

## Original Research Article

**The incidence of poisoning among medicolegal postmortem cases**Dr. Ashwini Kumar<sup>1</sup>, Dr. T. Krupal Singh<sup>2</sup>, Dr. B.V Naga Mohan<sup>3</sup><sup>1</sup>Associate professor, Department of Forensic medicine, Medciti institute of Medical sciences, Ghanapur, Medchal, Hyderabad, Telangana<sup>2,3</sup>Professor, Department of Forensic medicine, Kakatiya Medical College, Warangal, Telangana**\*Corresponding author**

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**Abstract:** Reports of World Health Organization (WHO) poisoning are one of the leading causes of increased morbidity and mortality. Multiple agents such as organo-phosphorous poisons, pesticides, drugs have been used for poisoning in various countries and regions. Pesticides and organo phosphorous are most commonly used poisoning agents in Indian scenario. The present study was undertaken to study the incidence of poisoning among the medicolegal postmortem cases. Highest incidence of poisoning cases in the age group of 21 to 30 years. The poisoning cases were more common in married individuals in which married males were more. The maximum incidence of poisoning cases was suicidal in manner as 83 out of 158 cases. In related to nature of poison indicates that organ-phosphorous compounds are mostly used suicidal purposes as 61 cases out of 83 suicidal cases of poisoning and out of 18 accidental cases 11 accidental poisoning was observed by consuming alcohol. By conducting educational, counselling programs and services in rural areas and poison information services to the needy people may reduce the poisoning cases.

**Keywords:** Poison, Incidence, Suicide, organo-phosphorous poisoning

**INTRODUCTION**

Poisons which had cumulative effect in the human body. The medieval period of European history witnessed poisoning taking the shape of regular art and was practiced by secret agents and societies carefully catering the needs of ambitious royal heirs and nobles [1].

The nature of poisons ingested will vary from place to place depending up on the habits, socio-economic condition and the nature of substance in daily use in home [2]. Also India being a very vast country, with marked diversities in the geographical and seasonal distribution, culture, mode of living, education and Socio-economic variants etc., concerned with recent emergence of the new agro industrial phenomenon as a natural result of developing country. So many newer problems, till now insignificant have risen with marked dissimilarity from place to place, poisoning being one such which may be true about poisoning in one part of the country may not be at all so in another region [3, 4].

The present study has been undertaken to study the nature of poisons involved in incidences of poisoning, the signs and symptoms developed, age and sex incidences, socio-economic factor marital status in relation to poisoning, the effects of poisons on the fate of the patients whether recovered or died, the nature of poison in relation to the mode of poisoning, whether suicidal, accidental or homicidal. The study has been made on the patients admitted to Kakatiya Medical College, Warangal in addition to the bodies directly reach to mortuary Kakatiya Medical College, Warangal as bought in dead and also found died at open places and hidden places brought directly by the police people to Mortuary. The study of the above factors is likely to give some useful information on incidences of poisoning cases.

**MATERIALS AND METHODS**

The present observations on incidence and study of poisoning cases in united Andhra Pradesh region has been made on post mortem cases of poisoning done in Department of Forensic Medicine, Kakatiya Medical college, Warangal The following details have been

collected from all the cases sex, marital Status, social status, education status, occupation, name of the month and season, place of consumption of poison, period of survival, place of death, manner of poison, manner of poison in relation to sex, manner of poison in relation to age, manner of poison in relation to social status, manner of poison in relation to marital status, manner of poison in relation to nature of poison, nature of poison, nature of poison in relation to sex, nature of poison in relation to age, nature of poison in relation to social

status, social Factors as per given by I.O, pathological Disease predisposing poisoning, psychological Cause predisposing poisoning, lab report and post mortem findings

**RESULTS**

A total 158 cases out of 1054 post mortem cases have been included in the present study which is indicating that males are predominant 122 out of the 158 poisoning cases. (Table 1)

**Table 1: Sex incidence of poisoning cases**

Sex	No.of cases	Percentage
Male	122	77.2
Female	36	22.8

**Table 2: The age incidence of poisoning cases**

Age group	No of cases	Percentage
0-10	00	00
11-20	25	15.8
21-30	52	32.9
31-40	37	23.5
41-50	35	22.2
51-60	06	3.7
61-70	03	1.9
71-80	00	00

The age incidence of poisoning cases of the present series. The above table indicating highest incidence of poisoning cases in the age group of 21 to 30 years as 52 cases observed in this age group out of total 158 poisoning cases. (Table 2).

The poisoning cases were more common in married individuals in which married males were more than in

109 married individuals in 158 cases of poisoning cases and married male individuals are 86 out of the 109 married individuals. The incidence of poisoning cases more in the middle income group people i.e. 72 out of 158 cases, which is closely followed by the low income group as 70 cases. The high income group is least affected.

**Table 3: Seasonal incidence of poisoning cases**

Rainy season	July	23	63
	Aug	13	
	Sept	12	
	Oct	15	
Winter season	Nov	08	48
	Dec	08	
	Jan	18	
	Feb	14	
Summer season	March	11	47
	April	11	
	May	13	
	June	12	

The seasonal incidence indicating that poison cases reported in rainy season maximum in i.e., 63, in which

maximum monthly incidence of 23 cases (Table 3).

**Table 4: Manner of poisoning in present study**

Total no. of cases	Homicidal	Suicidal	Accidental	Other causes
158	01	83	18	56
Percentage	0.7	52.5	11.3	35.5

The above table indicating in the present series the maximum incidence of poisoning cases was suicidal in manner as 83 out of 158 cases (Table 4).

**Table 5: Showing incident of nature of poison in different sexes**

Nature of poison	No of cases	Male		Female		
		Number	Percentage	Number	Percentage	
Organo phosphorous	62.93(39.24%)	39	62.91	23	37.09	
Organo chlorine	3(1.9%)	2	66.67	1	33.33	
Carbamate	7(4.44%)	4	57.14	3	42.86	
Rat poison	3(1.9%)	0	0	3	100	
Corrosives	6(3.8%)	4	66.67	2	33.33	
Plants & seeds	1(0.63%)	0	0	1	100	
Alcohol	15(9.49%)	15	100	0	0	
Animal poison	Snake bite	2(1.27%)	1	50	1	50
	Insect bite	1(0.63%)	1	100	0	0
Drugs	1(0.63%)	1	100	0	0	
Food poisons	0	0	0	0	0	
House hold poison(wood polish)	1(0.63%)	1	100	0	0	
Pre-existing pathological diseases in which poisoning suspected	56(35.44%)	54	96.43	2	3.57	

**DISCUSSION**

Poison causes damage and endangers life due to expose by injection and inhalation [5]. Worldwide various agents such as agrochemicals, drugs or environmental agents are used as poisoning agents [6]. Worldwide intentional poisoning is one of the important causes for mortality and morbidity [7]. Exposure to agrochemicals, medicines and environmental agents are the major causes of poisoning.

In the present study the incidence of poison cases is 158 out of all 1054 post mortem cases which indicates a gradual rise in the incidence of the poisoning that i.e. 14.99% of the total cases. Sex incidence of the poisoning cases indicates that males are more affected i.e. 122 out of 158. Findings indicate that frustrations in various walk of life precipitating suicidal poisoning in males. Ghimere *et al.*; noted significant rise in percentage of male poisoning cases from 31.4% to 42.7% [8]. Where as in study by Paudyal BP found

female preponderance. In another study, 59.5% of cases were females and 40.5% males [9].

The age incidence of the cases is highest in 21-30 years i.e. 52 cases. Married individuals are affected than unmarried in this study. In the present study 72 out of 158 poisoning cases were belongs to middle class and 70 were lower belongs to economic group.

In the present study, the manner of poisoning in related to nature of poison indicates that organo-phosphorous compounds are mostly used suicidal purposes as 61 cases out of 83 suicidal cases of poisoning and out of 18 accidental cases 11 accidental poisoning was observed by consuming alcohol. Above findings is consistent with Neil Kessel *et al.*; Rai SPD *et al.*; This is evident from other studies done in south India [10-14]. In contrast, the incidence of aluminum phosphide was found to be high in north Indian studies done by Bajaj *et al.*; and others [15-18]. Several studies

have reported that pesticides were the most commonly used agents for poisoning in Asia Pacific Regions [19-21].

Environmental poisoning was also found as a significant cause in poisoning admissions to the hospital. Reptile bite is one of the major environmental poisoning occurring in rural areas than the urban area.

## CONCLUSION

Incidences of international poisoning are rising day to day due to social, emotional and professional stress. The findings of present study indicating that males are more predominantly affected. The vulnerable age group is 21-30 years. Most of the individuals affected by poisoning belong to middle income group. Most of the poisoning cases are due to organo-phosphorus compounds. Majority cases of poisoning are suicidal in manner. Most suicidal cases are male individuals in which married male individuals are more affected. The mortality and morbidity due to poisoning can come down by conducting educational, counselling programs and services in rural areas and poison information services to the needy people.

## REFERENCES

1. Sharma BR, Harish D, Sharma V, Vij K. The epidemiology of poisoning: An Indian view point. *Journal of forensic Medicine and Toxicology*. 2002; 19(2):5-11.
2. Narayana Reddy KS. Toxicology, General consideration. Narayana Reddy K S. *Essentials of Forensic Medicine and Toxicology*. 2010:446-65.
3. Singh G, Khurana D. Neurology of acute organophosphate poisoning. *Neurology India*. 2009 Mar 1; 57(2):119.
4. Thomas WF, John HD, William RH. *Stedman's Medical Dictionary*. 28th Ed. New York: Lippincott William and Wilkins; 2007: 2004.
5. Hempstead K. Manner of death and circumstances in fatal poisonings: evidence from New Jersey. *Injury prevention*. 2006 Dec 1; 12(suppl 2):ii44-8.
6. Eddleston M, Phillips MR. Self-poisoning with pesticides. *BMJ: British Medical Journal*. 2004 Jan 1; 328(7430):42.
7. Jeyaratnam J. Acute pesticide poisoning: a major global health problem. *World Health Stat Q*. 1990; 43(3):139-44.
8. Chakrabarti K, Devkota KC. Retrospective study of suicide cases admitted in Nepal Medical College Teaching Hospital. *Nepal Medical College journal: NMCJ*. 2004 Dec; 6(2):116-8.
9. Paudyal BP. Poisoning: pattern and profile of admitted cases in a hospital in central Nepal. *JNMA J Nepal Med Assoc*. 2005 Jul 1; 44(159):92-6.
10. Adlakha A, Philip PJ, Dhar KL. Organophosphorus and carbamate poisoning in Punjab. *The Journal of the Association of Physicians of India*. 1988 Mar; 36(3):210.
11. Jaiprakash H, Sarala N, Venkata Rathnamma PN, Kumar TN. Analysis of different types of poisoning in a tertiary care hospital in rural South India. *Food and chemical toxicology*. 2011 Jan 31; 49(1):248-50.
12. Jesslin J, Adepu R, Churi S. Assessment of prevalence and mortality incidence due to poisoning in a south Indian tertiary care teaching hospital. *Indian Journal of Pharmaceutical Science*. 2010(Sep- Oct); 72(5): 587-591.
13. Shetty VB, Pawar GS, Inamadhar PI. Profile of poisoning cases in district and medical college hospitals of north Karnataka. *Indian Journal of Forensic Medicine & Toxicology*. 2008; 2(2):26-8.
14. Ramesha KN, Rao KB, Kumar GS. Pattern and outcome of acute poisoning cases in a tertiary care hospital in Karnataka, India. *Indian Journal of critical care Medicine*. 2009 Jul 1; 13(3):152.
15. Banjaj R, Wasir HS. Epidemic aluminium phosphide poisoning in northern India. *The lancet*. 1988 Apr 9; 331(8589):820-1.
16. Sagar MS, Sharma RK, Dogra TD. Analysis of changing patterns of unnatural fatalities in South Delhi (Comparative study of 1977-1980 and 1988-1991). *J For Med and Toxicol*. 1993; 10(1):22-5.
17. Lall SB, Peshin SS, Seth SS. Acute poisoning: A ten years retrospective hospital based study. *Ann Natl Acad Med Sci*. 1994; 30(1):35-44.
18. Singh VP, Sharma BR, Dasari H, Vij K. A ten year study of poisoning cases in a tertiary care hospital. *Indian internet journal of forensic medicine & toxicology*. 2004; 2(1).
19. Rao S, Venkateswarlu V, Surender T, Eddleston M, Buckley NA. Pesticide poisoning in south India: opportunities for prevention and improved medical management. *Tropical medicine & International Health*. 2005 Jun 1; 10(6):581-8.
20. Aaron R, Joseph A, Abraham S, Muliylil J, George K, Prasad J, Minz S, Abraham VJ, Bose A. Suicides in young people in rural southern India. *The Lancet*. 2004 Apr 3; 363(9415):1117-8.
21. Roberts DM, Karunarathna A, Buckley NA, Manuweera G, Sheriff MH, Eddleston M. Influence of pesticide regulation on acute poisoning deaths in Sri Lanka. *Bulletin of the World Health Organization*. 2003 Nov; 81(11):789-98.