

# TRENDS OF POISONING AMONG CHILDREN AT KASTURBA HOSPITAL, MANIPAL

Pratik Vijay Tarvadi<sup>1</sup>, Shankar M. Bakkannavar<sup>2</sup>, Manjunath S.<sup>3</sup>,  
Vikram Palimar<sup>4</sup>, G. Pradeep Kumar<sup>5</sup> & Mahabalesh Shetty<sup>6</sup>

<sup>1</sup> Assistant Professor, Department of Forensic Medicine, KSHEMA, NITTE University, Mangalore

<sup>2</sup> Assistant Professor, <sup>3</sup> Associate Professor, <sup>4</sup> Additional Professor, <sup>5</sup> Professor & HOD, Department of Forensic Medicine, Kasturba Medical College, Manipal University, Manipal. <sup>6</sup> Professor & HOD, Department of Forensic Medicine, KSHEMA, NITTE University, Mangalore

Correspondence:

Pratik Vijay Tarvadi

Assistant Professor, Department of Forensic Medicine, K.S. Hegde Medical Academy (KSHEMA), NITTE University  
Nitynanada Nagar, Deralakatte, Mangalore 575018, Karnataka, India

Mobile : +91 9845306634, Tel. : +91 824 2203030. E-mail : pvtldr@yahoo.com

## Abstract :

**Background :** Pediatric poisoning is a common medical emergency and also associated with a high morbidity and mortality in children. In developing countries like India, poisoning emergencies are becoming a major cause of mortality in infants and toddlers. Among the various studies conducted on poisoning in our country, the study on poisoning is predominantly on adults and hence this study is taken up to understand the incidence of childhood poisoning cases.

**Method :** A ten year retrospective study from January 1999 to December 2008 was conducted at the Department of Forensic Medicine & Toxicology, Kasturba Medical College, Manipal, to comprehend the magnitude of childhood poisoning cases at Kasturba Hospital, Manipal.

**Results :** Insecticide poisoning was the most predominant poisoning followed by venomous bites.

**Conclusion :** Our study examines the most common poison involved and route of intake among children to identify specific ages at risk and give suggestions so as to reduce the morbidity and mortality.

**Keywords :** pediatric, poisoning, insecticide

## Background :

Poisoning causes considerable morbidity and mortality worldwide. Irrespective of circumstances of poisoning the victim can be of any age group ranging from an infant to elderly<sup>1</sup>. Although pediatric poisoning most often refers to poisonings occurring among children and adolescents aged less than 18 years, there is an inter-country variation, usually indicating differences between the healthcare systems.<sup>2</sup> Most exposures among children are unintentional.<sup>3</sup> If the harmful agent, for example is stored in a soft drink container, children may fail to recognize the suitability of the liquid and

may consume the contents before taste aversion leads to discontinuing the drink.<sup>4</sup> Intentional poisonings becomes more likely after the age of five.<sup>4</sup> Children aged 5 to 9 years are less frequently involved in toxic exposures.<sup>5</sup> Teenagers, on the other hand, are more often involved with poisonings related to substance abuse or suicidal behavior.<sup>6</sup>

The present study attempts to gather epidemiological data regarding poisoning in children in Manipal, so as to formulate recommendations that could probably help to reduce the morbidity and mortality associated with poisoning in these age groups.

## Material and Methods :

The data for the present study is a retrospective research undertaken at the Kasturba Hospital, Manipal, which is a tertiary care teaching hospital, situated in coastal Karnataka, South India, for a period of 10 years (January

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1999 to December 2008).

All the poisoning cases admitted to Kasturba Hospital, Manipal, in the pediatric age group (up to 18 years)<sup>7</sup> during the study period were included.

The relevant data like age, sex, place of poisoning and outcome was obtained from the Clinical case records from medical records department, Kasturba Hospital, Manipal.

The data obtained was tabulated and analyzed using SPSS (Statistical Package for Social Services) 11 software.

#### Results :

A total of 214 cases of poisoning in the pediatric age group were admitted at the Kasturba Hospital, Manipal, during the period of 10 years from January 1999 to December 2008, as depicted in the table no. 1.

Our study showed that, the maximum numbers of pediatric poisoning cases were found to be in the age group of less than 5 years, followed by the age group of 11 to 15 years, 16 to 18 years, and 6 to 10 years respectively, as depicted in the Table No. 2.

In our study, we observed that, the most common substance in the pediatric poisoning cases was insecticide followed by venomous bites, drug over-dosage, kerosene consumption, corrosives etc, as depicted in the Table No. 3.

The route of poisoning reported in our study was by ingestion, 84% (180) and by injection, 16% (34). Injection included snake bite and bee stings, as depicted in the Table No. 4.

Our study revealed that, most of the poisoning cases occurred at home, as depicted in the Table No. 5.

Our study revealed that, 95.3% of cases reported at Manipal hospital had survived while 4.7% cases had expired, as depicted in the Table No. 6.

#### Discussion :

Rise in poisoning is a global phenomenon seen in all age groups amongst all strata of people. This increase in the incidence of poisoning in recent times is due to stress

related to academics in children. It is not only the adult population that is affected by poisoning but of late, even children are affected. As health care providers, it is our duty to prevent this rise of morbidity and mortality due to poisoning cases. The present task was undertaken to study the pediatric poisoning so as to reduce the morbidity and mortality.

#### Age

Our findings from the pediatric poisoning study revealed that the majority (33%) of the victims to be in the age group of less than 5 years (preschool age group), followed by 11 to 15 years (29%). The high incidence of poisoning in the age group of less than 5 years is in accordance with the trends observed nationally<sup>8, 9, 10, 11</sup> and globally.<sup>12, 13, 14, 15, 16, 17</sup> The vulnerability of the preschool age group could be attributed to inquisitiveness and high exploratory activity associated with their developing mobility and hand skills. They also try imitating their parents or grandparents taking medication. Children cannot differentiate between harmless and harmful substances. Incidence of poisoning can also be precipitated by lack of safety measures taken by parents regarding safe storage of medications and pesticides.

Studies conducted at Pakistan, Finland and South Carolina<sup>18, 19, 20</sup> observed high incidence of poisoning amongst adolescent and teen age group.

#### Poisoning :

Insecticide compounds were predominantly consumed by children in our study. This is in concurrence with the studies conducted earlier by Palimar et. al.<sup>21</sup> and Vaswani et. al.<sup>9</sup>, however other studies<sup>8, 22, 23, 11, 24, 16, 17</sup> revealed that kerosene was the most common poison. The reason for high incidence of insecticide consumption in our study may be attributed to its easy availability in agricultural households. It also reflects the lack of safety measures adopted by the parents in handling these hazardous substances. The high incidence of kerosene poisoning in several other studies were linked to its usage in most of the households as an alternative fuel for cooking and

Illumination. Studies conducted in Pakistan<sup>18</sup>, Finland<sup>19</sup> and South Carolina<sup>20</sup> revealed that habit forming drugs and alcohol showed high prevalence in the teen age group which could be attributed to their adolescent age, academic stress, peer pressure and inappropriate group of friends, thereby increasing their vulnerability for poisoning.

Route of poison :

Our findings revealed, ingestion to be the major route of poisoning which may be attributed to its convenience and easy availability of orally consumable poisons, a feature observed, which is not only a national phenomenon<sup>10</sup> but also a global one.<sup>25,20</sup>

Place of Poisoning :

Eighty percent of pediatric poisoning incidents took place in the victims own home both in accidental and suicidal events. High suicidal incidence at home can be attributed to the preference of the victims for a confined home environment. Similar findings were observed in previous studies conducted at national<sup>10</sup> and international level.<sup>20,25</sup>

Outcome :

The mortality rate in our study of pediatric poisoning was 5%, where as the mortality rate ranged from 0.1% to 16% in various national<sup>8, 9, 21</sup> and international<sup>19, 12, 14, 24</sup> studies. No deaths were reported in the studies conducted at Pakistan<sup>17</sup> and United Arab Emirates.<sup>2</sup>

Conclusion :

Thirty-three percent of pediatric poisoning cases were in the age group of less than 5 years.

Ingestion constituted the major route of entry and was seen in 84% of the cases.

Insecticide poison was the most common type of poison that was observed in 40% of the cases.

Poisoning most commonly occurred inside the house (80%)

The survival rate was 95%.

Following measures are suggested to decrease the morbidity and mortality amongst the pediatric population:

- | Parental education and awareness
- | Child-resistant packaging

- | Storage of poisonous substance out of reach of children
- | Proper disposal of poisonous substance and their containers after use
- | Basic health education during schooling
- | Educating the teen age population regarding handling of stressful situations

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Table No. 1: Year wise distribution of cases of poisoning in pediatric age groups (n=214)

Year	Number of cases
1999	21
2000	24
2001	16
2002	19
2003	15
2004	15
2005	15
2006	28
2007	32
2008	29
Total	214

Table No. 2: Age incidence (n=214)

Age in years	Number of cases	Percentage
< 5	70	32.7
6 -10	28	13.1
11 -15	63	29.4
16 -18	53	24.8
Total	214	100.0

Table No. 3: Type of poisoning (n=214)

Poison	Total	Percentage
Insecticides	86	40.2
Venomous bites	34	15.9
Drug Over-dosage	27	12.6
Kerosene	20	9.3
Corrosives	18	8.4
Rodenticides	12	5.6
Plant Poisons	11	5.1
Metallic Irritants	3	1.4
Herbicides	2	1
Unknown/ unidentified poisons	1	0.5
Total	214	100.0

Table No. 4: Route of poisoning (n=214)

Ingestion	Injection	Total
180	34	214

Table No. 5: Place of poisoning (n=214)

Poisoning		Total
Indoor	Outdoor	
171	43	214

Table No. 6: Outcome (n=214)

Outcome		Total
Survived	Expired	
204 (95.3%)	10 (4.7%)	214 (100%)

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