

ORIGINAL ARTICLE

A Study on Profile of Poisoning Cases in a Tertiary Care Hospital at Karaikal

J Venkatesaprasanna¹, Prasanna Parthasarathy², Thumma Amar³, Vijayakumar Nair G⁴

ABSTRACT

INTRODUCTION:

BACKGROUND: Acute poisoning is one of the major causes of morbidity and mortality worldwide, with 90% of the burden of fatal poisoning cases are from developing countries. Pattern of poisoning in any region depends on variety of factors such as availability of poisons, socio economic status of population, religious beliefs and cultural influences. The data regarding poisoning cases in south India is scarce. Hence, the present study was carried out.

MATERIALS AND METHODS: This was a hospital-based, descriptive, cross sectional study conducted for a period of one year, from January 2021 to December 2021.

RESULTS: Out of 152 cases, majority were males (63.16%) and from rural area (83.55%). The most common age group involved was between 21 to 30 years (41.45%). Suicidal poisoning was common (57.74%) followed by Accidental poisoning (34.21%), while none of them were of homicidal in nature. Organophosphorus compounds, Household products, and Rodenticides were the most commonly used poisons.

CONCLUSION: The present study concludes that acute poisoning is a distressing public health problem. It affects the larger number of male population. The commonest poisoning agent was Organophosphorus compound. The occurrence was high among married males and in the age group of 21 – 30 years. The incidence of acute poisoning, morbidity and mortality related to the poisoning can be diminished by developing and implementation of appropriate preventive strategies. words:

KEYWORDS | EPIDEMIOLOGIC STUDIES; ACUTE POISONING; ORGANOPHOSPHOROUS COMPOUNDS; HOUSEHOLD PRODUCTS.

INTRODUCTION

Acute poisoning is one of the major causes of morbidity and mortality worldwide, with 90% of the burden of fatal poisoning cases are from developing countries.¹ Approximately 258,000 fatal cases of pesticide self-poisoning are reported globally each year, most from

Author's Credentials:

¹Assistant Professor, Department of Forensic Medicine & Toxicology, Government Medical College and Hospital, Virudhunagar 626001, Tamilnadu, India, ²Assistant Professor, Department of Forensic Medicine & Toxicology, Tirunelveli Medical College and Hospital, Tirunelveli 627011, Tamilnadu, India, ³Assistant Professor, ⁴Professor, Department of Forensic Medicine & Toxicology, Vinayaka Mission's Medical College, Vinayaka Mission's Research Foundation (Deemed to be University), Karaikal 609609 Pondicherry, India.

Corresponding Author:

Thumma Amar, Assistant Professor, Department of Forensic Medicine & Toxicology, Vinayaka Mission's Medical College, Vinayaka Mission's Research Foundation (Deemed to be University), Karaikal 609609 Pondicherry, India..

Email: amar.thumma@gmail.com

Received on: 20.09.2022

Accepted on: 24.10.2022



How to cite this article:

J Venkatesaprasanna, Prasanna Parthasarathy, Thumma Amar, et al./A Study on Profile of Poisoning Cases in a Tertiary Care Hospital at Karaikal. Indian J Forensic Med Pathol.2022;15(4):231-235.

Asian countries, and the figure is greatly exceeded by the number of poisoned patients who seek treatment at health facilities.² Data regarding the other kinds of poisonings are limited and are quite variable depending on the geographical area, socio-economic factors and cultural diversity.³ The low to middle economy nations carry disproportionately larger share (84%) of poisoning cases reported globally.⁴ The mortality percentage due to acute poisonings in the developed countries is 2%, while in a developing country like India, it is alarming and as high as 30% with approximately fifty thousand Indians dying annually.⁵

Pattern of poisoning in any region depends on variety of factors such as availability of poisons, socio economic status of population, religious beliefs and cultural influences.⁶ The aetiology of poisoning may be either intentional (suicidal or homicidal) or unintentional (accidental).⁷

With the rapid advancement in the development of newer chemicals and drugs, the problem is getting worse. Information available is limited, including hospitalized patients because of poor regulations and limited health care services in our country.

Several studies done in India have shown organophosphates (OPs) as the most common agents of poisoning.² Some of the recent studies have found change in the trends of poisoning in certain parts of India with an increasing incidence of poisoning with aluminum phosphate.⁸

The data regarding poisoning cases in south India is scarce. Hence, the present study was carried out with the objectives to know the pattern of poisoning cases and to study the socio-demographic profile of victims of poisoning in a rural tertiary care hospital in Karaikal.

MATERIALS AND METHODS

This was a hospital-based, descriptive, cross sectional study conducted at Vinayaka Mission's Medical College and Hospital, Karaikal, which is a tertiary care teaching hospital in rural part of Pondicherry state. This study was carried

out for a period of one year, from January 2021 to December 2021. All the poisoning cases admitted during the study period to the emergency ward, intensive care unit, and medicine wards were included in the study. In the present study, cases of food poisoning and adverse drug reaction were excluded.

The interviewing technique was employed as a tool for data collection. A pre-designed structured proforma was used to record the necessary information. Informed consent was obtained from the study participants. The diagnosis of poisoning was based on a history given by the patients or relatives and clinical examination. The required laboratory tests were also performed to confirm the diagnosis of poisoning whenever possible.

The data including demographic profile of patients, time of exposure to poison, time interval between poisoning and hospitalization, duration of hospital stay, nature and chemical type of poison, clinical manifestations of patients, treatments delivered to patients, outcome and circumstances of poisoning was collected. The poisons were classified into various groups based on their usage and / or their chemical classification.

Data was entered and analysed by using 'EpiCollect5' software. Descriptive statistics was used to summarize baseline characteristics of the study participants. The analyzed data was presented in the form of text, tables, and charts.

Ethical clearance was obtained from the institutional ethics committee before commencement of this study.

RESULTS

A total of 152 admitted cases of acute poisoning were enrolled in this study based on inclusion and exclusion criteria. In the current study, 96 (63.16%) patients were males and 56 (36.84%) were females. Most of the patients of acute poisoning were from rural area, i.e., 83.55%, and majority of them were farmers and fishermen, i.e., 55.26%. The most common age group involved was between 21 to 30 years, i.e., 41.45%. Majority of them were married, i.e., 84.21% and were belonged to low socioeconomic class, i.e., Class IV and V, 114

(75%) (Table 1).

Table 1: Socio-demographic profile of victims of poisoning

Variables	Number of cases	Percentage (%)
Gender		
Male	96	63.16
Female	56	36.84
Age group		
<20	15	9.87
21-30	63	41.45
31-40	41	26.97
>40	33	21.71
Domicile		
Rural	127	83.55
Urban	25	16.45
Socioeconomic class		
Class I	5	3.29
Class II	6	3.95
Class III	27	17.76
Class IV	66	43.42
Class V	48	31.58
Marital status		
Married	128	84.21
Unmarried	23	15.13
Divorced	1	0.66
Occupation		
Student	31	20.39
Farmer	52	34.21
Fisherman	32	21.05
Homemaker	29	19.08
Laborer	6	3.95
Self business	1	0.66
Government servant	1	0.66

Suicidal poisoning was common, i.e., 57.74% followed by Accidental poisoning 34.21%, while none of them were of homicidal in nature. Organophosphorus compounds, Household products, and Rodenticides were the most commonly used poisons, i.e., 80.26%. (Figure 1)

Table 2: Time interval between poisoning and hospitalization, Outcome and Manner of poisoning

Variables	Number of cases	Percentage (%)
Time interval between poisoning and hospitalization (hours)		
<1	73	48.03
1-3	61	40.13
3-6	12	7.89
6-12	4	2.63
>12	2	1.32
Outcome		
Death	16	10.53
Survived	136	89.47
Manner of poisoning		
Accidental	54	35.53
Suicidal	98	64.47
Homicidal	0	0

As shown in Table 2, in the present study, majority of the cases, i.e., 88.13% reached the hospital within 3 hours of exposure, of which >54% reached within 1 hour of exposure. Mortality rate was noticed in the present study as 10.53%.

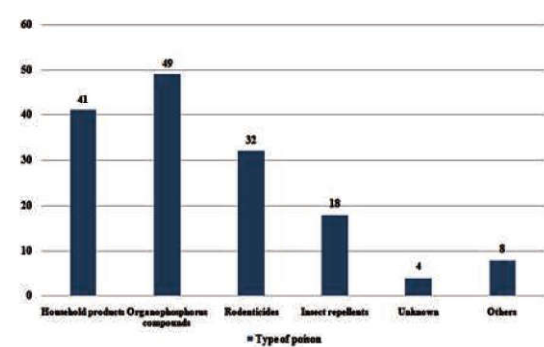


Fig. 1: Type of poison

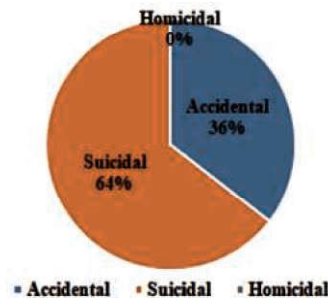


Fig. 2: Manner of poisoning

DISCUSSION

In the present study, men outnumbered women that was similar to findings of the study conducted by Vedpathak et al.⁹ Male: female ratio observed in the study was 1.71, which was similar to a study conducted by Prayaget al.¹⁰, Churi et al.¹¹, Maharani and N. Vijayakumari.¹² This might be due to the fact that men are more exposed to various levels of stress, and engaged in dangerous occupational and environmental conditions. Among the cases studied, most of the victims of acute poisoning were from rural area. The current study shows that the most of cases belonged to the age group of 21-30 years. The availability of data of acute poisoning in adults is scarce in our region. We observed that poisoning was most common in productive age group (21-30 years) that imparts a huge socioeconomic burden on the society. Acute poisoning was commonly seen among male farmers followed by fishermen and students. Majority of the patients belonged to low socio-economic class. This might be attributed to financial crises at domestic level. Similar findings were reported by Somasundaram et al.¹³ Majority of the poisoning cases were suicidal (57.75%), which is in accordance with the findings of other studies.^{11,14} All cases of poisoning in children were accidental in nature. The similar findings were reported by Fan AY et al.¹⁵ The possible reason for the accidental consumption of poisons in children could be increased outdoor activity, putting objects into mouth by curiosity and consumption of unknown liquids carelessly kept in uncapped bottles.

Organophosphorous compounds were the most commonly preferred poison followed by household products and rodenticides. The same was in accordance with the other studies done in South India by Kora et al.¹³ Vedpathak et al.⁹ Prayaget al.¹¹ Ease of availability, low cost, deficient regulation on sales of organophosphorous compounds and major occupation in this region being agriculture may be responsible for preference of these compounds. However, a study conducted in New Delhi showed that drugs and insecticides were the most commonly preferred agents. This difference within the country may be due

to difference in pattern, use, and availability of poison. In addition, difference in urbanization and literacy can also be responsible. Ours is an agriculture-based society and owing to easy availability of organophosphorous compounds, these are the most commonly used substances in poisoning.

Most of the patients were admitted within 3 hours of consumption of poison. Mortality rate was noticed in the present study as 11.26%. This rate was comparable to the study by Vedpathak et al.⁹ and Patil et al.¹⁶ This mortality rate was less than the study conducted by Somasundaram et al.,¹³ i.e., 15% but higher than that reported by Padmanabhaet al.¹⁷ As maximum number of cases reached the hospital within 3 hours of toxic exposure which enabled early initiation of treatment. This could be a reason for low mortality rate.

LIMITATIONS

Limitations of the present study may be smaller sample size and shorter duration of the study. Also, the diagnosis of the poisoning was made from patient's history and clinical examination, while they were not confirmed with laboratory testing in majority of the cases. Further studies with larger sample size, longer study duration along with confirmatory laboratory investigations will give better picture of the situation.

CONCLUSION

The present study concludes that acute poisoning is a distressing public health problem. It affects the larger number of male population. The commonest poisoning agent was Organophosphorus compound. The occurrence was high among married males and in the age group of 21 - 30 years. The incidence of acute poisoning, morbidity and mortality related to the poisoning can be diminished by developing and implementation of appropriate preventive strategies. The healthcare establishments should take necessary actions to create awareness about the dangers of poisons. Establishing a 'poison control center' in the region will aid in prevention of poisoning events. Healthcare authorities must prioritize

the acquisition of antidotes of the common poisons used in the area, so that timely and effective management is possible to save valuable lives.

Conflict of Interest:

Nil

Source of Funding:

Nil

Acknowledgement:

Nil

REFERENCES

- Batra AK, Keoliya AN, Jadhav GU.** Poisoning: An unnatural cause of morbidity and mortality in rural India. *J Assoc Physicians India* 2003 October;51:955-9.
- Gunnell D, Eddleston M, Phillips MR, Konradson F.** The global distribution of fatal pesticide self-poisoning: Systematic review. *BMC Public Health*. 2007;7:357.
- Dash SK, Aluri SR, Mohanty MK et al.** Sociodemographic profile of poisoning cases. *Journal of Indian Academy of Forensic Medicine* 2005; 27(3): 133-8.
- World health organization. International Programme on Chemical Safety, Poisoning Prevention and Management. 2020.
- Pillai VV.** *Modern Medical Toxicology*. 4th ed. New Delhi: Jaypee Brothers Medical Publishers. 2013:5
- Ramesha KN, Rao KBH, Kumar GS.** Pattern and outcome of acute poisoning cases in a tertiary care hospital in Karnataka, India. *Indian Journal of Critical Care Medicine*. 2009 Sep;13(3):152-5.
- Nadeem MN, Maqdoom M, Akif ME.** A Prospective Observational Study on Pattern of Poisoning Cases Reported to Emergency Department of a Teaching Hospital in South India. *Biomed Pharmacol J*. 2020 Dec 31;13(4):1863-9.
- Murari A, Sharma GK.** A comparative study of poisoning cases autopsied in LHMC, New Delhi and JIPMER, Pondicherry. *J Forensic Med Toxicol*. 2008;19(1):18-20.
- Vedpathak VL, Pise HN, Kharade P.** Clinico-epidemiological profile of acute poisoning cases admitted in a rural tertiary care hospital of Maharashtra. *Int J Med Sci Public Health* 2017;6(7):1150-1154.
- Prayag A, Ashtagi GS, Mallapur MD.** Pattern of poisoning cases at a tertiary health-care center, Belagavi. *Int J Med Sci Public Health*. 2016;5(8):1698-701.
- Churi S, Ramesh M, Bhakta K, Chris J.** Prospective assessment of patterns, severity and clinical outcome of Indian poisoning incidents. *Chem Pharm Bull (Tokyo)*. 2012;60(7):859-64.
- B. Maharani and N. Vijayakumari.,** Profile of poisoning cases in a Tertiary care Hospital, Tamil Nadu, India. *J App Pharm Sci*. 2013; 3 (01): 091-094.
- Somasundaram KV, Patil A, Shukla S.** Epidemiological profile of OP poisoning cases treated at Pravara hospital, Loni, India. *Indian Prev Soc Med*. 2009;40(3):184-8.
- Peshin SS, Srivastava A, Halder N, Gupta YK.** Pesticide poisoning trend analysis of 13 years: A retrospective study based on telephone calls at the National Poisons Information Centre, All India Institute of Medical Sciences, New Delhi. *J Forensic Leg Med*. 2014;22:57-61.
- Fan AY, Che AH, Pan B, Yang C, Coulter CV, Shieffelbien L, et al.** Investigating Childhood and Adolescence Poisoning Exposures in New Zealand Reported to the National Poisons Centre during 2000-2009. *Asia Pac J Med Toxicol* 2013;2(2):52-7.
- Patil A, Peddawat R, Varma VS, Gandhi H.** Profile of acute poisoning cases treated in a tertiary care hospital: A study in Navi Mumbai. *Asia Pac J Med Toxicol*. 2014;3(1):36-40.
- Padmanabha TS, Kashinath G, Kulkarni GP.** Study of profile of organophosphorus cases in a tertiary care hospital, North Karnataka, Bidar, India. *Int J Pharm Bio Sci*. 2014;5(1):332-9.

