Hospital Kegalle) in Sri Lanka from 1st January 2020 to 31st December 2023 were analyzed. The study sample consisted of 333 deaths, of which the majority were natural. There were 237 (71.17.%) natural deaths and 96 (28.9%) UD. Among UD, 67.7% (65) were male children. Accidental deaths were higher than suicides. Out of suicidal deaths, 88.2% were due to hanging and 5.8% by drowning. Road traffic accidents (RTA) were the most common cause (48.4%) for accidental deaths, followed by falls, train accidents and drowning. The teenage group had sustained 72.2% of unnatural deaths out of all deaths. RTA, drowning and hanging were accountable for the majority of UD in Sri Lanka. Appropriate measures must be adopted to overcome these preventable deaths.

Keywords: *Children; risk factors; unnatural deaths*

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INTRODUCTION

The death of a child is a sentinel event in a community and a defining marker of a society's policies of safety and health. An unnatural child death is a tragic outcome that can occur anywhere in the world. During the last century, child mortality has fallen to very low rates in developed countries. From a medical perspective, a natural death refers to a death that occurs solely due to a disease or natural processes. Unnatural deaths (UD) include homicide, suicide, and accidents. All of these cases are potentially preventable because the death occurs due to an external process. An understanding of the nature and patterns of childhood death and factors contributing to childhood deaths is essential to drive preventive initiatives[2].

The World Health Organisation (WHO) defines a child as a person less than 18 years old. Childhood is a critical phase of life with major physical, physiological, psychological, and behavioural changes, with changing patterns of social interactions and relationships. During this turbulent phase of life, young individuals are exposed to various needs, demands, challenges, failures, conflicts, and problems. This group will grow up to become fundamental contributors to the development of a country[3].
The global under-five-year mortality rate has significantly decreased over the past few decades. A 60% reduction reflects improvement in child health worldwide. Despite this progress in reducing child mortality, conditions such as pneumonia, diarrhoea, malaria, preterm **births,** and **intrapartum-related complications** remain, according to new mortality estimates released by the United Nations International Children's Emergency Fund (UNICEF) and the WHO Population Division[4]. In 2019, the child mortality rate for Sri Lanka was 7.1 deaths per 1,000 live births, after falling gradually from 70.1 deaths per 1,000 live births in 1970[5].

A medico-legal autopsy is an important solution to many unanswered questions that may arise after death. Information revealed after a child's death is mandatory to improve childhood survival and to strengthen child welfare services. Only a few studies have reported childhood factors associated with UD and risk factors at the individual level, family level, and community level. The majority of UD in literature were due to accidents, including road traffic accidents (RTA), falls from a height, snake bites, lightning, electrocution, animal attacks, drowning, poisoning, hanging, and burns[6,7].

OBJECTIVES

The main objective of this study was to understand the sociodemographic profile and types of unnatural deaths among children reported to two tertiary care hospitals in Sri Lanka, the National Hospital Kandy (NHK) and the Provincial General Hospital Kegalle (GHK).

METHODS

This was a descriptive study done retrospectively that included all UD among individuals under the age of 18 years. An electronic database was created for this study, retrieving data from the databases of the two hospitals (NHK and GHK) from the 1st of January 2020, to the 31st of December 2023. All deaths under the age of 18 were considered. The information retrieved from the new data system was sex, date of birth, address, history with remarkable events, time of death, details of the autopsy, lab investigations, and cause and manner of death. The data was analysed using the IBM SPSS Statistics software.

RESULTS

There were 23 UD at GHK for the given period and 72 UD at NHK. All the children above 5 years of age were attending school, whilst others were at pre-school or taken care of by their families. Among the UD, 67.7% (n=65) were male and 32.3% (n=31) were female. These UD consisted of 10.2% (n=34) suicides and 18.61% (n=62) accidental deaths. No homicides were reported (Fig. 1).

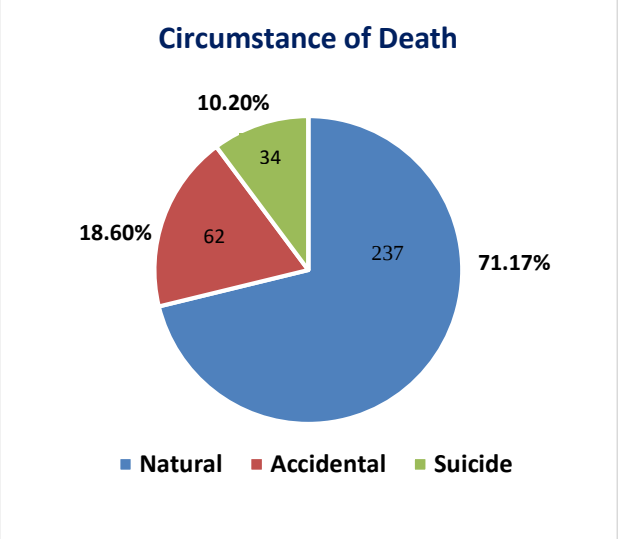

Figure 1: The distribution of natural and unnatural deaths (UD)

The majority of UD occurred among teenagers, accounting for 65 deaths, or 72.2% of the total. In the 3-to-12-year age group, there were 14 UD (15.5%), while among toddlers, 9 (10%) UD were recorded. UD were lowest among infants, with only 2 (2.2%) cases reported. In the analysis of suicides, the majority of children (88.23%) died from hanging (n=30), drowning (n=2) and other causes (n=2) (Fig. 2).

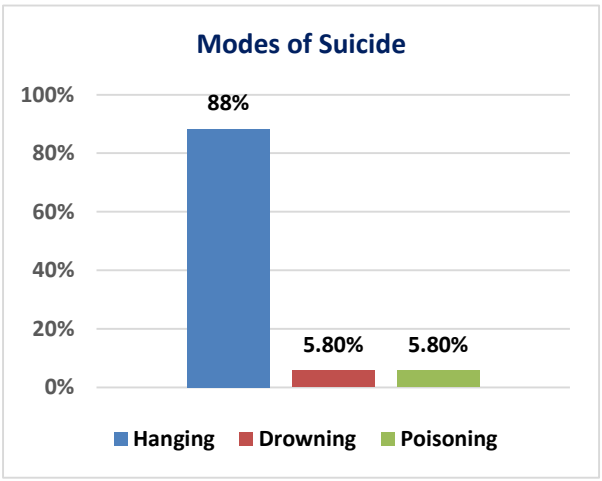

Figure 2: Modes of suicide

UD occurred under a variety of accidental circumstances. RTA were the most frequent, accounting for nearly half of the UD (41.6%). Falls were the second leading cause at 23.3%, followed by accidental drownings at 18.3%. Less common causes included train accidents (6.6%), burns (5%), and cut injuries (1.6%). The remaining 3.3% of UD were attributed to other causes such as poisoning, accidental sharp trauma, and asphyxia (Fig. 3).

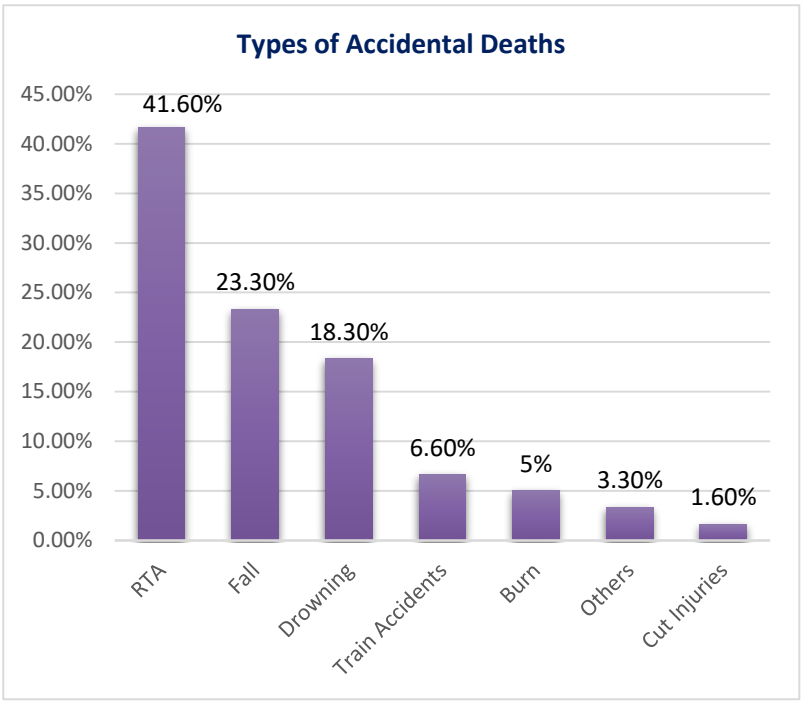

Figure 3: Different types of accidental deaths

DISCUSSION

Despite advancements in medicine, natural deaths remain the leading cause of death among both children and adults. Although natural causes remain a major contributor to child mortality in Sri Lanka, deaths from unnatural causes have increased over the last four years, principally due to hanging and RTAs[7].

This study revealed that 67.7% of male child deaths were UD. Male children have a higher tendency to undertake risky behaviours compared to their female counterparts. These findings are consistent with prior national studies conducted in the United States and Turkey. However, the underlying mechanisms driving this gender-based mortality disparity remain complex and not fully elucidated. Various biological and social factors, along with modifiable behaviours like substance abuse and violence, may play a significant role in the reduced life expectancy observed in male children[8].

Several interconnected factors contribute to female child mortality. These include emotional and social situations, such as romantic relationships, and psychosocial disturbances, including mental health issues like depression and anxiety, which also play a crucial role. Socioeconomic factors like poverty, family dynamics, domestic violence, neglect, peer pressure, and societal influence potentially create a vulnerable, high-risk environment for female children, placing them at a higher risk for UD[11].

The largest proportion of UD (72.2%) was observed among teenagers. In studies conducted in India and the United States, similar patterns have been observed [8].

In our study, accidental deaths constituted two-thirds of all unnatural deaths. These results are very similar to another study conducted in Sri Lanka by Kitulwatte et al[7].

Access to lethal means significantly influences suicide methods. Hanging is the most common method of suicide among teenagers globally, a trend also observed in Sri Lanka. A thorough understanding of suicidal behaviour in children is essential for developing effective prevention strategies. In a European context, the most common suicide methods included hanging, jumping from heights, and railway suicides, followed by intoxication and firearms. In the United States, among children who committed suicide, ~~strangulation/~~suffocation was the most frequent method, followed by firearm use.

While suicidal poisoning is a common method in Sri Lanka for adolescents and adults, its incidence has decreased due to stricter pesticide regulations and public awareness compared to previous years[9]. Globally, poisoning accounts for 7% of accidental injuries in children under five. Child mortality from poisoning is around 2% in developed countries but is higher, exceeding 5%, in developing countries.

Recent studies by the American Academy of Child and Adolescent Psychiatry (2024) and other academic sources have revealed that the use of drugs and alcohol can contribute to the occurrence of any type or circumstance of unnatural death[10]. Addiction to narcotic drugs is also a contributing factor to UD among children.

Causes of death of children in Asia and Southeast Asia have not been researched separately and remain an avenue for future research. This may differ from global statistics, highlighting the need for economic policies that promote health equity and reduce premature deaths.

LIMITATIONS AND STRENGTHS

The autopsies were mostly negative for alcohol, and other toxicology data were incomplete. The study context, being urban Sri Lanka, may limit its application to rural areas due to differing socioeconomic and cultural contexts. Future research with more comprehensive data and broader representation is needed.

CONCLUSION

Unnatural deaths are avoidable and preventable in comparison with natural deaths. To effectively prevent these unnatural deaths, accurate data collection through medico-legal investigations is essential. Conducting public awareness campaigns, educating caretakers on safety precautions, and advocating for mental health and safety legislation can be addressed with this data. Authorities should utilise these distributions to identify children at risk and take necessary actions.

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None.

CONFLICTS OF INTEREST

The author declared no conflicts of interest.

DISCLOSURE

ANV and KASK are members of the Editorial Board of the Sri Lanka Journal of Forensic Medicine, Science & Law. Therefore, they did not participate in any way in the publication/decision-making process of this submission, as per journal policy.

ETHICAL ISSUES

This ethical approval for this study was obtained from the Ethics Review Committee, Faculty of Medicine, University of Peradeniya (Ref. No. 2021/EC/49).

SOURCES OF SUPPORT

None.

AUTHOR CONTRIBUTIONS

SS: Conception and design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; and final approval of the version to be published. **ANV:** Conception and design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; and final approval of the version to be published. **KASK:** Conception and design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; and final approval of the version to be published. **EMNKE:** Analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; and final approval of the version to be published.

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