

Original Research Article

Epidemiological profile and outcome of pediatric poisoning: a prospective observational study from a tertiary care center

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Received: 05 February 2018

Accepted: 07 March 2018

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ABSTRACT

Background: Acute poisoning in children is one of the common causes for emergency hospital visit in developing countries. Objectives of the present research was aimed to study the magnitude, nature, age, sex, socioeconomic status and outcome of poisoning in children aged <15 years.

Methods: This prospective study was conducted for a period of 1 year between January 2017 to December 2017, at S.V.S. Medical College and Hospital, Mahabubnagar, Telangana. All poisoning cases under the age of 15 years were included in this study.

Results: Out of 1975 admitted patients, 98 (5%) cases were due to acute poisoning, 52 (53.1%) were males and 46 (46.9%) were females. The majority of the poisoning was accidental (78, 79.6%) in nature and found to be common in the age group of 0-5 years (69, 70.4%). Majority of children belonged to upper lower (35, 44.9%) and lower (20, 25.6%) socio-economic status. Kerosene (40, 40.8%) was the most common poisoning agent, followed by household compounds (22, 22.4%). 82 (83.7%) children had complete recovery, whereas 5 (5.5%) children died, all due to late visit to the hospital.

Conclusions: Kerosene is the most common agent in paediatric poisoning in children, followed by household compounds. It is common in 0-5 years of age group and mostly accidental in nature. Corrosives were the common agent involved in suicidal poisoning.

Keywords: Accidental, Poisoning, Suicidal, Socio-economic status

INTRODUCTION

Poisoning as defined by Paracelsus as “All things are poison, and nothing is without poison; only the dose permits something not to be poisonous.” Simply stated, “The dose makes the poison”.¹

Poisoning is a significant global public health problem. The extent of the problem is different from one country to the other.² The World Health Organization (WHO) estimates that at global level three million severe

pesticide poisoning episodes occur annually and, of these, a minimum of 3,00,000 die with 99% of the cases being from low and middle-income countries.³ Pediatrics population is more vulnerable and 47.8% of poisoning cases reported in children. Unintentional poisonings are frequent among young children while ~ 50% poisoning exposure in teenagers are intentional.⁴ This research was conducted in our institute because there is a paucity of epidemiological data about the poisoning in children in rural Telangana. This will help to educate the community

to decrease the incidence of poisoning and morbidity and mortality associated with poisoning in children.

Aims and objectives of this prospective observational study on paediatric poisoning was conducted with the following aim and objectives.

- To know the magnitude of poisoning in pediatric age group <15 yrs
- To know the nature of poisoning in pediatric age group
- To know the common age group involved
- To know the commonest type of poison encountered
- To know the outcome of poisoning cases

METHODS

This study was conducted from January 2017 to December 2017, in department of pediatrics, S.V.S. Medical College and Hospital, Mahabubnagar, Telangana, India.

Inclusion criteria

- Children aged less than 15 years of age, who presented with history of accidental, deliberate ingestion of poisonous substance, were included.
- Patients with doubtful history of consumption of poison but with definite signs and symptoms of acute poisoning

Exclusion criteria:

- Children with history or with doubtful history of bites and signs and symptoms due to poisonous creatures like snakes, scorpions, bees and insects.
- Food poisoning
- Idiosyncratic reactions to drugs
- Chronic poisonings due to heavy metals, air pollutants etc.

A detailed history was obtained including age, sex, socioeconomic status, nature of poisoning (accidental or suicidal), quantity of poison and circumstances of poisoning. A thorough physical examination was done. All the patients were treated according to the treatment

policy of the department. Modified Kuppuswamy’s scale was used for classification of socio economic status of patients. Consent was obtained from parents of children and the study was approved by institutional ethical committee. Data obtained was analyzed using appropriate statistical methods.

RESULTS

In this study, 1975 children aged less than 15 years were admitted to pediatric department. Among these, 98 (4.96%) had history and/or symptoms and signs of poisoning; 52 (53.1%) were males and 46 (46.9%) were females.

The majority of poisoning cases were in the age group of 0-5 years (69, 70.4%), followed by 11 to 15 years age group (18, 18.3%) and 6 to 10 years (11, 11.2%) (Table 1).

Table 1: Age-wise distribution of poisoning cases.

Age group (year)	Accidental (n, %)	Suicidal (n, %)	Total
0-5	69 (88.4)	--	69 (70.4%)
6-10	9 (11.5)	2 (10)	11 (11.22)
11-15	0 (0)	18 (9)	18 (18.3%)
Total	78	20	98

The nature of poisoning was accidental in 78 (79.6%) cases where as suicidal in 20 (20.4%) cases. Out of 52 male patients, 43 (82.7%) had accidental poisoning and 9 (18%) had suicidal poisoning (Table 2). Of the 46 female patients, 35 (76.1%) had accidental poisoning and 11 (22.9%) had suicidal poisoning. The male: female ratio in our study was 1.13:1.

Table 2: Distribution poisoning cases according to nature of poisoning and sex.

Poisoning	Male (n, %)	Female (n, %)	Total (n, %)
Accidental	43 (82.7)	35 (76.1)	78 (79.6)
Suicidal	9 (18)	11 (22.9)	20 (20.4)
Total	52 (53.1)	46 (46.9)	98

Table 3: Distribution of poisoning cases according to nature of poisoning and socio-economic status.

Socio economic status	Upper I (n, %)	Upper middle II (n, %)	Lower middle III (n, %)	Upper lower IV (n, %)	Lower V (n, %)
Accidental	3 (3.8)	5 (6.4)	15 (19.2)	35 (44.9)	20 (25.6)
Suicidal	5 (25)	12 (60)	2 (10)	1 (5)	0

Among the accidental poisoning cases, 35 (44.9%) and 20 (25.6%) cases belonging to upper lower class and

lower class, respectively, whereas it was 15 (19.2%) in lower middle, 5 (6.4%) in upper middle and 3 (3.8%) in

upper class population (Table 3). Suicidal poisoning was mostly seen in upper middle class 12 (60%), followed by upper class 5 (25%), lower middle 2 (10%) and upper lower 1 (5%).

In this study, the most common agent for poisoning was kerosene (n=40, 40.8%), followed by household substances (Lakshmana Rekha, mosquito repellents etc.) (n=22, 22.4%), pesticides (n=14, 14.2%), corrosives (phenol, toilet cleaners etc.) (n=12, 12.2%), and drugs (acetaminophen and iron preparations etc.) (n=10, 10.2%) (Table 4).

Table 4: Distribution of poisoning cases according to poisonous agent and nature of poisoning.

Agent	Accidental (n, %)	Suicidal (n, %)	Total (n, %)
Kerosene	38 (48.7)	02 (10)	40 (40.8)
Drugs	10 (12.8)	0 (0)	10 (10.2)
Household substance	17 (21.8)	05 (25)	22 (22.4)
Corrosives	05 (6.4)	07 (35)	12 (12.2)
Pesticides	08 (10.2)	06 (30)	14 (14.2)
Total	78	20	98

Among the accidental poisoning cases, kerosene 38 (48.7%) was the most common agent. Other agents were household substances (17, 21.8%), drugs (10, 12.8%), pesticides (8, 10.2%) and corrosives (5, 6.4%).

Of the 20 suicidal poisoning cases, majority of them had ingestion of corrosives (7, 35%), followed by pesticides (6, 30%), household substance (5, 25%) and kerosene (2, 10%).

Among 0 to 5 years of age group, most common agent of poisoning was kerosene, followed by household compounds. Household compounds and pesticides contributed equally for poisoning in age group of 6-10, whereas corrosive agents were the most common agent among 11-15 years age group (Table 5).

Table 5: Distribution of poisoning cases according to type of poisonous substance and age group.

Group	Age groups (year)			Total (n, %)
	0-5 (n, %)	6-10 (n, %)	11-15 (n, %)	
Kerosene	39 (56.6)	1 (9.1)	0	40 (40.8)
Drugs	8 (11.5)	2 (18.2)	0	10 (10.2)
Household compounds	14 (20.2)	3 (27.3)	5 (27.8)	22 (22.4)
Corrosives	3 (4.3)	2 (18.2)	7 (38.9)	12 (12.24)
Pesticides	5 (7.2)	3 (27.3)	6 (33.3)	14 (14.3)
Total	69	11	18	98

In this current study, 82 (83.7%) children had complete recovery, 69 (70.4%) with accidental poisoning and 13 (13.26%) with suicidal poisoning. 11 (11.24%) patients

left against medical advice (LAMA) and 5 (5.5%) expired (Table 6). All the 5 patients who died presented late to the hospital.

Table 6: Distribution of outcome.

Outcome	Recovery (n, %)	LAMA	Death (n, %)	Total
Accidental	69 (70.4)	7 (7.14%)	2 (2.4)	78
Suicidal	13 (13.26)	4 (4.1%)	3 (3.06)	20
Total	82 (83.7)	11 (11.24%)	5 (5.5)	98

DISCUSSION

Pediatrics poisoning is one of the important causes of morbidity and mortality in developing countries including India. In this study, nearly 5% of children admitted to the paediatric department were attributed to poisoning. This is comparable to the study reported by Sridhar PV et al. Male: female ratio was 1.13:1.⁵ Male predominance was reported by study conducted by Sridhar PV et al, Sharma J et al.^{5,6} This may be due to their active, exploratory, inquisitive, curious and adventurous behaviour.

Accidental poisoning was higher among males, whereas suicidal poisoning was higher among females. Majority of the poisoning cases were in the age group of 0-5 years. Similar findings were seen in study done by Agarwal G et al, Soren C et al.^{7,8}

Kerosene was the most common agent of poisoning in 0 to 5 years of age group, similar findings were observed by Sridhar PV et al⁵ and Ram P et al.⁹

A retrospective analysis of poison centre data (1999-2002) published in 2003 showed 1-6 yr old to be the commonest group involved in pediatric poisoning.¹⁰

Kerosene is cheap, easily available and used as fuel by lower socioeconomic status people. It is often stored in bottles used for edible items, which exposes children for accidental consumption. Household compounds and pesticides poisoning contributed equally and majority of cases among the 6-10 years of age group. Similar findings were reported by SK Gupta et al.¹¹ Corrosives accounted for majority of poisoning in 11 to 15 years of age group.

Majority of the accidental poisoning in this study belonged to upper lower and lower socio-economic class, while more than half of the suicidal poisoning were from upper middle class, which was similar with the findings observed by Susheela C et al.¹²

Majority of the children, who presented early to the hospital, had complete recovery. Only 5 (5.5%) admitted cases were expired during the study period, all the death was attributed to delayed presentation to the hospital,

which is comparable with study done by Budhathoki S et al.¹³

CONCLUSION

Acute poisoning is one of the common causes of emergency hospital visit in our department. Majority of the poisoning was accidental in nature and the kerosene was the commonest agent, followed by household compounds. Accidental poisoning is common in the age group of 0-5 years. Suicidal poisoning is more common in the age group of 10-15 years and the common agents are the corrosives. Avoidance of keeping kerosene in edible bottle in accessible area will prevent accidental poisoning in young children. Poisonous substances should be kept out of reach of children. Proper guidance to children and parental counselling is recommended to prevent suicidal poisoning among adolescents.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Reddy AB, Reddy KV, Soren C, Eluzai Z, Srikanth M. Epidemiological profile and outcome of pediatric poisoning: a prospective observational study from a tertiary care center. Int J Contemp Pediatr 2018;5:963-6.