

Study of Current Trends of Poisoning in Children in Bikaner Region

Rajendra Singh*, Shalender Kumar

Assistant Professor,

Department of Forensic Medicine & Toxicology, S. P. Medical College, Bikaner, Rajasthan, India.

ABSTRACT

Background: Profile and outcome of poisoned paediatric patients varies in different parts of the world and in a given region is influenced by the prevalent social, occupational, economic, and cultural practices. The aim of this study to determine the various parameters of poisoning such as type of poison involved, incidence in pattern of poisoning, to detect the risk factor and prone groups and outcome of pediatric poison in Bikaner region.

Material & Methods: The study was conducted in the Department of Forensic Medicine and Toxicology, in association with Pediatric Department, S.P. Medical College, Bikaner (Raj.). The study was carried out by using information regarding age, gender, marital status, demography, manner, time of occurrence, stay in hospital and patient outcome from the hospital records, victim's relatives and accompanying police records.

Results: In our study the maximum no. of patients were male (71.25%), Incidence was also more common in Rural areas (72.5%) as compared to urban (27.5%). Kerosene (32.5%) and terpenile oil (18.75%) were the most common offending agents in our study. Most of poison cases were accidental and more common in evening. Most of patients were discharged (61.87%), only 1.87% deaths occurred in study period.

INTRODUCTION

Poisoning in children is an important paediatric emergency and is a worldwide problem. It is a common and preventable cause of morbidity and mortality in children. Profile and outcome of poisoned paediatric patients varies in different parts of the world and in a given region is influenced by the prevalent social, occupational, economic, and cultural practices, and also by the availability and the quality of the medical facilities.

By definition, anything which when used internally or on the body surface, in a dose or in repeated doses, if acts chemically and pathologically, causing disturbances of body functions and leads to disease or death is a Poison.¹

Poison is a substance (solid, liquid or gaseous), which if introduced in the living body, or brought into contact with any part thereof, will produce ill-health or death, by its constitutional or local effect or both. Thus, almost anything is a poison.² A foetus can be poisoned by a substance crossing the placenta. Almost any

Conclusion: The trends for paediatric poisoning noted at our centre are not very different from those observed in hospital based studies conducted in other parts of our country. Although adequate evidence regarding effectiveness of community-based childhood poisoning prevention programmes is lacking at present.


Key Words: Poisoning, Paediatric, Kerosene, Accidental.

*Correspondence to:

Dr. Rajendra Singh,
Assistant Professor,
Department of Forensic Medicine & Toxicology,
S.P. Medical College, Bikaner, Rajasthan, India.

Article History:

Received: 16-12-2016, Revised: 29-12-2016, Accepted: 11-01-2017

Access this article online	
Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2017.3.1.029	

substance can act as a poison if a sufficiently large dose is absorbed.

Pediatric poisonings are a common and preventable cause of morbidity and mortality throughout the world. According to the World Health Organization (WHO), acute poisoning accounts for an estimated 45000 deaths annually among children and youth 520 years of age.³ In 2012 in the USA, more than 1.4 million poisonings in children and adolescents 520 years of age were reported. The youngest are most at risk – approximately 50% of all poisonings occur in children 56 years of age.⁴ The exact incidence of poisoning in India is uncertain due to lack of data at central level as most cases are not reported, and as mortality data is a poor indicator of incidence of poisoning.

This study has been aimed to determine the various parameters of poisoning such as type of poison involved, incidence in pattern of poisoning, to detect the risk factor and prone groups and outcome of pediatric poison in Bikaner region.

MATERIALS & METHODS

The study was conducted in the Department of Forensic Medicine and Toxicology, in association with Pediatric Department, S.P. Medical College, Bikaner (Raj.). The study was carried out by using information regarding age, gender, marital status, demography, manner, time of occurrence, stay in hospital and patient outcome from the hospital records, victim's relatives and accompanying police records.

Finally the details were analyzed and the conclusions were drawn after comparing and discussing with similar type of the work carried out by foreign and Indian authors.

Inclusion Criteria

Cases (0-10 yrs) admitted in P.B.M. & Associated group of hospitals, Bikaner (Raj.) in one year duration was taken for study.

Exclusion Criteria

Poisoning by animals and insects bite.

Table 1: Demographic characteristics of children (0-10yrs)

Sex	Male	114	Total= 160	71.25%
	Female	46		28.75%
Religion	Hindu	142	Total= 160	88.75%
	Muslim	18		11.25%
Habitat	Rural	116	Total= 160	72.5%
	Urban	44		27.5%
Socioeconomic status	Middle	62	Total= 160	38.75%
	Lower	98		61.25%

Table 2: Type of poison consume in children (0-10yrs)

Poison	No. of patients	Percentage
Aluminium phosphate	1	0.62%
Carbamates	1	0.62%
Corrosive	5	3.12%
Datura	2	1.25%
Kerosene oil	52	32.5%
Laxman Rekha	19	11.87%
Drug Overdose	5	3.12%
Mercury	1	0.62%
Mosquito	8	5.0%
Opium	10	6.25%
Organochlorine	3	1.87%
Organophosphate	16	10.0%
Phenyl	2	1.25%
Rodenticide	1	0.62%
Terpentile oil	30	18.75%
Unknown	4	2.5%

Table 3: Manner of poison in children (0-10yrs)

Manner	No. of patients	Percentage
Accidental	151	94.37%
Suicidal	7	4.37%
Undetermined	2	1.25%

Table 4: Timing of poison consume in children (0-10yrs)

Timing	No. of patients	Percentage
Morning	49	30.62%
Afternoon	52	32.5%
Evening	59	36.87%

Table 5: Outcome of poison in children (0-10yrs)

Outcome	No. of patients	Percentage
Absconded	38	23.75%
Death	3	1.87%
Discharged	99	61.87%
LAMA	20	12.5%

RESULTS

A total of 160 poisoning cases of 0-10 years of age were studied in the forensic department of P.B.M., Bikaner (Raj.). In our study the maximum no. of patients were male (71.25%), Incidence was also more common in Rural areas (72.5%) as compared to urban (27.5%), Hindus (88.75%) were more common as compared to Muslims (11.25%), and lower socioeconomic status were more common (61.25%) (Table1). Kerosene (32.5%) and terpenite oil (18.75%) were the most common offending agents in our study (Table 2). Most of poison cases were accidental and more common in evening (table 3 & 4). Most of patients were discharged (61.87%), only 1.87% deaths occurred in study period (table 5).

DISCUSSION

The childhood unintentional poisoning death rate has declined over the past decade, largely due to child resistant packaging, product reformulation, heightened parental awareness and appropriate interventions.⁵ However children continue to be at significantly greater risk than adults for unintentional poisoning, because they are smaller, have faster metabolic rates and are less able to physically handle toxic chemicals. In addition natural curiosity and their desire to put everything in their mouth increase their poisoning risks.

In this study majority of age group were broad (0-10 yrs) but most vulnerable age group for poisoning is under 5 years which is consistent with studies from Jordan⁶. In various studies from Kuwait⁷, Bangladesh⁸, and Colombo⁹, 1-3 years was reported to be the most vulnerable age group to be affected. Hussein A Bataineh et al.¹⁰ from Saudi Arabia & Raymond Cripps et al from Australia observed that majority of children were under 5 years of age group. There was a male preponderance in the present series which is concurrent from various other works.⁸⁻¹²

Present study observed predominance of poisoning in rural children, Also the incidence of poisoning was found to be highest in lower income group followed by lower middle income group which was in concordance with work in Karachi¹³ (80% lower income group, 19% middle income group and 1% fair income

group). While increased incidence in lower income group can be attributed to lower level of education, improper storage of chemicals & household products and lower level of care towards the child. The majority of our patients were from a rural background as our hospital caters to a large rural area. The median time to presentation after consumption of the poison was 5 hours for rural patients who presented later than urban patients (2 hrs). This was significantly longer than reported by Kohli et al.¹⁴ This could be explained by the longer distance that these rural patients travelled to reach our centre and also by the fact that most of these patients received initial treatment at other health care facilities, before being referred to our hospital. Most cases of poisoning in children 0-10years old are accidental in nature. In our study majority of consumed poison were kerosene (32.5%), previous studies from India and adjoining regions have shown that kerosene is the major culprit in majority of childhood poisonings accounting for 25 - 50% of cases¹⁴⁻¹⁶. Kerosene is mostly used in our country as a cooking fuel by low income families, and is frequently stored in empty soft drink bottles that are kept on the floor, within easy reach of the children.

CONCLUSION

The trends for paediatric poisoning noted at our centre are not very different from those observed in hospital based studies conducted in other parts of our country. However, the rapid socioeconomic development that our country has seen during the last couple of decades, and with wider availability of LPG as a cooking fuel, kerosene has decreased to the third most common cause of childhood. Although adequate evidence regarding effectiveness of community-based childhood poisoning prevention programmes is lacking at present¹⁷, simple measures like parental education, safe storage and use of child-proof packaging and containers for drugs and insecticides, could go a long way in preventing a large proportion of morbidity and mortality related to childhood poisoning.¹⁸

REFERENCES

1. Nandy A. Nandy's handbook of Forensic Medicine and Toxicology 1st Ed. Page-464.
2. Biswas G. Review of Forensic Medicine and Toxicology 2nd Ed. Page-411
3. Peden M, Oyegbite K, Ozanne-Smith J, et al., editors. World Report on Child Injury Prevention. World Health Organization, 2008; [cited 2015 Jul 8].
4. Mowry JB, Spyker DA, Cantilena LR Jr, et al. 2012 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 30th Annual Report. Clin Toxicol. 2013;51:949-1229.
5. National SAFE KIDS Campaign (NSKC). Poisoning Fact Sheet. Washington (DC): NSKC, 2004.

6. Shotar AM (2005) Drug poisoning in childhood. Saudi Med J 26: 1948-1950.
7. Akhtar S, Gulati R, Fahad Al Anezi (2006) Risk factors in acute poisoning in children-A retrospective study. Kuwait Medical Journal 38: 33-36.
8. Rashid AKM (2007) Seasonal variation of childhood acute poisoning. Pakistan Journal of Medical Science 23: 1-5.
9. Lucas GN (2006) A hospital based prospective study of acute childhood poisoning. Srilanka Journal of child health 35: 12-19.
10. Hussein AB, Ahmed AB (2007) Childhood accidental poisoning in Tafila. Iran J Ped 17: 23-27.
11. Hockey R, Reith D, Miles E (2000) Queensland injury surveillance unit childhood poisoning and ingestion, injury bulletin 60: 1-6.
12. Gupta SK, Peshin SS, Srivastava A, Kaleekal T (2003) A study of childhood poisoning at National Poisons Information Centre, All India Institute of Medical Sciences, New Delhi. J Occup Health 45: 191-196.
13. Manzar N, Saad SM, Manzar B, Fatima SS (2010) The study of etiological and demographic characteristics of acute household accidental poisoning in children--a consecutive case series study from Pakistan. BMC Pediatr 10: 28.
14. Kohli U, Kuttait VS, Lodha R, Kabra SK. Profile of Childhood Poisoning at a Tertiary Care Centre in North India. Indian J Pediatr 2008; 75: 791-4.
15. Dutta AK, Seth A, Goyal PK et al. Poisoning in children: Indian scenario. Indian J Pediatr 1998; 65: 365-70.
16. Gupta S, Govil YC, Misra PK et al. Trends in poisoning in children: experience at a large referral teaching hospital. Natl Med J India 1998; 11: 166-8.
17. Nixon J, Spinks A, Turner C, McClure R. Community based programs to prevent poisoning in children 0 - 15 years. Inj Prev 2004; 10: 2-3.
18. Chan TY. Childhood poisoning: the scope for prevention. Vet Hum Toxicol 1998; 40: 361-3.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Rajendra Singh, Shalender Kumar. Study of Current Trends of Poisoning in Children in Bikaner Region. Int J Med Res Prof. 2017; 3(1):153-55.
DOI:10.21276/ijmrp.2017.3.1.029