Original Research Article

Profile of poisoning in India: An autopsy-based study

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Abstract

This prospective observational study was carried out over a span of one year extending from 01-January 2016 to 31-December 2016 in a premier medical institute of Haryana state of India where cases are being referred from all over the state for all kinds of treatment and post-mortem examination. All the cases of death due to poisoning were included into the study and details were obtained from the police inquest papers and relatives family members accompanying the deceased for autopsy. Out of total 338 death due to poisoning, parameters like type of the family, season of the year in which poisoning occurred, survival time after consumption of the poison and diurnal variation of the intake of poison were included and analyses. Study revealed that out of 338 poisoning cases 63.6% used to live in a nuclear family, 28.1% cases occurred in summer, most of the poisoning occurred in evening 37.9% and most of the death occurred within 6 hours of ingestion of the poison.

Key Words: Autopsy, Diurnal Variation, Nuclear Family, Ingestion

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INTRODUCTION

According to World Health Organization (WHO) reports, about 3 million people around the world consume poison every year, out of them 2, 20,000 deaths occur annually. About 99% of these deaths occur in the developing countries. About 50,000 deaths occur in India due to poisoning every year.[1] variety of factors are responsible for it. With the revolutionary changes in Indian system like green revolution and industrialization the use of pesticides, insecticides and organophosphorus compounds become a boon to agriculturists and horticulturists to protect crops and stored grains from pests and rodents. Though these substances have been in the market only for a few decades in our country, they have created many serious problems, because most suicides in the recent years have been traced to their oral intake.[2,3]

In India, due to the relative ease with which poisons are available, naturally or in the market, cases of human poisoning are commoner than the West. In cities, cases of poisoning by acids, cyanides and various alkaloids are of occasional occurrence. Accidental poisonings are more uncommon here than in developed countries, though instances of accidental poisoning of agricultural and industrial workers are reported. Thus all forms of poisoning namely homicidal, suicidal and accidental are reported from all parts of the country.[4]

AIMS AND OBJECTIVES

The present study was conducted to find out the possible sociodemographical profile and pattern of acute poisoning which is necessary not only for the purpose of early diagnosis and treatment of poisoning but also for its preventions.

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MATERIAL AND METHODS

This study was done in a tertiary care centre of Haryana state of India i.e. Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana. All the poisoning cases brought to the mortuary of Department of Forensic Medicine were included in this study. Out of total 1483 postmortem examinations done in year 2016, the poisoning were 338. This study excluded the death due to snake bike or other insect bites. The ethical clearance was obtained from the institutional ethical committee. The written consent for the research work was obtained from the nearest of the kin. A standardized proforma was prepared and various parameters were noted. Data thus obtained was statistically analyzed using statistical software (SPSS) Statistic 20.

OBSERVATIONS

After analyzing the data the following findings were obtained. The type of family in which the individual used to live:-

Table 1: Distribution of the cases on the basis of type of family

	Male		Female		Total	
Period of the day	**Number**	**%**	**Number**	**%**	**Number**	**%**
Nuclear	82	34.5%	41	41%	123	36.4%
Joint	156	65.5%	59	59%	215	63.6%
Total	**238**	**100%**	**100**	**100%**	**338**	**100%**

(Chi square- 1.10; p-value: 0.177)

As mentioned in table 1 that the most of the cases lived in a joint family i.e. 215 out of 338(63.6%) and 123 cases i.e. 36.4% were living in the nuclear family. Out of 100 females, 59 used to live in joint families i.e. 59% while 41% used to live in nuclear families. The results obtained are statistically non significant. The season of year in which poisoning occurred was studied and following results were obtained:-

Table 2: Distribution of the cases on the basis of season

	Male		Female		Total	
Season	**Number**	**%**	**Number**	**%**	**Number**	**%**
Summer	68	28.6%	27	27%	95	28.1%
Winter	61	25.6%	19	19%	81	24.0%
Autumn	44	18.6%	32	32%	75	22.2%
Spring	65	27.2%	22	22%	87	25.7%
Total	**238**	**100%**	**100**	**100%**	**338**	**100%**

(Chi square- 1.565; p-value: 0.457

Table 2 that the maximum cases occurred in the summer season and they were 95 in number and 28.1% of total. It was followed by spring i.e. 87(25.7%) and least cases occurred in autumn i.e. 75(22.2%). The results of the study are statistically non significant and reason might be the difference between the season of consumption and season of death.
The next parameter studied was survival time after consumption of poison and following results were obtained:

Table 3: Distribution of cases on basis of survival time after consumption

	Male		Female		Total	
Survival time after consumption	**Number**	**%**	**Number**	**%**	**Number**	**%**
Upto 6 hours	143	60.1%	63	63%	206	60.9%
More than 6 to upto 12 hours	69	29%	27	27%	96	28.4%
More than 12 to upto 24 hours	20	8.4%	6	6%	26	7.7%
More than 24 hours	6	2.5%	4	4%	10	3.0%
Total	238	100%	100	100%	338	100%

(Chi square- 0.787; p-value: 0.853)

Table 3 shows that the survival time was upto 6 hours in 60.1% cases and it was more than 24 hours in 2.5% cases only. The results obtained are statistically non significant. Further the cases were studied on the basis of time of the day when incidence of poisoning occurred.

Table 4: Distribution of cases on diurnal variation basis

	Male		Female		Total	
Period of the day	**Number**	**%**	**Number**	**%**	**Number**	**%**
Morning	37	1.6%	21	21%	58	17.2%
Afternoon	52	21.9%	14	14%	66	19.5%
Evening	89	37.4%	39	39%	128	37.9%
Night	60	25.1%	26	26%	86	25.4%
Total	**238**	**100%**	**100**	**100%**	**338**	**100%**

(Chi square- 3.594; p-value: 0.309)

Table 4 shows that maximum poisoning occurred in the evening time i.e. 6pm to 12pm and the load was 128(37.9%) followed by night i.e. 12am to 6am and load shared was 86(25.4%). Lowest incidences were noted during morning time i.e.6am to 12pm which were 58(17.2%). In every time of the day males predominated females. The results of the study are statistically non significant.

RESULTS AND DISCUSSION

Most if the cases lived in joint family [215(63.6%)] than the nuclear family [123(36.4%)]. Most of the poisoning cases occurred in summer [95(28.1%)] and it is followed by spring [87(25.7%)], winter [81(24%)] then autumn [75(22.2%)] respectively and it is in accordance with Maharani *et al*[5] and Dash *et al*[6] while contrary to Pawar *et al*[7].The survival time after consumption was up to 6 hours in 206(60.9%) cases followed by 6 to 12 hours in 96(28.4%) cases, 12 to 24 hours in 26(7.7%) cases and more than 24 hours in 10(3%) cases. Most of the poisoning occurred in evening [128(37.9%) followed by night [86(25.4%)], afternoon [66(19.5%)] and morning [58(17.2%)] respectively which is in accordance with study done by Pawar *et al*[7] and Patil *et al*[8] which showed evening as the most common time and incongruous with study done by Maharani *et al*5 and Dash *et al*6 which showed day time as commonest.

CONCLUSION

Incidence of poisoning is higher in joint families (63.6%) irrespective of gender, age group, educational status and residential status. Most of the poisoning cases occur in summer (25.7%) followed by spring than winters and lastly by autumn. Irrespective of the season, occupation, age group, gender, type of family, educational status and residential status the maximum number of cases occur in evening (37.9%) followed by night (25.4%) then afternoon (19.5%) and morning (17.2%) respectively. The survival time after consumption was up to 6 hours in 206(60.9%) cases followed by 6 to 12 hours in 96(28.4%) cases, 12 to 24 hours in 26(7.7%) cases and more than 24 hours in 10(3%) cases. Early hospitalization becomes the pivotal step for survival. Taking care of all the needs of every family members in a joint family is required.

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