

Sociodemographic Profile of Fatal Poisoning in Gulbarga Region- A two year study

Vijayamahantesh S.N.*

Vijayanath V.**

ABSTRACT

Background: Poisoning is one of the common causes of unnatural deaths and continues to a major health problem in the developing countries. **Material & Method:** A prospective study of sociodemographic profile of poisoning cases of Gulbarga region from 1st January 2004 to 31st December 2005 using the data from hospital admission papers, police records, postmortem reports, suicide notes if any, history from the relatives & friends accompanying the deceased and chemical analysis report from Regional Forensic Science Laboratory. **Results:** Out of 910 autopsies conducted in District Hospital of Gulbarga, during the study period, 188 were due to poisoning. Majority of the victims were in the age group of 20 to 30 years. More than three fourth of the victim were from rural areas. Distribution of suicidal cases showed male preponderance, majority of the victims being illiterate and agriculturist by occupation with maximum number of fatalities in the month of August. Most of the cases were suicidal in nature and financial problem was the most common reason for consumption of poisons. Chronic illnesses, harassment by in-laws, psychiatric illness, and academic failure were the other main reasons for poisoning. Chemical analysis report showed that Organophosphorus groups of compounds were the most commonly found poison. Organochlorines and carbamate compounds were the other commonly used poisons.

Key words: Poisonings, Suicide, Organophosphorus compounds

INTRODUCTION

Poisonings both accidental and intentional are a significant contributor to mortality and morbidity throughout the world. Acute poisoning forms one of the commonest causes of emergency hospital admissions. Majority of fatal poisoning cases occur in the developing countries particularly among the agricultural workers.

According to WHO, three million acute poisoning cases with 2,20,000 deaths occur

annually. It has been estimated that about 5-6 persons per lakh of population die due to poisoning every year¹, mortality rate in developed countries due to poisoning is 1-2% whereas in India it varies from 15-35%.²

Considering these facts about the magnitude of the problem an attempt has been made in the present study to make an analysis of poisoning cases in terms of various epidemiological features. The results of study is based on the findings of a two year prospective study which is undertaken at the department of forensic medicine to study the impact of age, sex, domicile, educational status, marital status, seasonal variations on the poisoning fatalities in this region. The present study also aims to know substances commonly used by the victims. The present study may help different professionals to know the reasons for such fatalities and may help them suggest suitable preventive measures to limit such cases in the future if not totally eliminate such cases.

Author's Affiliation: *Associate Professor, Department of Forensic Medicine, S. Nijalingappa Medical College, Navanagar, Bagalkot - 587102, Karnataka. **Associate Professor, Department of forensic medicine, S.s.institute of medical sciences & research centre, Davangere -577005, Karnataka, india, E mail; drvijayanath@rediffmail.com

Reprint's request: Dr. Vijayamahantesh S.N., Associate Professor, Department of Forensic Medicine, S. Nijalingappa Medical College, Navanagar, Bagalkot - 587102, Karnataka

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MATERIAL AND METHODS

The present is a prospective study comprises the profile of all 188 poisoning deaths that are subjected to autopsy at Government General Hospital, Gulbarga during the study period i.e., from 1st January 2004 to 31st December 2005. During the study period, the total 910 autopsies are conducted out of which 188 deaths are due to poisoning. A proforma was evolved to get detailed uniform information from different sources. These different sources are hospital case records, police records suicide notes left over by victims, postmortem reports of all poisoning cases, chemical analysis reports from Regional Forensic Science Laboratory and also by direct interrogation from the relatives, friends and other accompanying the deceased. Only cases with clear history of poisoning were included. All cases of acute alcohol /drug intoxication which contributed to the cause of death in road traffic accidents were also included in the present study.

RESULTS

Total 910 autopsies were conducted in the study period out of which 188 deaths are due to poisoning (20.66%). Poisonings are the second most common manner of unnatural deaths (20.66%) after the accidents i.e., 64.12% of all autopsies conducted.

As depicted in the table-1 that the maximum number of deaths due to poisoning are in the age

group of 20 to 30 years (30.85%) followed by less than 20 years (23.41%). Poisoning deaths showed that the male are preponderance with male to female ratio of 1.47:1.00 (Table-1).

Majority of poisoning deaths are seen in married people i.e., 112 (59.57%) (Table-2). Rural victims are outnumbered the urban victims constituting 148 cases (78.72%) (Table-3). Majority of the victims are illiterate i.e., 95 (50.53%) (Table-4). Most of the victims 79 (42.02%) are agriculturists by occupation (Table-5).

The most common reasons for consuming the poison is due to financial problems the victim faced prior to death in as many as 37.23%. The other reasons are due to, chronic illnesses (15.96%), academic failure (5.32%), dowry related problems (4.79%), extramarital affairs of self /spouse (3.72%), love failure (2.66%), being infected with HIV (2.66%), sexual assaults (1.06%), etc. (Table-6).

Maximum number of deaths due to poisoning are documented in the month of August i.e. 28 (14.89%) followed by 22 cases (11.79%) in the month of December and least number occurred in the month of April (3.75%) (Table-7).

As per chemical analysis report, the most common poison which responsible for causing death is organophosphate compounds 63 (33.51%) followed by organochlorine compounds 39 cases (20.75%). Corrosives are the least common group of poisons used (1.06%) (Table-8). Although the chemical analysis report showed negative in 18 cases while the cause of death in such cases is

Table1: Age and sex wise distribution of poisoning deaths

Age	Males		Females		Total	
	No=112	%	No=76	%	No=188	%
<20 yrs	26	21.21	18	23.69	44	23.41
20-30yrs	33	29.67	25	32.89	58	30.85
30-40yrs	19	16.96	09	11.85	28	14.89
40-50yrs	12	10.71	08	10.68	20	10.64
50-60yrs	15	13.48	11	14.62	26	13.83
>60yrs	07	06.37	05	06.77	12	06.38

attributed to poisoning due to positive findings of symptoms, hospital case records, inquest papers and poisoning which based on clinical signs and and other circumstantial evidences.

Table 2: Distribution of poisoning deaths according to Marital Status

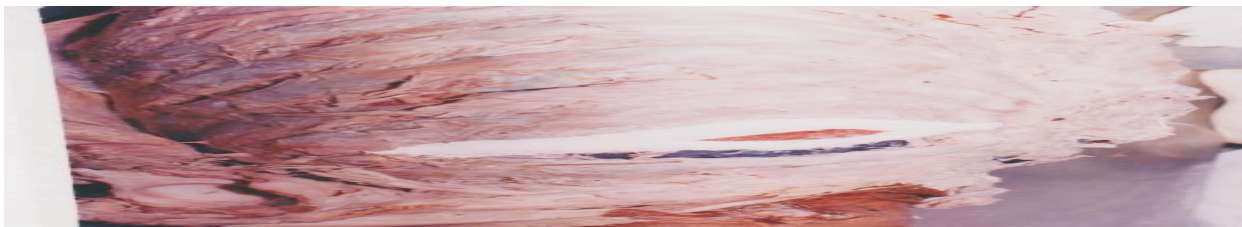


Table 3: Domicile wise distribution of poisoning Deaths

Domicile	Males		Females		Total	
	No=112	%	No=76	%	No=188	%
Rural	87	77.68	61	80.26	148	78.72
Urban	25	22.32	15	19.74	40	21.73

Table 4: Distribution of deaths due to poisoning according to Educational status

Education	No = 188	%
Illiterate	95	50.53
Primary	46	24.47
Higher Primary	23	12.23
Graduate	24	12.77

Table 5: Distribution of poisoning Deaths according to Occupation

Occupation	Total	
	No=188	%
Agriculture	79	42.02
Labourer	42	22.34
Business	22	11.70
Student	17	9.04
Govt/private service	21	11.17
others	07	3.72

Table 6: Reasons for consumption of poisons

Reason	Males		Females		Total	
	No=112	%	No=76	%	No=188	%
Financial problems	49	43.75	21	27.63	70	37.23
Chronic Illness (other than psychiatric illness)	18	16.07	12	15.79	30	15.96
Psychiatric Illness	07	06.25	03	03.93	10	05.32
Harassment by in-laws	00	00.00	09	11.84	09	04.79
Extramarital Affair of self or spouse	03	02.68	04	05.26	07	03.72
Love Failure	02	01.79	03	03.93	05	02.66
Sex Assault	00	00.00	02	02.63	02	01.06
HIV Positive	03	02.68	02	02.63	05	02.66
Academic Failure	04	03.57	06	7.89	10	05.32
Death of Family Member	00	00.00	04	5.26	04	2.13
Infertility	00	00.00	03	3.95	03	01.60
Not Known	03	02.68	02	2.63	05	02.66
Accidental exposure	23	20.54	05	06.58	28	14.89

Table 07: Month wise distribution of poisoning Deaths

Month	Males		Females		Total	
	No=112	%	No=76	%	No=188	%
January	11	9.82	07	9.21	18	9.57
February	08	7.14	05	6.58	13	6.91
March	08	7.14	07	9.21	15	7.98
April	04	3.58	03	3.95	07	3.73
May	06	5.36	04	5.26	10	5.32
June	07	6.25	06	7.89	13	6.91
July	10	8.93	07	9.21	17	9.04
August	18	16.07	10	13.16	28	14.89
September	11	9.82	05	6.58	16	8.51
October	06	5.36	06	7.89	11	5.85
November	08	7.14	09	11.85	17	9.04
December	15	13.39	07	9.21	22	11.70

Table 8: Distribution of poisoning Deaths as per autopsy findings and results of chemical analysis

POISONS DETECTED	Males		Females		Total	
	No=112	%	No=76	%	No=188	%
Organophosphates	36	32.14	27	35.53	63	33.51
Organochlorines	17	15.18	22	28.95	39	20.75
Carbamates	20	17.86	12	15.79	32	17.02
Benzodiazepines	03	02.68	03	03.95	06	03.19
Alcohol	08	07.14	00	00.00	08	4.26
Snake bites	08	07.14	04	09.26	12	06.38
Scorpion bite	04	03.58	01	01.32	05	02.66
Corrosives	02	01.79	00	00.00	02	01.06
Organic irritants	01	00.89	02	02.63	03	01.60
Negative results	13	11.61	05	06.58	18	09.57

DISCUSSION

Poisons are subtle and silent weapons, which can be easily used without violence and often without arousing suspicion. In recent times due to vast development in all fields of life like industries, medicine and agriculture a significant number of new poisonous compounds have appeared as new a poisonous substance which has resulted in more number of fatalities due to poisoning.

The present study consisted of 188 cases of fatal poisonings which were subjected to autopsy at Government General Hospital, Gulbarga. The results of the present study were compared with the studies by different workers from other parts of the country and abroad as well.

In the present study male victims (112) outnumbered the females (76). The male female ratio is being 1.47:1 and these tallies with the other studies^{3, 4, 5, 6, 7}. The high incidence may be because males are more exposed to stress, strain and occupational hazards compared to females^{8, 9}.

The most common age group involved in our study was between 20-30 years followed by the age group between 1-20 years. Thus there is a need for intervention program designed specifically for adolescents and young adults. A pattern similar to this has been reported else where in India and abroad^{3, 4, 6, 10, 11, 12}. This might be due to modern life style, stress, tension, family and social problems.

Maximum number of fatalities in the study was found in the married which was found to be similar with other studies^{3, 13, 14}. More number of deaths in the married people can be explained by the fact that married people are more likely to come under the responsibilities and stress of life besides dowry related problems.

Farmers were most common group affected by poisoning in the present study accounting for 42.02% which coincides with other studies^{14, 15}. This is so because larger segment of our population comes from these groups. The study also shows that maximum number of victims were from rural areas with 78.72%. This can be explained by the fact that majority of people in these area are

dependent on agriculture and this makes more accessible to agriculture related poisons. More than half the victims were illiterates (50.53%).

Analysis of poisoning deaths that took place in two year period shows that incidence of such cases are more in the months of August followed by December. Reason could be more usage of the pesticides for crops during these months making them easily available to the vulnerable people. But this is in contrast with study conducted by Dattarwal S.K in which more cases are found in the month of May and June.¹⁴

Majority of the poisonings are suicidal in nature except in 28 cases which are accidental in nature. Out of these 28 cases 17 are due to snake and scorpion bites. There is no single case of homicidal poisoning in our study. These finding is similar to the other studies conducted^{16, 17, 18, 19, 20, 21}. This inference of manner of death is based on history given either by police or and relatives. The most common reasons for consuming the poison is due to financial problems the victim faced prior to death in as many as 37.23%. The other reasons are due to, chronic illnesses, academic failure, dowry related problems, extramarital affairs of self /spouse, love failure, being infected with HIV, sexual assaults, etc. No similar study is found in the literature for comparison.

The chemical analysis reports from Regional Forensic Science Laboratory indicate that the organophosphorus poisons are responsible causing maximum number of deaths. The next is organochlorines followed by carbamates. Similar types of findings are noted by the other workers^{9, 20, 22, 23}. This could be attributed to easy availability of these insecticides related to their occupation or otherwise. The viscera were not sending for chemical analysis in 17 cases of snake and scorpion bite since there are no facilities available in our region to test for the presence of such venom or toxins. In remaining 171 cases, the viscera were sent for chemical analysis. Out of 171 cases, the 21 cases showed negative results of which three cases are due to organic irritants which included two cases of poisoning by datura seeds and one by seeds of abrus precatorius. In these three cases seeds are recovered from the stomach of the deceased.

Most of the authors except Gupta B.D²⁰ and Nigam *et al*²⁴ have studied the incidence of type of poisoning based on history given to them by police, relatives of victim and medical case papers and not based on reports of chemical analyzer^{16,17,18,19,21}. In the present study, we have tried to categorise the poisons causing death based on autopsy examination and chemical analysis report.

LIMITATIONS OF THE STUDY

This is a study conducted in a tertiary care teaching hospital in the city of Gulbarga and may not reflect the complete scenario/ magnitude of the problem in this part of the country.

There may be good number of cases in the community, which might not have been reported at all. Some other cases might have been taken care of by primary health centres and hence exact incidence of the suicidal cases in the study cannot be determined.

CONCLUSION

Pattern of poisoning in present study is more or less similar to the pattern found in most of the other studies. Most poisoning is by agricultural poison. In that category the organophosphorus groups in tops of the list. This study helps to identify people at risk and the common scenario involved.

There is an urgent need to strengthen the legislature on availability of drugs and poisons substance in the market. This can regulate the manufacture, sale, transport and use of pesticides with a view to prevent risk to human beings. Establishing new poison information centers and developing the existing ones is the need of hour. Enlightenment through educating young people about harmful effects of drugs, introducing separate toxicological units in the hospitals and upgrading the peripheral health centers to manage cases of poisoning in emergency could

possible help us to bring down the morbidity and mortality rate.

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