

## Research Article

## Analytical Study of Poisoning Cases in and Around Visakhapatnam

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**Abstract: Objective:** To determine and classify the various types of poisoning deaths as seen at Andhra Medical College, KGH Mortuary, Visakhapatnam City. **Materials and Methods:** This is a prospective study of deaths due to poisoning seen in the Department of Forensic Medicine & Toxicology, Andhra Medical College, Visakhapatnam City over a 1 year period (January 2017 -December 2017) as postmortem reports, inquest reports and hospital records. **Observations:** Poisoning is one of the commonest methods of committing suicide especially in developing countries like India. A total of 1646 autopsies were done during the period. One hundred and thirty-two cases representing 132 cases (8.02%) of all bodies received by the mortuary were deaths due to poisoning. Organophosphate compounds were the most commonly 63.6 % abused substance. The common motive of poisoning was suicidal 82.6 % with male to female ratio 4.73:1 Peak incidence was observed in the age group 21-40 years. Type of poison consumed, socioeconomic status and place of household are also ascertained. **Conclusion:** This study shows the pattern of poisoning deaths in Visakhapatnam and this preliminary data will provide a baseline for future research and help in formulating policies to prevent deaths due to poisoning.

**Keywords:** Poisoning, autopsies, suicide, organophosphates, Visakhapatnam.

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## INTRODUCTION

Medico legal death is a term used to describe any violent, unclear or suspicious death that must be subjected to legal investigation (Browne, C., & Dorries, C.P. 2010). Various countries use different medico legal systems like medical examiner system, coroner system, procurator fiscal system (Prahlow, J. A., & Lantz, P. E. 1995). In India, Police and Magistrate system of death investigation has been used.

Poisoning both accidental and intentional is a significant contributor to mortality and morbidity throughout the world. Poisoning is a common method of suicide has been known since antiquity. The choice of agents used for poisoning depends on the availability, cost, harmful effects of poison and regional consideration.

Due to fast development in the field of agriculture and industrial sectors, easy availability of toxic substance in market without any objection or documentation is becoming global phenomena but also

plays a major role in accidental and suicidal poisoning in developing countries like India.

As per W.H.O., about 3 million cases of poisoning occur every year in the world wide, of which 99% of fatal poisoning cases occur in developing countries.

The present study, covers a 1 year period. The aim of study was to know the actual magnitude, pattern and profile of poisoning cases in teaching hospital setting in Visakhapatnam.

- There is really no boundary between a medicine and a poison, for a medicine in a toxic dose is a poison and a poison in a small dose may be medicine. In law, the real difference between a medicine and a poison is the intent with which it is given. If a substance is given with the intention to save life, it is a medicine but if it is given with the intention to cause bodily harm it is a poison (Ch. Parikh. 2014).

- Pattern of poisoning in a region depends on variety of factors, such as availability of the poisons, socioeconomic status of the population, religious, cultural influences and availability of drugs (Reddy, K. N. 2017).

## MATERIALS AND METHODS

The present study is Cross sectional analytical (Observational) study, death due to poisoning in and around Visakhapatnam which are subjected to post mortem examination in the mortuary of Andhra Medical College, King George Hospital, Visakhapatnam, India during the period January 2017 to December 2017. All cases of poisoning death autopsies during the study period i.e. one hundred and thirty-two 132 cases. Among them 126 cases were registered under 174 Cr. PC and 6 cases under 306 IPC.

### Inclusion Criteria

- Cases sent from different wards in KGH and other hospitals within Visakhapatnam city.

- Cases brought in dead either from home or by police or common public to hospital.

### Exclusion Criteria

Deaths due to snake envenomation, stings and food poisoning were excluded from this study. Sources of information included autopsy registers of department, personal data from inquest forms, forensic science laboratory reports and autopsy findings from postmortem reports.

## RESULTS & DISCUSSION

### Number of Autopsies conducted in KGH basing on type of death

A total number 1646 of medico legal autopsies were conducted by the Department of Forensic Medicine during the period of study (01/01/2017 to 31/12/2017). Among these deaths due to poisoning accounts for 132 cases (8.02%). This occupies 5<sup>th</sup> place in most common cases, Road traffic accidents are the most common.

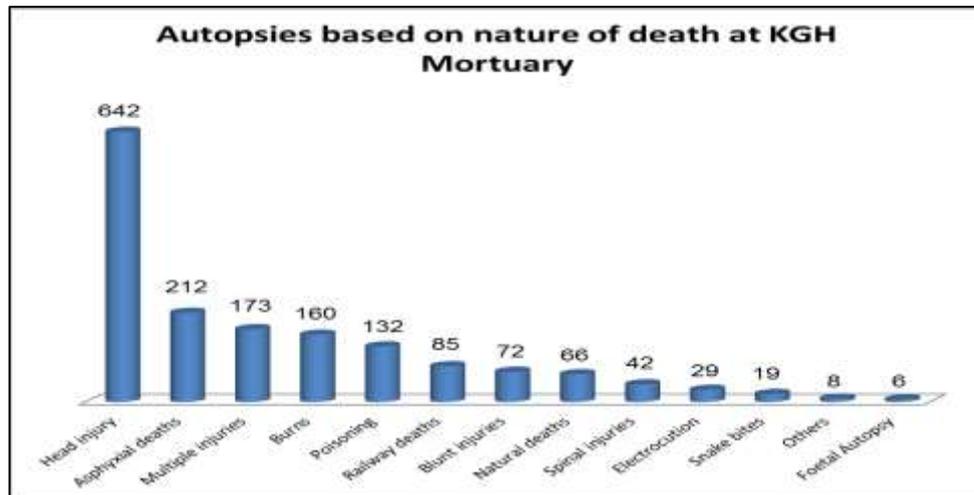


Figure1: Total Autopsies Vs poisoning deaths

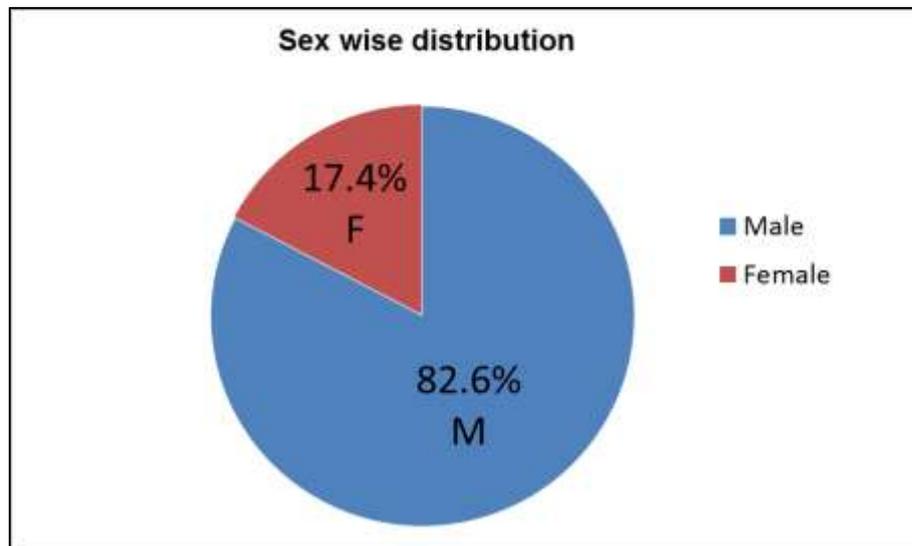


Figure 2: Sex wise distribution of cases

In poisoning deaths, male preponderance is observed, with male female ratio of 4.73:1 is similar to reports by other studies (Khosya, S., & Meena, S. R. 2015; Panda, B. B. *et al.*, 2015; Haloi, M. *et al.*, 2013; Maharani, B., & Vijayakumari, N. 2013; Gupta, B. D., & Vaghela, P. C. 2005; Siddapur, K. R. *et al.*, 2011; Dash, S. K. *et al.*, 2005; Abubakar, S. *et al.*, 2014; Vijayamahantesh, S.N., & Vijayanath, V. 2010; & Batra, A. K. *et al.*, 2003; & Patil, A. *et al.*, 2014). This

may be due to paternalistic nature of our environment with more men being involved in outdoor and agricultural activities.

Males are exposed to enormous amount of stress, strain and occupational hazards to a greater extent when compared to females as they are bread earners particularly in the field of farming.

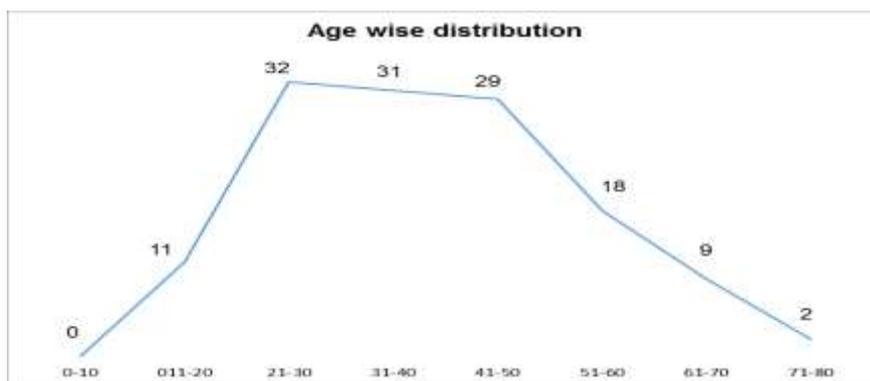


Figure 2: Age Wise Distribution of Cases

Also, 47.7% of cases were between 21 to 40 years agrees reasonably with mean ages reported in other studies<sup>5-15</sup> thus constituting great manpower loss

to our nation as the most active age group of society is affected.

Table1: Occupational Status

S.No.	Occupation	No of cases	Percentage
1.	Agriculturists (Farmers)	31	23.4
2.	Daily Labor	21	15.9
3.	House wife	16	12.1
4.	Not known	14	10.6
5.	Private job	09	6.8
6.	Student	09	6.8
7.	Security guard	06	4.6
8.	Driver	06	4.6
9.	Shop keeper	05	3.8
10.	Government job	05	3.8
11.	Unemployed	03	2.3
12.	Painter	02	1.5
13.	Carpenter	02	1.5
14.	Others	03	2.3
	<b>Total</b>	<b>132</b>	<b>100</b>

Occupational status also ascertained in our study. Majority being farmers and agricultural laborers contributing 23.4%. other daily labourers are 15.9%. majority of women died due to poisoning are home makers (12.1%). cause of death is not known in 10.6%. easy availability and accessibility of poisons

particularly insecticides by agriculture workers or farmers is the reason for high incidence in them which is consistent with studies (Khosya, S., & Meena, S. R. 2015; Panda, B. B. *et al.*, 2015; Gupta, B. D., & Vaghela, P. C. 2005; Siddapur, K. R. *et al.*, 2011; Abubakar, S. *et al.*, 2014).

**Table-2:** Pattern of Poisoning

S.No.	Type of poison	No. of cases	Percentage
1.	Organophosphate	84	63.6
2.	Paraquat	12	9.1
3.	Ethyl alcohol intoxication	11	8.3
4.	Acid poison	07	5.3
5.	Phosphide	05	3.8
6.	Organochlorine	04	03
7.	Drugs	03	2.3
8.	Unknown	02	1.5
9.	Paraphenylene diamine	02	1.5
10.	Sulphur	01	0.8
11.	Oleander	01	0.8
	<b>Total</b>	<b>132</b>	<b>100</b>

Majority of deaths are by agricultural poisons like organophosphate compounds dominating with 63.6% of cases followed by paraquat (9.1%), ethyl alcohol intoxication (8.3%) and acid poisoning (5.3%), Phosphides (3.8%) As visakhapatnam and north coastal districts were agriculture based income and they opt this as commonest method of suicide in rural areas.

Medicinal drugs contributing to 2.3% (3cases) which is significant. Organophosphorus compounds

(84) were commonly used pesticide in this locality which is similar to studies (Khosya, S., & Meena, S. R. 2015; Haloi, M. *et al.*, 2013; Maharani, B., & Vijayakumari, N. 2013; Siddapur, K. R. *et al.*, 2011; Dash, S. K. *et al.*, 2005; Abubakar, S. *et al.*, 2014; Vijayamahantesh, S.N., & Vijayanath, V. 2010; & Batra, A. K. *et al.*, 2003). Out of 84 cases, in 78 cases RFSL report revealed organophosphate, in 5 cases specifically came as monocrotophos and 1 case as phorate.

**Table 3:** Manner of Death

S.No.	Manner	No of cases	Percentage
1.	Suicidal	109	82.6
2.	Accidental	23	17.4
3.	Homicidal	00	00
	Total	132	100

Poisoning is one of the commonest methods of committing suicide especially in developing countries like India. In our study 82.6% of poisoning deaths are suicides, 17.4% of cases are accidental poisoning and homicidal cases were nil. Suicidal poisoning cases are more than accidental poisoning which is similar to other studies (Khosya, S., & Meena, S. R. 2015; Panda, B. B. *et al.*, 2015; Haloi, M. *et al.*, 2013; Maharani, B., & Vijayakumari, N. 2013; Gupta, B. D., & Vaghela, P. C. 2005; Siddapur, K. R. *et al.*, 2011; Abubakar, S. *et al.*, 2014; & Batra, A. K. *et al.*, 2003).

## CONCLUSION

The present study helps to interpret the pattern of trends of poisons and poisoning is the commonest method of committing suicide and Organophosphate compounds are choice.

The high incidence of suicide by poisoning among young adults can be checked by frequent psychological counseling and by tackling their problems sympathetically.

Education of the community with regard to proper storage and use will reduce the incidence of

poisoning. Laws should be made strict for sale and usage of pesticides.

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