



PROFILE OF CHILDHOOD POISONING: A RETROSPECTIVE STUDY FROM A TERTIARY CARE HOSPITAL IN ASSAM

Arindam Ganguly*

Department of Pediatrics, Fakhruddin Ali Ahmed Medical College & Hospital, Barpeta, Assam, India *Corresponding Author

Indira Das

Department of Pediatrics, Fakhruddin Ali Ahmed Medical College & Hospital, Barpeta, Assam, India

Atiqr Rahman

Department of Pediatrics, Fakhruddin Ali Ahmed Medical College & Hospital, Barpeta, Assam, India

ABSTRACT

Acute poisoning forms a substantial part of emergency visits to a hospital for the pediatric population. It is mostly noted amongst the families in the lower socio-economic strata of the society with limited access to the basic amenities of life. Majority of childhood poisonings are unintentional, occur at home, and home surroundings and hence preventable. **METHODOLOGY:** It is a retrospective study conducted in the Department of Pediatrics of Fakhruddin Ali Ahmed Medical College & Hospital, Barpeta, Assam. **OBJECTIVE:** To determine the types of acute childhood poisoning and demographic profile in children admitted Fakhruddin Ali Ahmed Medical College & Hospital. **RESULT:** A total of 69 cases of poisoning was reported during the study period. 46 (66.6%) were males while 23 (33.33%) were females. Mineral oil was the most common cause of poisoning (40.5%), followed by organophosphorus compounds (28.9%), drugs (11.5%) and unknown causes (18.8%). Of the 69 cases, 61 (89.8%) were discharged while 8 (11.1%) cases went home against medical advice. **CONCLUSION:** Acute poisoning in children is mostly accidental in nature, with preventable morbidity and mortality. In our study, mineral oil and organophosphorus compounds were the most common causes as the study population comprised of cases of lower socioeconomic strata and mostly related to the agrarian sector. Careful storage of household products and keeping medicines in child-proof containers may reduce poisoning to a great extent.

KEYWORDS : Childhood poisoning, accidental, organophosphorus, mineral oil, drugs

INTRODUCTION

Poisoning is one of the commonest preventable emergencies encountered in pediatric practice¹. In terms of high social and economic burden poisoning is the third most common emergency in pediatrics². Poisoning, while never accounting for a large number of accidental deaths, have acquired prominence now because they have not decreased at the same rate as the infectious diseases^{3,4}.

Accidental poisoning is the twelfth leading cause of admission in the pediatric wards in India and accounts for about 1.0% of the hospitalized patients⁵. Poisoning accounts for 1-6% of bed occupancy in children hospitals and 3.9% in pediatric intensive care units in India⁶⁻⁹.

Ingestion is the most common route of poisoning exposure accounting for 70.0% cases, with the dermal, ophthalmic and inhalation routes each occurring in about 6.0% cases¹⁰. More than 85% of cases need no medical intervention because the ingested material is not toxic or the amount swallowed is not clinically significant^{11,12}.

Poisoning most commonly occurs between the ages of 1 and 5 years. During the 1st year of life, medications given by the parents are the common cause of poisoning. Among the causes of poisoning, house cleaning products are common between the ages 2 and 3 years and medicines left unattended between the ages 3 and 5 years¹³.

Poisoning is predominantly accidental particularly in children < 5 years of age but might be increasingly self-inflicted in older children¹⁴. The cause and type of poisoning vary in different parts of the world, depending on the accessibility of poison to children, which depends upon factors such as demography, socio-economic status, education, local beliefs and customs¹⁵.

METHODS

This retrospective hospital record-based study was carried out over a period of one year from January 2020 to December 2020 in patients who were admitted in Pediatric wards and

pediatric intensive care unit (PICU) of Fakhruddin Ali Ahmed Medical College & Hospital, Barpeta, Assam with history of ingestion of poison or intoxication.

All cases of acute poisoning were thoroughly examined, baseline variables like age, gender, religion and place of dwelling was noted. Duration of hospital stay, symptoms and outcomes were also noted.

RESULTS

A total of 69 children were admitted for acute poisoning in the Paediatric ward and Paediatric intensive care unit (PICU) over a period of 1 year out of which 46 (66.6%) were males while 23 (33.33%) were females.

79 % of the cases were children below 5 years of age, while 20% of the cases were above 5 years. Out of the 69 cases, majority of them were from the rural areas, while only were from urban areas.

Table 1 : Socio-demographic profile of acute childhood poisoning

Sl. No.	Variables	Number of cases
1	Gender	
	Male	46
	Female	23
2	Age	
	Less than 5 yrs	55
	5-12 years	14
3	Demography	
	Rural	55
	Urban	14
4	Religion	
	Hindu	13
	Muslim	56
	Others	0

Among the agents of poisoning, mineral oil (40.5%) , most notably kerosene followed by diesel, was the common causative agent. Organophosphorus compounds (28.9%),

drugs (11.5%) and other unknown agents (18.8%) were implicated in the remaining cases.

Table 2: Agents causing acute poisoning

Sl no	Causes	Number
1	Mineral oil	28
2	Organophosphorus Compounds	20
3	Drugs	8
4	Others	13

Most of the patients (91.3%), were managed in the pediatric ward itself, however few patients (8.75%) had to be shifted to PICU for management.

Table 3: Admissions

Sl no.	Admitted in	Number
1	Pediatric Ward	63
2	PICU	6

Out of the 69 cases admitted for acute poisoning, 39 children had a hospital stay of >48 hours, 16 children were admitted for 48-72 hours and 14 children had a hospital stay of more than 72 hours.

Table 4: Duration of hospital stay

Sl no.	Duration of hospital stay	Number
1	Less than 48 hours	39
2	48-72 hours	16
3	More than 72 hours	14

61 cases were discharged after treatment, while 8 cases were discharged against medical advice.

Table 5: Outcome of the cases

Sl no.	Outcome	Number
1	Discharged	61
2	Discharged against Medical Advice	8

DISCUSSION

Childhood poisoning is a significant cause of morbidity and mortality in pediatric patients of our country. The incidence of childhood poisoning in Indian studies varies between 0.3% to 7.6%^{16,17}. It is very likely that this reporting is an underestimate of the actual magnitude of this problem as many cases go unreported¹⁸.

Males outnumbered females with a ratio of 2:1 in present study quite similar to other studies conducted by Sreeramareddy CT et al¹⁹ and Singhi S et al²⁰.

Of the 69 children, 46 children (66.6%) were below the age of 5 years. Similar distribution was also seen in a study conducted by Das Adhikari et al²¹, where 77.42% of children were below the age of 5 years, which seem to be in line with the study done by Reddy et al²², where 70.4% were within the age group of less than 5 years.

Majority of children (79.7%) were from a rural background in our study. This is in accordance with another study conducted by Agarwal et al²³ in Rajasthan, where the rural representation was 65.54%.

Limitations

It is a retrospective register-based study. The information was collected from a register handled by various physicians which would have affected the uniformity in data collection. Furthermore, this is a single centre study, and it is therefore difficult to generalize the results and to calculate the rate of poisoning in the entire Indian population.

CONCLUSION

We conclude that ingestion of medicine and household products remain important causes for acute poisoning in

children. Careful storage of common household products implicated in pediatric poisoning and keeping medicines in child-proof containers or under lock and key may reduce such poisoning to a great extent. Majority of studies are on accidental poisoning. Intentional and homicidal nature of poisoning is usually overlooked. Addressing this issue along with parental education is paramount for prevention and comprehensive management of poisoning in children.

Ethical approval: The study was approved by the Institutional Ethics Committee

Funding: None; Competing interest: None stated.

REFERENCES:

- Singh M, Hessam MY, Azamy S, Arya LS. Spectrum of poisonings among children in Afghanistan. *Indian J Pediatr*. 1984;51(3):313-6.
- Steele P, Spyker DA. Poisonings. *Pediatr Clin North Am*. 1985;32(1):77-85.
- Parikh CK. Toxicology. In: Parikh CK (ed). *Parikh's text book of medical jurisprudence and toxicology*. 5th edn. Bombay. CBS publisher. 1990: 660-690
- Narayana Reddy KS. Toxicology. In: Narayan Reddy KS (ed). *The synopsis of forensic medicine and toxicology*. 14th edn. Hyderabad. Medical book company. 2000: 221-293
- Suvedi BK. A retrospective study of poisoning cases at Bir Hospital, Nepal. *J Inst Med*. 1990;12:296-302
- Abula T, Wondmikun Y. The pattern of acute poisoning in a teaching hospital, north-west Ethiopia. *Eth Med J*. 2006;44(2):183-9.
- GR Lawson, AW Craft and RH Jackson Changing Pattern of poisoning in children in Newcastle, 1974-81. *BMJ* 1983;287:15-17
- 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.
- 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
- 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.
- Rodgers GC Jr, Condurache T, Reed MD, Bestic M, Gal P. Poisonings. In: Kliegman RM, Behrman RE, Jenson HB, Stanton BF. *Nelson's Textbook of Pediatrics*. New York: Saunders: Elsevier; 2007:689-732.
- Bronstein AC, Spyker DA, Cantilena LR Jr, Green JL, Rumack BH, Giffin SL. Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 26th Annual Report. *Clin Toxicol (Phila)*. 2009;47(2):911-1084.
- Agarwal G, Bithu KS, Agarwal R. An epidemiological study of acute poisoning in children in a tertiary care hospital of western Rajasthan, India. *Int J Contemp Pediatr* 2016;3:1249-51
- 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.
- Singh S, Sood NK, Walia BNS, Kumar L. Changing pattern of childhood poisoning: Experience of a large north Indian Hospital. *Indian Pediatr*. 1995;32:331
- Singhal PK, Kumar H, Rastogi V, Saili A, Patwari AK, Mullick DN. Accidental poisoning. *Indian Pediatr*. 1988;25:350-3.
- Niyaz AB, Ahmed K, Sethi AS. Poisoning in children. *Indian Pediatr*. 1991;28:521-4.
- Dutta AK, Seth A, Goyal PK, Aggarwal V, Mittal SK, Sharma R et al. Poisoning in children: Indian scenario. *Indian J Pediatr*. 1998;65(3):365-70.
- Sreeramareddy CT, Sathyanarayana TN, Kumar HN. Utilization of health care services for childhood morbidity and associated factors in India: a national cross-sectional household survey. *PLoS One*. 2012;7(12):e51904
- Singhi S, Gupta G. Comparison of pediatric emergency patients in a tertiary care hospital vs a community hospital. *Indian Pediatr*. 2004;41(1):67-72.
- das Adhikari D, Das S, Winston AB, Vazhudhi K, Kumar A, Fx MS, et al. A retrospective study on non-drug related poisoning in the community among children from South India. *Hosp Pract (1995)* 2017;45:39-45.
- Reddy A, Reddy K, 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.