

## Original Article

# Profile of Fatal Poisoning Cases in Chitradurga District, Karnataka

Ajay Kumar S<sup>1\*</sup>, Sidramappa Gouda<sup>2</sup>, YC Rudresh<sup>3</sup>, HC Govindaraju<sup>4</sup>, Chandan V<sup>2</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Postgraduate Students, <sup>4</sup>Professor, Basaveshwara Medical College, Chitradurga-577502, Karnataka, India

<sup>3</sup>Specialist in Forensic Medicine and Toxicology, District Hospital, Chitradurga-577502, Karnataka, India

\*Corresponding author email id: ajayhospet@gmail.com

### ABSTRACT

A one-year retrospective study was undertaken to ascertain the incidence of poisoning deaths in and around Chitradurga district of Karnataka state, which were autopsied at District Government Hospital, Chitradurga. Out of 343 autopsies conducted, 73 were deaths due to poisoning. The commonest age group of affected victims was 21–30 years. Males outnumbered females in a ratio of 1.8:1. The most commonly used poison was an organo-phosphorus compound. Most of the cases were suicidal in nature and maximum were from rural population.

**Keywords:** Poisoning, Insecticides, Chitradurga

### INTRODUCTION

Poisoning both accidental and intentional is a significant contributor to mortality and morbidity throughout the world. World Health Organization conservatively estimates that about 3 million cases of poisoning occur every year in the world and about 2,20,000 (2.2 Lac) deaths occur due to poisoning. Of these, 99% of fatal poisoning occurs in developing countries particularly among agriculture workers. About 50,000 deaths occur every year in India due to poisoning alone.<sup>1</sup> Profile of poisoning in an area depends upon a variety of factors, ranging from access to and availability of poison, literacy, socio-economic status of the individual, cultural and religious influences, etc.

The easy availability and unsafe storage practices of pesticides in the homes of the rural poor mean that many acts of self-harm, at moments of acute distress, have fatal and sometimes unintended consequences<sup>2</sup>. Even though the advanced medical treatment and awareness, the deaths due to poisoning cases are increasing day by day. As various chemicals are in use in modern era, they are very handy for misuse or accidental calamity as well. Most of the people prefer them for the purpose of suicide, as

poisons leading peaceful death<sup>3</sup>. An attempt has been made to find out some epidemiological factors, pattern and other significant features of poisoning in the Chitradurga district of Karnataka.

### MATERIALS AND METHODS

The present study was conducted in the District Government General Hospital, Chitradurga (Karnataka), during the period of 1 year from January 2012 to December 2012. During this period, total 343 autopsies were conducted. Out of these 343 cases, poisoning was observed in 73 cases. Death due to snakebite and other animal bites and stings were included in the study. Relevant data were obtained from hospital case records, police records and chemical examiner's reports (from Regional Forensic Science Laboratory, Davangere). A proforma was designed to get uniform information from all the above-mentioned sources.

### RESULTS

Among 73 cases of poisoning studied during January 2012 to December 2012, majority of the victims were in the age group of 21–30 years (36.99%). Males outnumbered

females and most of the victims were married. The commonest manner of poisoning was suicide both in males and females (87.70%) followed by accidental poisoning. Not a single case of homicidal poisoning was observed in our study. Most of the victims belonged to rural area, i.e., 69 (94.5%) in comparison to urban area (05.5%) and more cases recorded in summer season (53.4%). The commonest type of poison (74%) encountered was organo-phosphorus compounds.

### DISCUSSION

Trends of the poisons seem to be a function of need and availability of specific substances. Since last few years, there is a significant increase in the misuse of agrochemicals. Despite of tremendous progress in all fields of life, snakebite continues to be the major cause of morbidity and mortality in India. The incidence of poisoning in the present study was 21.28%.

In our study, maximum number of deaths, 36.99%, was noticed in the third decade (21–30 years.) of life followed by 19 cases (26.03%) in fourth decade (31–40 years.) and only 1 case was seen in first decade (1–10 years.). Significant decrease in both extreme age groups observed. The incidence of poisoning was higher in third decade (21–30 years.) of life, which is consistent with other studies<sup>1-12</sup> and this might be due to the fact that this age group is the determining factor of the life in terms of

**Table 1: Age- and sex-wise distribution of poisoning cases**

Age (in years)	Female		Male		Total	
	No.	%	No.	%	No.	%
0–10	00	00	01	2.13	01	1.37
11–20	06	23.08	02	4.25	08	10.96
21–30	11	42.31	16	34.04	27	36.99
31–40	04	15.39	15	31.92	19	26.03
41–50	03	11.54	08	17.02	11	15.06
51–60	01	3.84	02	4.26	03	4.11
61–70	00	00	02	4.26	02	2.74
71–80	01	3.84	01	2.12	02	2.74
Total	26	100	47	100	73	100

**Table 2: Sex-wise distribution of poisoning cases**

Sex	Total	
	No.	%
Male	47	64.39
Female	26	36.61
Total	73	100.0

**Table 3: Distribution of poisoning cases according to marital status**

Marital status	Female		Male		Total	
	No.	%	No.	%	No.	%
Married	17	65.4	34	72.3	51	69.9
Unknown	00	0.0	01	02.1	01	01.4
Unmarried	09	34.6	12	25.5	21	28.8
Total	26	100.0	47	100.0	73	100.0

**Table 4: Religion-wise distribution of poisoning cases**

Religion	Female		Male		Total	
	No.	%	No.	%	No.	%
Hindu	26	100.0	43	91.5	69	94.5
Muslim	00	0.0	03	06.4	03	04.1
Unknown	00	0.0	01	02.1	01	01.4
Total	26	100.0	47	100.0	73	100.0

**Table 5: Area-wise distribution of poisoning cases**

Area	Total	
	No.	%
Rural	69	94.5
Urban	04	05.5
Total	73	100.0

studies, service, marriage and other life settlement factors. Therefore, they are subjected to a substantial amount of mental stress and strain during this period.

Males outnumbered females, the male/female ratio being 1.8:1. In our study, there is a male predominance (64.39%) and this high incidence may be because males are more exposed to stress, strain and occupational hazards compared to females, which is similar to the observations reported in different studies<sup>1,4,6,7,9-11</sup>. We observed that married person (number of cases-51, 69.90%) more often become victim of poisoning compared to unmarried person (number of cases-21, 28.80%), which was found similar with other studies<sup>1,5,8-11</sup>. The reason of fact could be that the amount of stress carried by the married people on their day to day life is more than the single males or females, which makes them more vulnerable.

In our study, 69 (94.5%) cases were Hindus, which is more when compared to Muslims, 3 (4.1%). This may be due to religious beliefs and low per cent of Muslim population in and around Chitradurga district and is consistent with other Indian studies<sup>1,7,8</sup>. In our study, majority of cases were from rural domicile (number of

www.IndianJournals.com  
Members Copy, Not for Commercial Sale  
Downloaded from www.IndianJournals.com  
IP: 10.58.20.24  
Date: 10/05/2014

cases-69, 94.5%) and similar findings were seen in other studies<sup>4,-7,9-12</sup>.

Most of the studies<sup>2,6,7,10,11</sup> including our study show that most of the cases were suicidal deaths. This inference of manner of death is based on history given either by police or and by relative. Increasing stress and strains in life and diminished mental strength to cope up with this stress may be the reason behind this; other reasons may be free and easy availability, social problems like marital disharmony, economic hardship, disagreement, scolding, un-employment, adjustment problem, quarrel with other members, etc. Our study showed eight (11%) accidental poisoning cases and none homicidal poisoning but in one case manner of death was not known.

**Table 6: Distribution of poisoning cases according to the manner of death**

Manner	Female		Male		Total	
	No.	%	No.	%	No.	%
Accidental	02	07.7	06	12.8	08	11
Not known	00	00	01	02.1	01	01.4
Suicide	24	92.3	40	85.1	64	87.7
Homicide	00	00	00	00	00	00
Total	26	100	47	100	73	100

**Table 7: Season-wise distribution of poisoning cases**

Season	Female		Male		Total	
	No.	%	No.	%	No.	%
Rainy	09	34.6	19	40.4	28	38.4
Summer	15	57.7	24	51.1	39	53.4
Winter	02	07.7	04	08.5	06	08.2
Total	26	100.0	47	100.0	73	100.0

**Table 8: Distribution of poisoning cases according to the type of poison**

Type of poison	Female		Male		Total	
	No.	%	No.	%	No.	%
Alcohol	00	0.0	01	02.1	01	01.4
Alcohol+organo-phosphorous	00	0.0	01	02.1	01	01.4
ALP	04	15.4	01	02.1	05	06.8
Alprazolam	00	0.0	01	02.1	01	01.4
Carbamate	01	03.8	00	0.0	01	01.4
Kerosine	01	03.8	00	0.0	01	01.4
Organophosphorous	18	69.2	36	76.6	54	74.0
Scorpion sting	00	0.0	01	02.1	01	01.4
Snake bite	02	07.7	05	10.6	07	09.6
Sulphuric acid	00	0.0	01	02.1	01	01.4
Total	26	100.0	47	100.0	73	100.0

Season-wise variation was seen in the poisoning incidence in the present study with summer showing the maximum numbers of victims. The same trend was reported by others.<sup>5,9</sup> In other few studies<sup>4,8</sup> showed that winter is the most vulnerable period of poisoning. Incidence of poisoning is more during summer months, which can be attributed because summer days being longer and during which the person becomes easily fatigued and exhausted as a result of extreme heat conditions tilting his mental balance and attitude towards life. The preservation of grain starts from March, which is related directly to the overall use of pesticides and variety of chemicals. Therefore, the sudden rise of cases from February to March is mainly due to this fact, while the succeeding months are the time of school, college examination and results followed by admissions in new classes<sup>5</sup>.

In the present study, commonest poison observed was the organo-phosphorus (number of cases-54, 74%). Similar type of findings was noted by other authors<sup>2,4,5,7,9-12</sup>. Aluminium phosphide poisoning was seen in five cases (6.8%), followed by each case of poisoning by alcohol, alprazolam, carbamate, kerosene, sulphuric acid was seen. However, seven (9.6%) cases of snake bite and one case (1.4%) of scorpion bite were observed. Most of the people in India are mainly dependent on agriculture, insecticides are available abundantly and easily even in local shops. The easy availability and cheaper price have made them a popular killer agent in the present study.

## CONCLUSION

It has been observed that there is an alarming increase in cases of poisoning mainly for suicidal purposes. India is a predominantly dependent on agriculture and therefore organo-phosphorous was found to be the most common cause for acute poisoning with high mortality, due to its high fatality rate. Strict legislative measures over sale and purchase of the insecticides may prevent the occurrence of poisoning to some extent. Above all, increase in public awareness about the seriousness of problem through health education and efforts to distress and develop a healthy outlook towards life should be undertaken. The changing trends of poisoning need to be studied on a regional basis for proper health-care policy planning, so as to equip the hospitals/health-care centres

in a particular region for early proper diagnosis and effective treatment of such cases. Establishment of poison detection centre helps to know the type of poison in particular and also help the clinicians in treating the patients.

## REFERENCES

1. Prajapati K, Merchant SP, Patel PR. Trends of Suicidal Poisoning In Ahmedabad. *NHL J Med Sci* 2012; 1(1): 18-22.
2. Shetty AK, Jirli PS, Bastia BK. Incidence of Poisoning Deaths in and Around Belgaum, Karnataka—A Retrospective Autopsy Survey. *J Indian Soc Toxicol* 2010; 6(2): 34-36.
3. Gupta BD, Vaghela PC. Profile of Fatal Poisoning in and around Jamnagar. *J Ind Acad Forensic Med* 2005; 27(3): 145-48.
4. Sandhu SS, Dalal JS. Trends of poisoning in Faridkot region of Punjab- A retrospective study of one year. *J Indian Acad Forensic Med* 2002; 32(1): 8.
5. Dash SK, Raju AS, Mohanty MK, Patnaik KK, Mohanty S. Sociodemographic profile of poisoning cases. *J Ind Acad Forensic Med*, 2005; 27(3): 133-38.
6. Sharma BR, Relhan N, Gupta N and Singh H. Trends of fatal poisoning in Northern India: A ten-year autopsy analysis. *J Pharmacol Toxicol* 2007; 2(4): 350-58.
7. Sangalad PN, Huddar MG. Pesticide poisoning among agriculturists of dharwad district: A study. *Recent Res Sci Technol* 2010; 2(4): 109-11.
8. Kora SA, Doddamani GB, Halagali GR, Vijayamahantesh SN, Umakanth B. Sociodemographic profile of the organophosphorus poisoning cases in Southern India. *J Clin Diagn Res* 2011; 5(5): 953-56.
9. Mugadlimath A, Bagali MA, Hibare SR, Ingale DI, Gupta N, Bhuyyar C. Study of socio-demographic profile of poisoning cases at Shri B M Patil Medical College Hospital and Research Centre, Bijapur. *Int J Cur Res Rev* 2012; 4(20): 80-84.
10. Tapse SP, Shetty VB, Jinturkar AD. Profile of fatal poisoning in and around Bidar, Karnataka. *Ind J Forensic Med Toxicol* 2012; 6(1):127-29.
11. Santhosh CS, Kumar S, Nawaz B. Profile of poisoning cases autopsied at District government Hospital, Davangere. *Ind J Forensic Med Toxicol* 2012; 6(1): 104-06.
12. Radhika RH, Kashyap BRS. Pattern of Poisoning at a tertiary care hospital in Bangalore, India: A retrospective two year survey. *J Indian Soc Toxicol* 2012; 8(2): 16-20.