

**AN ANALYTICAL STUDY OF DEATHS DUE TO POISONING IN VISAKHAPATNAM***V. Chandrasekhar<sup>1</sup>, P. Ramakrishna<sup>2</sup>, P. Venkataramana Rao<sup>3</sup>*

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**ABSTRACT**

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**BACKGROUND**

The aim of this study was to determine and classify the various types of poisoning deaths as seen at Andhra Medical College Mortuary, Visakhapatnam city.

**MATERIALS AND METHODS**

This is a retrospective study of all the deaths due to poisoning seen in the Department of Forensic Medicine & Toxicology, Andhra Medical College, Visakhapatnam City over a 15 year period (January 2001-December 2015) as recorded in the autopsy registers and postmortem reports of the department.

**RESULTS**

Poisoning is one of the commonest methods of committing suicide especially in developing countries like India. A total of 22475 autopsies were done during the period. Two thousand seventy four cases representing 9.23% of all bodies received by the mortuary were deaths due to poisoning. Organophosphate compounds were the most commonly abused substance. The common motive of poisoning was suicidal 93.43% with male to female ratio 6.69:1. 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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**BACKGROUND**

Medico legal death is a term used to describe any violent, unclear or suspicious death that must be subjected to legal investigation.<sup>1</sup> Various countries use different medico legal systems like medical examiner system, coroner system, procurator fiscal system.<sup>2</sup> In India, Police and Magistrate system of death investigation has been used.

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<sup>3</sup>.

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

**MATERIALS AND METHODS**

Study Design- An Observational Retrospective Study.

Study Setting- King George Hospital Mortuary, Visakhapatnam, Andhra Pradesh.

Period of Study- January 2001 to December 2015.

Sample Size- All cases of poisoning death autopsies during the study period i.e. two thousand and seventy four (2074) cases. Among them 2068 cases were registered under 174 Cr. PC and 6 cases under 302IPC.

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**Inclusion Criteria**

1. Cases sent from different wards in KGH and other hospitals within Visakhapatnam city.
2. Cases brought in dead either from home or by police or common public to hospital.

**Exclusion Criteria**

1. 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 AND DISCUSSION**

During the 15-year study period a total of 22475 cases were reported of which 2074 cases were Poisoning deaths (Table-1). There was, however, a progressive rise in rate of autopsies from 2001 to 2015, Poisoning cases accounted for 9.23% of total autopsies (Table-2).

In poisoning deaths, male preponderance is observed (Figure-1), with male female ratio of 6.69:1 is similar to reports by other studies.<sup>4,5</sup> This may be due to paternalistic nature of our environment with more men being involved in outdoor and agricultural activities

Also, 72.5% of cases were between 21 to 40 years agrees reasonably with mean ages reported in other studies.<sup>4,5</sup> thus constituting great manpower loss to our nation as the most active age group of society is affected (Figure-2).

Occupational status also ascertained in our study. Majority being farmers and agricultural labourers contributing 25%. Other workers, students and small scale business people contributing to nearly 17% each. Majority of women died due to poisoning are homemakers 13% (Figure-3).

Majority of deaths are by agricultural poisons like organophosphate compounds dominating with 78.98% of cases followed by phosphides (5.2%), organochlorines (2.5%) and carbamates (1.6%). As Visakhapatnam and North coastal districts were agriculture based income and they opt this as commonest method of suicide in rural areas. Corrosives accounted for 3.2% of cases. Medicinal drugs contributing to 2.9% (60 cases) which is significant (Figure-4).

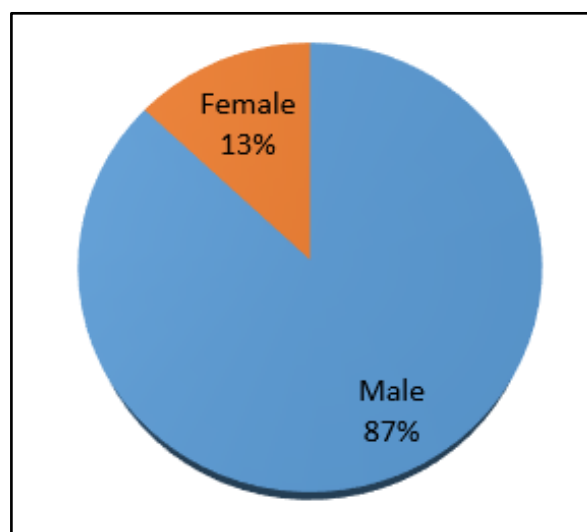
Poisoning is one of the commonest methods of committing suicide especially in developing countries like India.<sup>6</sup> In our study 93.4% of poisoning deaths are suicides, 6.3% of cases are accidental poisoning and 6 cases (0.3%) of homicidal manner were also reported (Figure-5).

Year	Number of Cases (n)
2001	1054
2002	1123
2003	1158
2004	1171
2005	1217
2006	1419
2007	1432
2008	1614
2009	1684
2010	1772
2011	1670
2012	1780
2013	1848
2014	1786
2015	1747
Total	22475

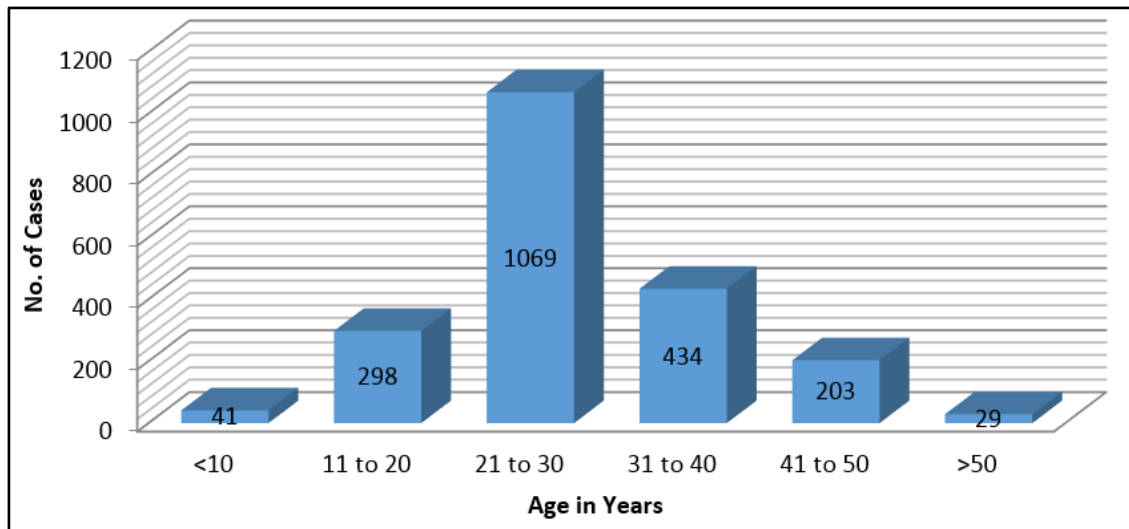
**Table 1. Year wise Distribution of Autopsy Cases**

Cause of Death	No. of Cases (n)	Percentage
Head Injuries	9017	40.12
Burns	2422	10.78
Multiple Injuries	2364	10.52
Poisoning	2074	9.23
Hanging	1737	7.73
Natural deaths	1660	7.39
Drowning	1052	4.68
Blunt Injury Chest/Abdomen	845	3.76
Electrocution	380	1.69
Snake envenomation	157	0.7
Strangulation	112	0.5
Foetal autopsies	112	0.5
Others	498	2.21
Not ascertained	45	0.2
<b>Total</b>	<b>22475</b>	<b>100</b>

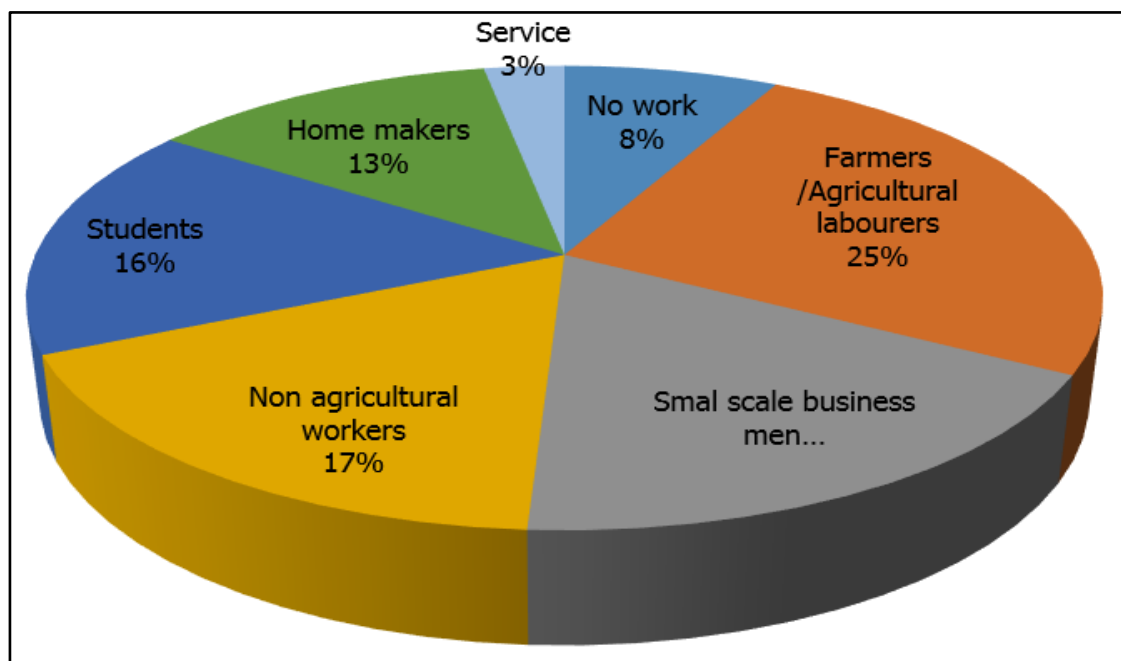
**Table 2. Total Autopsies Vs Poisoning Deaths**



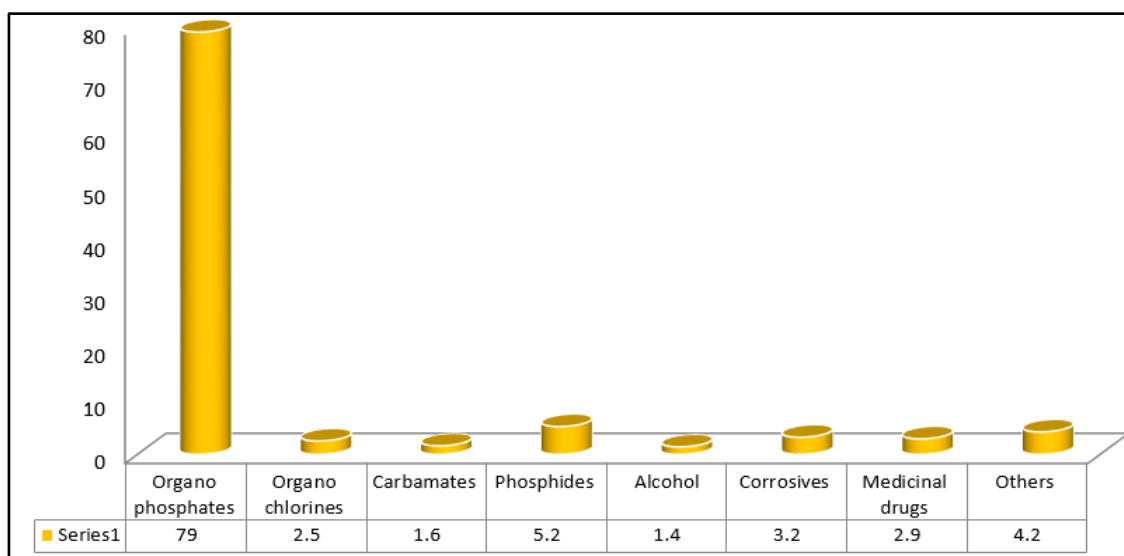
**Figure 1. Sex Wise Distribution of Cases**



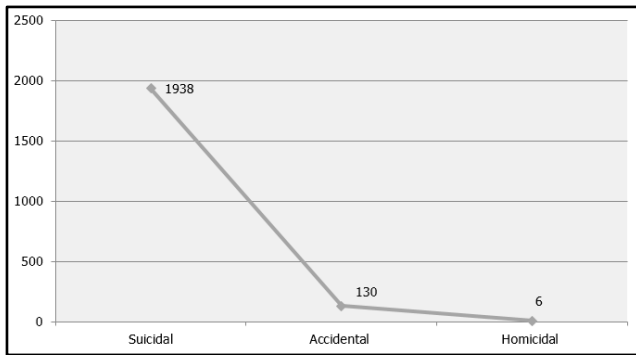
**Figure 2. Age Wise Distribution of Cases**



**Figure 3. Occupational Status**



**Figure 4. Pattern of Poisoning**



**Figure 5. Manner of Death**

### 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.<sup>7</sup>

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. Agriculture usage of insecticides/pesticides should be done by trained persons with proper precautions as like pest control agencies so that reduce morbidity/mortality. Poison

substance should keep in safe place to avoid accidental consumption by children or illiterates.

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