

Socio-demographic profile of poisoning in children admitted to a tertiary hospital

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ABSTRACT

Background: Childhood poisoning is a significant public health problem and is very important cause of mortality and morbidity in children. The offending substances used vary from place to place. The pattern of poisoning has been changing with new hazards constantly appearing due to the introduction of new drugs and chemicals. Childhood poisoning is usually accidental making poisoning a preventable problem. **Objectives:** To determine the socio-demographic and clinical profile and outcome of childhood poisoning in a tertiary care hospital. **Materials and Methods:** This prospective study was done over a period of 2-year in a tertiary care hospital. We studied children <15 years of age who were admitted to our hospital with a history of poisoning. Children with history of food poisoning, snake bite, scorpion sting, and insect bites were excluded from the study. The demographic profile of patients, various substances of poisoning, mode of poisoning, and outcome of admitted children with poisoning were studied. **Results:** Among 200 children admitted with the history of poisoning, 126 (63%) were boys and 74 (37%) were girls. The majority of the poisoning were accidental in nature and found to be common in the age group of 1-5 years, children from rural areas, and are of lower socio-economic status. Kerosene poisoning was the most common (35%) agent followed by organophosphorus poisoning (11%). 4 children died due to various complications of poisoning. **Conclusion:** Common household products were found to be the main source of poisoning in younger age groups from rural background, and the majority was accidental in nature. Educational programs toward creating awareness among public are necessary to reduce the incidence of poisoning in children.

Key words: Accidental, Children, Kerosene, Poisoning, Suicidal

Poisoning is an important pediatric emergency. It is one of the important causes of childhood mortality and morbidity especially in developing countries. The mortality due to poisoning in children below 4 years of age has been estimated to be 1-7/100,000 population [1]. Poisoning in children accounts for 1-6% of hospital admission and 3.9% in the pediatric intensive care unit in India [2-4]. The offending agent and the associated morbidity and mortality vary from place to place and change over a period of time. Profile and outcome of poisoned pediatric patient in a given region are influenced by the social, economic and cultural practices and also by the availability and quality of medical facilities. Unlike adults, childhood poisoning is usually accidental making it preventable with some simple but intelligent interventions.

Studies in developed countries show that common household products rather than pharmaceuticals are now implicated in the majority of cases of poisoning in pediatric age group [5,6]. Understanding the nature and severity of poisoning is crucial for appropriate and effective management. Profile of poisoning in children is lacking from resource poor countries such as India. However, available limited data suggests childhood poisoning as a considerable cause of morbidity or mortality in India. A lack of concrete data in our region is the main reason

to undertake this study so that problem of childhood poisoning can be quantified and prevention of the same is made possible by educating parents and caretakers. This study was carried out with an objective to assess the profile of childhood poisoning at our center.

MATERIALS AND METHODS

This prospective study was conducted over a period of 2-year from November 2013 to October 2015 in the Department of Pediatrics of a tertiary care teaching hospital. Approval from institutional ethics committee was obtained before starting the study. All children <15 years of age admitted with history of poisoning were included in the study after taking consent from parents or legal guardians. The cases of food poisoning, snakebite, scorpion sting, and insect bite were excluded from the study. A detailed history was taken at the time of admission followed by complete physical examination. Relevant investigations were sent as and when required. All these data documented in predefined data entry forms including age, sex, mode of poisoning, substance consumed, duration of hospital stay, and outcome. A statistical analysis was performed using descriptive statistics such as rate, ratio, and proportion.

RESULTS

During the study period, 200 children presented to the Pediatric Department with poisoning. The majority of the children, i.e., 119 (59.5%) were in 1-5 years age group, followed by 48 (24%) in 10-15 years age group (Table 1). Poisoning was seen more commonly among boys (74 females, 126 males) with male to female ratio of 2:1. The majority of our patients resided in rural areas. Accidental poisoning was seen in 170 (85%) cases, whereas it was suicidal in nature in 27 (13.5%) cases and homicidal in three cases. The immediate precipitating factors for poisoning were varied like argument with parents, failure in exam and depression due to other causes.

Kerosene (35.5%) and organophosphorus (OP) compound poisoning (11%) were the substances most frequently implicated in our patients (Table 2). OP compound was commonly used for suicidal purpose which was kept in home for the agricultural purpose. The majority of the children presented with vomiting (86.4%) followed by pain in abdomen (56.8%) and altered sensorium (22.5%). Other presenting symptoms were breathing difficulty, hematemesis, and seizures. Routine blood investigations were done for all the patients to rule out comorbidities. Facilities for measuring toxic or drug levels were not available in our setup.

Nearly, 65% (130) patients sought medical advice between 30 and 60 min of exposure to the poison. In 46.5% cases, the first aid was given before they came to the hospital. Most of the cases required only symptomatic treatment (140, 70%) while specific treatment was given in 25% (50) cases and 5% (10) cases were put on a ventilator. Specific antidotes were given whenever required according to the protocol (OP - Atropine, rat poison paste - vitamin K). No patient with kerosene poisoning underwent gastric lavage.

Around 143 children (71.5%) were discharged from the hospital without any complication by 48 h (Table 3). Out of 200 children, 184 (92%) were discharged successfully without any squeal, while parents of 12 (6%) children took discharge against medical advice. Out of 10 ventilated children, 4 (2%) died of severe pneumonia.

DISCUSSION

Poisoning in children is one of the most common medical emergencies in children encountered in pediatric practice. The most common age group affected in our study was 1-5 years of age (59.5%) which was comparable to the other Indian studies [7-9] where age group affected were 1-3 years (47.36%), 0-5 years (81.2%), and 1-2 years (41.1%). Children between 1 and 5 years of age are more vulnerable to accidents because of their inquisitiveness and inability to differentiate harmful and harmless things.

In our study, males were more affected than females (2:1) which was comparable to most of the other Indian studies [7,9]. The most common poison consumed in our study was kerosene (35%) followed by OP compound (11%) which was similar in other studies [10,11]. However, one study conducted at

Table 1: Socio-demographic profile of pediatric poisoning cases

Variables	Number of cases (%)
Gender	
Male	126 (63)
Female	74 (37)
Age in years	
<1	8 (4)
1-5	119 (59.5)
5-10	25 (12.5)
10-15	48 (24)
Socio-economic status	
Upper	7 (3.5)
Upper middle	10 (5)
Lower middle	39 (19.5)
Upper lower	48 (24)
Lower	96 (48)

Table 2: Distribution of patients based on type of poisoning

Poisoning	Number of cases (%)
Kerosene	71 (35.5)
OP compound	22 (14)
Mosquito repellent	9 (4.5)
Rat poison	8 (4)
Turpentine	13 (6.5)
Lindane	6 (3)
Iron and folic acid	3 (1.5)
Castor	4 (2)
Phenol	4 (2)
Others (drugs/unknown seeds/nail polish/lipstick) etc.	60 (30)
Total	200

OP: Organophosphorus

Table 3: Distribution of patients based on duration of stay in the hospital

Duration (h)	Number of cases (%)
<24	68 (34)
24-48	75 (37.5)
48-72	28 (14)
72	29 (14.5)
Total	200

Bengaluru [12] showed drugs (phenytoin, iron, and paracetamol) as the commonly consumed substance which could be the fact in their study, most of the included children were from urban areas. This is because kerosene is still being used as a cooking fuel especially by rural population and for lighting purpose because of long power cuts. A casual attitude toward storage of kerosene accounts for most of the cases of kerosene poisoning such as storing kerosene in bottles meant for drinking water or cold drinks, keeping such bottles open without closing the lid and keeping them in open cupboard which are easily accessible to the children. Also because of its colorless nature, small children

mistakenly drink to quench thirst. Hence, parents need to be educated about not to store kerosene in water bottles and should keep substances in child proof containers and they should not be reachable to children.

Our study showed 85% of the poisoning was accidental and 13.5% cases were suicidal in nature which was similar to other studies [13]. Most of the poisoning cases are from rural and low socio-economic status (48%) probably due to illiteracy, poverty and poor storage of kerosene, and other substances and usage of kerosene is very low in urban population. In this study, 4 out of 200 children died (2%), which is well within the range of national statistics [14]. Three children were died due to accidental poisoning and one child due to homicidal OP compound poisoning due to family issues.

CONCLUSION

Common household products were found to be the main source of poisoning in younger children from rural background and the majority was accidental in nature. Educational programs toward creating awareness among public are necessary to reduce the incidence of poisoning in children.

REFERENCES

1. WHO. World Health Statistics Annual. Geneva: World Health Organization; 1988.
2. Brata Ghosh V, Jhamb U, Singhal R, Krishnan R. Common childhood poisonings and their outcome in a tertiary care center in Delhi. *Indian J Pediatr.* 2013;80(6):516-8.
3. Roy RN, Shrivastava P, Das DK, Saha I, Sarkar AP. Burden of hospitalized

- pediatric morbidity and utilization of beds in a tertiary care hospital of Kolkata, India. *Indian J Community Med.* 2012;37(4):252-5.
4. Jayashree M, Singhi S. Changing trends and predictors of outcome in patients with acute poisoning admitted to the intensive care. *J Trop Pediatr.* 2011;57(5):340-6.
5. Lamireau T, Llanas B, Kennedy A, Fayon M, Penouil F, Favarell-Garrigues JC, et al. Epidemiology of poisoning in children: A 7-year survey in a paediatric emergency care unit. *Eur J Emerg Med.* 2002;9(1):9-14.
6. Marchi AG, Renier S, Messi G, Barbone F. Childhood poisoning: A population study in Trieste, Italy, 1975-1994. *J Clin Epidemiol.* 1998;51:687-95.
7. Subash Vijaya Kumar, B. Venkateswarlu, M. Sasikala, and G. Vijay Kumar. A study on poisoning cases in a tertiary care hospital. *J Nat Sci Biol Med.* 2010; 1(1): 35-39.
8. Khadawat R, Garg P, Bansal P, Arya A, Choudhary B. Accidental poisoning. *Indian Pediatr.* 1994;31:1555-7.
9. Gupta S, Govil YC, Misra PK, Nath R, Srivastava KL. Trends in poisoning in children: Experience at a large referral teaching hospital. *Natl Med J India.* 1998;11(4):166-8.
10. Kohli U, Kuttiaat VS, Lodha R, Kabra SK. Profile of childhood poisoning at a tertiary care centre in North India. *Indian J Pediatr.* 2008;75(8):791-4.
11. Venkatesh C, Sriram P, Adhisivam B, Mahadevan S. Clinical profile of children with kerosene aspiration. *Trop Doct.* 2011;41(1):179-80.
12. Basavaraj S, Pushpalatha K. Clinical profile and outcome of acute pediatric poisoning in urban tertiary care hospital. *J Evid Based Med Healthc.* 2015;2(5):459-63.
13. Manikyamba D, Madhavi N. Clinical profile of poisoning in children admitted in a tertiary care centre. *Int J Sci Res.* 2015;4:2:975-8.
14. Aggarwal B, Rana SK, Chhavi N. Pattern of poisoning in children, an experience from a teaching hospital in Northern India. *JK Sci.* 2014;16(4):174-8.

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