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Original Article

Pattern of Accidental Deaths among Children: An Autopsy Study

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ABSTRACT

A study of pattern of accidental deaths conducted at M.S. Ramaiah Medical College, Bangalore, between October 2007 and September 2009 in the age group of 1-18 years with aims and objectives to study percentage of accidental deaths in children, age and sex distribution, various patterns, manner of death and other factors associated with accidental deaths. Detailed information regarding the circumstances of death was sought from the police, relatives and friends, visits to the scene of occurrence or deduced by the photograph of the scene of occurrence. Accidental deaths in children constituted 3.24% (57 cases) of the total autopsies conducted. Maximum number of child deaths occurred in the age group of 15-18 years in males and 5-9 years in females. Male outnumbered the females. Majority of the children were preschool and school going and from middle and lower socioeconomic status. Road traffic accident accounted for 53% of the cases. Most of the children were pedestrians. Heavy motor vehicle was involved in majority of the cases and most of the children died due to head injury. Drowning accounts for 32% of the cases. Most of the children died due to accidental drowning while playing. Pond was the commonest place of drowning followed by sump. Thermal deaths accounts for 6.34% of the cases followed by fall from height, which accounts for the 6.34% of the cases, and only one case was due scorpion sting.

Keywords: Children, Accidental deaths, Road traffic accident, Drowning, Thermal deaths, Fall from height

INTRODUCTION

Childhood is the developmental period that begins at birth and continues to adolescences, according to children bill of rights childhood occupies first 18 years of life[1]. The childhood injuries are a major public health problem worldwide with injuries being the far leading cause of death for children from early childhood through adolescence, fatal injuries are, however, only the tip of the iceberg. Childhood deaths contribute a significant number of cases among autopsies conducted. Injury-related childhood deaths pose a serious threat to children health and account for 7-10% mortality in the world[2]. There have been numerous studies on children's physical, psychological and mental development and on their rights, needs, education, problems, crimes, child abuse and child mortality, because they have been important parameters in terms of public health and for future of the societies. The latter widely varies with developmental level, cultural and socio-economic status and life styles of societies and geography[2]. The psychological characteristics of children, like impulsiveness, curiosity experimentation, lack of knowledge or judgment further compounded by smaller body size, vision, hearing and limited risk perception, make them more susceptible to be involved in traffic crashes, burns, poisoning, drowning. The most important characteristic of child injury deaths is the fact that 96% injury deaths are preventable. Detailed information of the occurrence and the circumstances surrounding particular types of injury needs to be collected and analysed, if effective interventions are to be developed. The quantity of data is an important prerequisite for the analysis of mortality patterns[3].

In spite of all this, very little epidemiological information on injuries and injury-induced deaths among children is

available and, to our knowledge, no nationwide study investigating the recent numbers, incidences and secular trends of fatal and serious non-fatal injuries has been published. An understanding of the underlying epidemiological changes would allow assessment of efficacy of preventive measures and the need for further preventive strategies. At least 1000 children's lives could be saved every day if proven preventive measures are adopted everywhere[4].

MATERIALS AND METHODS

The present study was conducted in the Department of Forensic Medicine, M.S Ramaiah Medical College, Bangalore, from October 2007 to September 2009. Prior ethical clearance was obtained. All cases of accidental deaths in children (1-18 years) subjected for autopsy were included. Cases subjected for autopsy with alleged history of accidental death but where cause of death was opined as due to natural causes after autopsy and histo-pathological examination were excluded. Detailed information regarding the circumstances of death was sought from the police, relatives and friends and also by the photographs of the scene of occurrence whenever necessary. Blood was sent for chemical analysis in suspected cases of poisoning.

RESULTS AND DISCUSSION

During the study period from October 2007 to September 2009, 1,755 autopsies were conducted, of which accidental deaths in children constituted 57 cases (3.24%).

From the above Table 1 it can be observed that males of 15-18 years age group and females of 5-9 years age group are more are vulnerable. Similar findings were observed in the studies conducted at Nimhans[5] and Virginia State Child Fatality review findings[6].

The reasons that could be attributed for the high incidence in this age group are directly related, i.e., playing near the ponds leads to drowning, as they use vehicles to commute and hence are more prone to road traffic accidents.

Though the other age groups are also involved, the reasons in them were mainly due to indirect relations, i.e., drowning or were involved in road traffic accidents while at play due to negligence by the parents.

Table 1: Distribution of the cases based on the age and sex

Sl.No.	Age group (years)	Male	Female	Total	Percentage (%)
1.	1-4	6	4	10	18
2.	5-9	10	6	16	28
3.	10-14	11	2	13	22
4.	15-18	17	1	18	32
	Total	**44**	**13**	**57**	**100**

This in contrast to the findings observed by Cekin[2], where most of the deaths have occurred in 0-6 years age group, Parkkari[4] observed that most of the deaths have taken place in the 10-14 years age groups.

Males outnumbered females (M/F ratio of 3: 1) in accidental deaths, because of their more aggressive nature, impulsive behaviour and outdoor activities, like swimming, riding motor vehicle etc.

Similar findings were observed by Cekin[2], Vali[3], Roberts[7], Canturk[1], Kanchan[8] and Child fatality review team New York City[9].

Table 2: Distribution of the cases based on the pattern of accidents

Sl.No.	Pattern of death	No of cases	Percentage (%)
1.	RTA	30	53
2.	Drowning	18	32
3.	Thermal injuries	4	6.5
4.	Fall from height	4	6.5
5.	Scorpion sting	1	2
	Total	**57**	**100**

From the above Table 2 it is observed that road traffic accident (RTA) accounted for majority of the cases (53%), followed by drowning (32%), burns (6.5%) and in one case where the child had died due to scorpion sting. Increased vehicular accidents are due to disregard for safety precautions and playing on the streets, followed by accidental drowning. This is similar to the findings observed by Cekin[2,8], where RTA (74.2%) accounts for majority of the cases followed by drowning.

From the above Table 3 it is observed that head injury accounts for maximum number of deaths in 17 (57%) followed by multiple injuries in 10 (33%) of the cases. This is similar to the observation made by Mason[10].

Table 3: Distribution of RTA cases based on the site of fatal injuries

Sl.No.	Fatal injuries	No of cases	Percentage (%)
1.	Head injury	17	57
2.	Thoraco-abdominal	3	10
3.	Multiple	10	33
	Total	**30**	**100**

Table 4: Distribution of the drowning cases based on the place of occurrence

Sl.No.	Place of drowning	No of cases	Percentage (%)
1.	Canal	1	5.5
2.	Pond	10	56
3.	Sump	4	22
4.	Swimming pool	2	11
5.	Water tank	1	5.5
	Total	**18**	**100**

It is observed that pond is the commonest place of drowning, i.e., in 10 cases (56), followed by sump, i.e., four cases (22%). Swimming pool was also the place of drowning, i.e., two cases (11%).

The reason for increased drowning deaths in ponds is due to increased number of ponds, which are easily accessible to the children for the activities like swimming, playing and bathing.

Similar observation was made by Ahmed[11], where pond is the commonest place of drowning (66.66%).

This is in contrast to the findings observed by Werneke[12], where the swimming pool is the commonest place of drowning, followed by bath tubs. This is because of easy accessibility of swimming pools in western countries.

CONCLUSION

- Accidental deaths in children constituted 3.24% of the total autopsies conducted.
- Maximum number of accidental childhood deaths occurred in the age group of 15-18 years and 5-9 years of age constituting 60%
- Males constituted 77% of cases.
- Most of the children were preschool and school going and were from middle and lower socioeconomic status.
- RTA accounts for 53% of the cases.
- In RTA, most of the children were pedestrians 56%.
- Most of the children in RTA died due to head injury.
- Drowning accounts for the 32% of the cases.
- Most of the children died due to accidental drowning while playing near the ponds (56%).
- Accidental thermal injuries accounts for 6.34% cases.
- Fall from height accounts for 6.34% of cases.

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