

Sociodemographic profile of paediatric poisoning cases in Bangalore, India

Satish K V^{1,*}, Shivakumar P², Dr Mandar Ramachandra Sane³

¹Associate professor, Department of Forensic Medicine & toxicology, Bangalore Medical College & Research Institute, Bangalore

²Assistant professor, Department of Forensic medicine & toxicology, BGS-Global institute of medical sciences, Bangalore

³Assistant professor, Department of Forensic medicine & toxicology, Sir Aurobindo Medical College & PG institute, Indore

***Corresponding Author:**

E-mail: knaik4u@gmail.com

Abstract:

Background: Acute poisoning forms one of the commonest causes of emergency hospital admissions and acute poisoning in children, contributing for morbidity and mortality in paediatric age group.

Material & Methods: Sociodemographic profile of paediatric poisoning cases was conducted in Department of Forensic Medicine and Toxicology in Victoria Hospital collaboration with the Department of Pediatrics, VaniVilas Hospital and, attached to Bangalore Medical College and Research Institute, Bangalore, India.

Results: During study period a total of 128 cases of paediatric poisoning cases were analysed and all cases were registered as medico-legal cases and informed to police as per section 39 CrPC. Incidence of poisoning was seen more in the age group of 0 to 5 years (38.28%). In this study the mean age was found to be 8.25 years, more in males compared to females, sex Ratio of male: female is 1.1: 1. Poisoning cases were more commonly seen in rural areas (53.9%) compared to urban areas (46.1%). Poisoning cases were predominantly seen in Hindus (79.7%) (n=102) as compared Muslims (20.3%) (n=4). Maximum number of paediatric poisoning cases was noticed among Upper Lower Class, followed by upper middle class.

Conclusions: The data available from the present study does not enable the assessment of risk factors. However, by identifying the importance of childhood poisoning as a cause of morbidity as may help in channelling the intervention programmes and further research in the right direction.

Keywords: Paediatric poisoning, Sociodemographic factors, Organophosphorus compounds

Access this article online	
Quick Response Code: 	Website: www.innovativepublication.com
	DOI: 10.5958/2394-6776.2015.00006.5

INTRODUCTION

Poisoning both accidental and intentional is a significant contributor to mortality and morbidity throughout the world. According to WHO, three million acute poisoning cases with 2, 20,000 deaths occur annually. Acute poisoning forms one of the commonest causes of emergency hospital admissions and acute poisoning in children is almost entirely accidental. Pattern of poisoning in a region depends on variety of factors, such as availability of the poisons, socioeconomic status of the population, religious and cultural influences and availability of drugs.(1) In India, while the most and commonest problems remain those related to infectious disease and malnutrition, accidental poisoning is one of the important emergencies encountered in children. 838 children ages 19 and under died from poisonings in 2010.(2)

To analyse the problem of pediatric poisoning, it is necessary to understand the magnitude of the problem. When assessing the impact of a particular type of injury such as poisoning, epidemiologists examine multiple parameters, such as exposure, morbidity, mortality and cost to measure the effect of the injury; however these parameters are difficult to measure accurately of the reported exposures in children and adolescents, children younger than age 6 years account for 79%, children between 6 and 12 years of age account for 10% and adolescents between 13 and 19years of age account for 11%. Children are frequently exposed to potentially toxic xenobiotics; fortunately, most childhood exposure are ingestion of non-poisonous xenobiotics or small nontoxic quantities of potentially toxic xenobiotics more likely pharmaceutical or household products.(3)

The present study is therefore conducted to know the changing trends of poisoning in children and to create awareness in parents by educating them regarding preventive methods of keeping household products and drugs away from the children.

MATERIAL AND METHODS

Present study was conducted in the Department of Pediatrics, VaniVilas Hospital and Department of Forensic Medicine and Toxicology, Victoria Hospital, attached to Bangalore Medical College and Research Institute, Bangalore, during the period November 2012 to September 2014. All the cases of pediatric cases brought to Department of Pediatrics with history of Poisoning were included in the study. Those with history of poisoning but with no signs or symptoms of poisoning were excluded from study. Similarly, patients with idiosyncratic reactions to drugs were excluded from study. A sum of 128 cases of accidental/suicidal/homicidal poisoning was selected for this prospective study. Study was commenced after Institutional ethical clearance. Informed consent was taken. A proforma containing details of the patient, informant, type and quantity of poison consumed, occupation, monthly income of the parents are noted, patients symptoms after consuming poison, details about the type of snake, site of bite, time, manner of bite, treatment history. In most of the cases history regarding the manner of poisoning is elicited. In succumbed cases a detail medico-legal autopsy was done.

RESULTS

During study period a total of 128 cases of Pediatric poisoning cases were analysed and all cases

were registered as medico-legal cases and informed to police as per section 39 CrPC. It is observed from the above table that maximum number of poisoning in the study population is seen in the age group of 0 to 5 years (38.28%). In males it amounted to 20.31% followed by age group of 6 to 10 years (12.5%). In females maximum number of cases seen in 0 to 5 years (17.97%), followed by age group of 11 to 14 years (11.72%). **(Table 1)** Males outnumbered the females in the study population. In males it amounted to 51.6% and in females 48.4%. The male: female ratio was 1.1: 1. **(Table 2)** It was observed that poisoning cases were predominantly seen in Hindus (79.7%) as compared Muslims (20.3%). **(Table 3)** Poisoning cases were more commonly seen in rural areas (53.9%) compared to urban areas (46.1%). **(Table 4)** According to Kuppuswamy's classification of socio-economic status, it is observed that maximum numbers of pediatric poisoning cases were noticed among Upper Lower Class, followed by upper middle class. No cases were seen upper class group. **(Table 5)** The pediatric poisonings were first observed by parents amounting to 88.2% of cases, followed by friends 7(6.9%). Least number of cases was seen in grandparents 2(1.6%). **(Table 6)** Most of the parents were having knowledge about the poison accounting for 96.1% of cases, that they know that the poison consumed by their children were dangerous. **(Table 7)**

Table 1: Distribution of study population based on Age

Sl No	Age Group	Male	Percent	Female	Percent	Total	Present
1	0-5yrs	26	20.31	23	17.97	49	38.28
2	6-10yrs	16	12.5	12	9.37	28	21.87
3	11-14yrs	14	10.94	15	11.72	29	22.66
4	15-18yrs	10	7.81	12	9.37	22	17.19
	TOTAL	66	51.56	62	48.44	128	100

Table 2: Distribution of study group based on sex distribution

Sl.no	Sex	Number	Percent
1	MALE	66	51.6
2	FEMALE	62	48.4
	TOTAL	128	100

Table 3: Distribution of study group based on religion

SL.NO	RELIGION	NUMBER	PERCENT
1	HINDU	102	79.7
2	MUSLIM	26	20.3
	TOTAL	128	100

Table 4: Distribution of study group based on locality

SL.NO	LOCALITY	NUMBER	PERCENT
1	RURAL	69	53.9
2	URBAN	59	46.1
	TOTAL	128	100

Table 5: Distribution of study population based on socio-economic status

SL.NO	SOCIO-ECONOMIC STATUS	NUMBER	PERCENT
1	UPPER CLASS	00	00
2	UPPER MIDDLE CLASS	18	14.1
3	LOWER MIDDLE CLASS	34	26.6
4	UPPER LOWER CLASS	62	48.4
5	LOWER CLASS	14	10.9
	TOTAL	128	100

Table 6: Distribution of study group based on person who first observed child consuming the poisoning.

SL.NO	SEEN BY	NUMBER	PERCENT
1	MOTHER	103	80.5
2	FATHER	10	7.8
3	FRIENDS	7	6.9
4	RELATIVES	03	2.3
5	NEIGHBOUR	03	2.3
6	GRANDPARENTS	02	1.6
	TOTAL	128	100

Table 7: Distribution of study group based on knowledge of parents about the poison that was consumed by their children

SL.NO	KNOWLEDGE ABOUT POISON	NUMBER	PERCENT
1	YES	123	96.1
2	NO	05	3.9
	TOTAL	128	100

DISCUSSION

Intentional poisoning of children is an unusual, though significant, form of child abuse. Intentional poisoning is rarely suspected unless the patient dies and an autopsy is performed, a wide-ranging drug screen is ordered, or the history of bizarre enough to raise suspicion. Accidental poisoning, a common pediatric emergency is one of the important causes of morbidity and mortality in children especially in developing countries. Thousands of innocent children under age of 5 years are poisoned accidentally every year all over the world, mainly due to their innovative and exploratory nature and mouthing tendencies.(4)(5)

The present study shows that the maximum numbers of patients were in the age group of between 0 to 5 years 38.28%, approximately, two-third of the patients were below 10 years of age. The mean age was found to be 8.25 years. Least number of cases were in age group of 15 to 18 years (17.18%). A study was conducted on pediatric poisoning in Government hospital, Srinagar, the major referral hospital for pediatric catering to the whole of Kashmir Valley. Maximum numbers of cases (49.8%) were in the age group of 1-5 years.(6) A retrospective study was carried out in Krishna Hospital and Medical Research Centre, Karad, Mean age of children was 6.5yrs.(7) A similar retrospective study analysis was done for three years from January 1996 to May 1999 on children admitted with poisoning to the pediatric ward of Government RM Hospital, Thanjavur. The total pediatric admissions due to poisoning were diagnosed in 1056. 203(19.2%) had chemical poisoning and 853(80.8%) had biological poisoning. 125 children

were less than 2 years of age, 570 were between 2 to 5 years of age and 361 were above 5 years of age.(8) Results of present study are similar to the previous study.

Sex wise distribution of cases in this study showed that males outnumbered the females in the study population. In males it amounted to 51.6% and in females 48.4%. The male: female ratio was 1.1: 1. A study of pattern of childhood acute poisoning was studied in Ankara. They studied poisoned patients under 17 years of age, presenting to the Emergency Department. The clinical data were obtained for 489 patients and incidence of poisoning was slightly more in boys(52.3%) than girls.(9) similar results are found in studies done by Ganga N,(8) Izuora,(10) Fernando R,(11) Khadgawat R,(12) and Job C.(13) So present study correlates with the previous studies.

In present study, it was observed that poisoning cases were more commonly seen in rural areas (53.9%) compared to urban areas (46.1%). About two-third of cases of snakebite and scorpion stings were from rural side. As matter, in rural areas people usually involved in agriculture so the chances of children exposed to agricultural poison and children usually walk on bare foot and due to more of herbs and shrubs the chances of snakebite and scorpion stings are common in rural area. A retrospective study carried out at Krishna Hospital and Medical Research Centre, Karad, in South-West India over five years showed that rural children were more commonly involved than urban children (5:2).(7) Similar results were seen in studies conducted by Nowneeth KB,(14) and Shashidhar V.(15)

In this study population, it is observed that poisoning cases were predominantly seen in Hindus (79.7%) (n=102) as compared Muslims (20.3%) (n=4). Similar findings were observed in studies conducted by Kartik Prajapati(16) and Maharani(17)

According to Kuppaswamy's classification of socio-economic status, in present study, it was observed that maximum numbers of pediatric poisoning cases were noticed among Upper Lower Class, followed by upper middle class. No cases were seen upper class group. Since the study done in a tertiary government set up most of the patients involved were more from rural set up, the people usually in this set up are agriculturist or labour where their children are enough prone for household poisoning. Similar findings were observed in studies done by Senthil Kumar V(18) and Md. Hidayathulla(19).

CONCLUSION

Incidence of poisoning was seen more in the age group of 0 to 5 years (38.28%). The mean age was found to be 8.25 years. Poisoning cases were more in males compared to females. Sex Ratio of male: female is 1.1: 1. Poisoning cases were more commonly seen in rural areas (53.9%) compared to urban areas (46.1%). Poisoning cases were predominantly seen in Hindus (79.7%) (n=102) as compared Muslims (20.3%) (n=4). Maximum number of pediatric poisoning cases was noticed among Upper Lower Class, followed by upper middle class. The data available from the present study does not enable the assessment of risk factors. However, by identifying the importance of childhood poisoning as a cause of morbidity as may help in channelling the intervention programmes and further research in the right direction. Following preventive measures are suggested

1. Public education to keep toxic substance out of reach of children.
2. More community surveys must be planned to find the magnitude of problem in different areas.
3. Regional toxicological centres with well equipped laboratories to treat, guide and conduct research in the problem is needed more.
4. Mass media such as television, radio and newspaper should be harnessed for creating awareness about the potential hazardous effect of poison and their prevention.

REFERENCES

1. Glen Sipes, Charlene A Mcqueen, Jay Gandolfi A. Comprehensive Toxicology. United Kingdom: Pergamon; vol 1: p2.
2. Poison safety fact sheet. Safe Kids Worldwide.[online]. 2013; (cited on 17/10/14). Available from: www.safekids.org/worldwide.
3. Lewis S Nelson, Neal A Lewin, Mary Ann Howland, Robert S Hoffman, Lewis R Goldfrank et al. Goldfrank's Toxicologic Emergencies. 9th ed. China: Mc GrawHill; 2011. p. 447-57.
4. Goto K, Endoh Y, Kuroki Y, Yoshioka T. Poisoning in children in Japan. *Ind J paediatrics* 1997; 64:461-8.
5. Mc Caig LF, Burt CW. Poisoning related visits to emergency department of Unites States. *J toxicol-clin toxicol* 1997; 37:817-26.
6. Ahmad KW, Ahamad M, Rashid KR, Sethi AS, SHabnum. Poisoning in children. *JK Practioner* 2004 Oct-Dec; 11(4):274-5.
7. Kumar V. Accidental poisoning in South-West Maharashtra. *India Paediatrics* 1991 Jul; 28:731-4.
8. Ganga N, Rajarajeshwari G. Poisoning in children. *Indian Paediatrics* 2001 Feb; 38:208.
9. Andiron N, Sarikayalar F. Pattern of acute poisoning in childhood in Ankara: what has changed in twenty years?. *Turk J Pediatr* 2004 Apr-Jan; 46(2):147-52.
10. Izuora GI, Adoye A. A seven year review of accidental poisoning in children at a military hospital in Hafr Al Batin, Saudi Arabia. *Annals of Saudi Medicine* 2001; 21(1):13-6.
11. Fernando R, Fernando DN. Childhood poisoning in Sri Lanka. *Indian J pediatr* 1997; 64:457-60.
12. Khadgawat R, Garg P, Bansal P, Arya A, Choudhary B. Accidental poisoning. *Indian paediatrics* 1994 Dec; 31:1555-7.
13. Job C. A regional study of poisoning in children. *Journal of the Indian Society of Toxicology (JIST)* 2005 Jan-Jun; 1:10-3.
14. Nowneet Kumar Bhat, Minakshi Dhar, Sohaib Ahmad, Vipin Chandra. Profile of poisoning in children and adolescents at north Indian tertiary care centre. *J Indian acad of Clini Med* 2012 Jan-Mar; vol 13(1): 37-42.
15. Shashidhar V, Yogesh G. Profile of Pediatric Poisoning at District Hospital Gulbarga. *Indian J of medical research and review* 2013 Nov- Dec; vol1 (5):245-9.
16. Karthik Prajapati, Saamil P Merchant, Pratik R Patel. Trends of suicidal poisoning in Ahmedabad (retrospective study). *NHL Journal of Medical Sciences* 2012 July; vol(1): 18-22.
17. Maharani B, Vijayakumari N. Profile of poisoning in a tertiary care hospital, Tamil Nadu, India. *Journal of Applied pharmaceutical Science* 2013 Jan; Vol.3 (01): 91-94.
18. Senthil Kumar V, Venkatesha VT. An autopsy study of poisoning deaths conducted at KIMS hospital. Bangalore: RGUHS dissertation; 2014. 58.
19. Md. Hidayathulla. Accidental kerosene oil poisoning in children - a study. *Journal of Evidence Based Medicine* 2014 Sep; vol 7(1):479-84.