# A Cross Sectional Study of Deaths Due to Poisoning: Autopsied at a Tertiary Care Centre: Davangere

**Anand Patil[1], Tasgaonkar V.N.[1], Vijayakumar B. Jatti[2]**

*[1]Assistant Professor, Department of Forensic medicine and Toxicology, BVDUMC & H, Sangli, Maharashtra,*
*[2]Professor & Head, Department of Forensic Medicine & Toxicology, SSIMS & RC, Davangere. Karnataka*

## Abstract

Poisoning is an important health problem in every country of the world. Occupational exposure to industrial chemicals and pesticides, accidental or intentional exposure to household and pharmaceutical products and poisoning due to venomous animals, Toxic plants and food contamination, all contribute to morbidity and mortality. Poison is a substance that being soluble in the blood either destroys life or impairs seriously the functions of one or more organs of the body. Poison can be defined as, a substance (solid, liquid or gas) which if introduced in a living body or brought in contact with any part thereof will produced ill health or death by its constitutional or local effects or both.[1] Due to rapid development in the field of science and technology and vast growth in the industrial and agricultural sector, the poisoning is spreading like a wild fire. Poisoning is a medical emergency and the patients are invariably admitted to the hospital through emergency services. The poisoning may be suicidal, accidental or homicidal. With this background, the present study has been carried out to determine the profile of poisoning cases, autopsied at SSIMS & RC, Davangere, Karnataka. The study revealed that victims of rural population (68.9%) are highest among the habitation, followed by urban population. Most of the victims are married people (63.9%). Most of the victims were educated with matriculation (62.3%). Most of the poisoning cases are seen in Hindu religion (91.8%). Most of the cases were seen in winter season (42.6%) and in most of the cases the victims has consumed the poison at home (83.9%).

***Keywords:*** *Autopsy, FSL Report and Poisoning.*

## Introduction

Annually it has been estimated that the health hazards are directly or in directly due to poisons is for more than 1 million illnesses worldwide and this could be just the tip of the iceberg as most of the cases of poisoning actually go unreported and untreated, especially in developing and underdeveloped countries.[2]

The incidence of poisonings is increasing day by day because of its low cost, easily availability without any check on their sales and irregularity in distribution. However, the magnitude of the problem, the circumstances of exposure and the types of poisoning vary from country to country and it also varies from region to region. The variables include the degree of industrialization and urbanization, the type of agricultural activities and the available medical facilities and expertise to prevent and manage toxic exposures.

With this background present study has been conducted to assess the most prevalent habituation involved. And also to find out the marital status, educational status, religion, seasonal variation, place of consumption and to know the consumed poison was known or unknown in deaths due to poisoning cases, autopsied at SSIMS & RC, Davangere, Karnataka.

**Corresponding Author:**
**Dr. Vijay N. Tasgaonkar**
Assistant Professor, Department of Forensic Medicine & Toxicology, BVDUMC & H, SANGLI, Maharashtra
e-mail: vijaytasgaonkar1956@gmail.com
Tel. +919869158783

## Materials and Method

All the cases brought to the department of Forensic Medicine and Toxicology, SSIMS and RC, Davangere, for medico legal autopsy with history of poisoning and cases that were diagnosed as poisoning after post mortem examination during the period of one and half year, from November 2013 to March 2015. Total 61 cases were selected for this prospective study.

The present study has been carried out after obtaining the ethical clearance and consent from the relatives to take the relevant information.

In all cases of poisoning the detailed history and information were collected from the police and the relatives of the deceased questionnaire and post mortem findings were analyzed with the chemical analysis reports. In case of hospital admitted and treated cases the information's were collected by the perusal of hospital records. The cases of food poisoning, snake bite and any other insect bite envenomation and deaths due to idiosyncratic reaction to the drugs were excluded from the study group. Meticulous autopsy was done in all cases and the routine viscera and body fluids were collected and sent to Forensic Science Laboratory for Chemical analysis and report.

## Results

Total 61 cases were selected for the present study and the following observations were made. It is observed that more number of poisoning in this study population is seen with the residence of rural (69%) as compare to the residence of urban (31%).

**Table 1: Distribution of study population according to habitation.**

| Rural/Urban | Frequency | Percent (%) |
|---|---|---|
| Rural | 42 | 68.9 |
| Urban | 19 | 31.1 |
| **Total** | **61** | **100.0** |

From the above graph it is observed that more number of poisoning cases were seen in the married group (64%), followed by unmarried group (34%) and the least percentage seen in the divorced group (2%).

From the above study it is observed that more number of poisoning cases in the present study population were seen among matriculates (62%) as compare to others and least numbers of cases were seen in the postgraduates group (1.6%) and the least being the illiterates (1.6%).

**Table 2: Distribution of the study population according to Marital Status.**

| Marital Status | Frequency | Percent (%) |
|---|---|---|
| Divorced | 1 | 1.6 |
| Married | 39 | 63.9 |
| Unmarried | 21 | 34.4 |
| **Total** | **61** | **100.0** |

**Table 3: Distribution of the study population according to Educational status.**

| Educational Status | Frequency | Percent (%) |
|---|---|---|
| Illiterate | 1 | 1.6 |
| Under-Matriculate | 17 | 27.9 |
| Matriculate | 38 | 62.3 |
| Graduate | 4 | 6.6 |
| Post-graduate | 1 | 1.6 |
| **Total** | **61** | **100.0** |

From the above study among the religion, it is observed that more number of cases in the present study population were seen among Hindu (92%) population as compare to Muslim (8%) population.

**Table 4: Distribution of the study population according to religion.**

| Religion | Frequency | Percent (%) |
|---|---|---|
| Hindu | 56 | 91.8 |
| Muslim | 5 | 8.2 |
| **Total** | **61** | **100.0** |

It is observed that more number of cases in the present study population among the seasonal variations were seen in winter season (43%), followed by rainy season (33%) and summer season (24%).

**Table 5: Distribution of the study population according to Seasonal Variation**

| Seasonal Variation | Frequency | Percent (%) |
|---|---|---|
| Summer | 15 | 24.6 |
| Rainy | 20 | 32.8 |
| Winter | 26 | 42.6 |
| Total | 61 | 100 |

From the above study it is obtained that in more number of cases among present study population people have consume poison at home (84%), followed by other places (6%), work place (5%) and remote area (5%).

**Table 6: Distribution of the study population according to place of consumption.**

| Place of Consumption | Frequency | Percent (%) |
|---|---|---|
| Home | 51 | 83.6 |
| Workplace | 3 | 4.9 |
| Remote areas | 3 | 4.9 |
| Other places | 4 | 6.6 |
| **Total** | **61** | **100** |

## Discussion

In a study done by Gupta B D and Vaghela PC on 132 autopsied poisoning cases in the Dept. of Forensic Medicine and Toxicology, MP Shah Medical College, Jamnagar during the span of one year have shown that majority of victims were married, Hindu and rural population.[11] Our study correlates with the above mentioned findings.[3]

Vishwajeet Pawar and others did a study at Mahatma Gandhi Institute of Medical Sciences, Sewagram during the period May 2007 to April 2009. During this study maximum poisoning cases belong to rural area and married people.[4] These findings were agreement with the present study.

A study done by Sanjeev K and others in the department of Forensic Medicine at Rajkot (Gujarat) to know the pattern of fatal poisoning. Total 208 cases of death due to fatal poisoning were selected for this prospective study, which were brought for postmortem examination during the span of one year (From January 2007 to December 2007). Study revealed that most of the victims of fatal poisoning were Hindus and married population[5]. Our study correlates with the above mentioned findings.

Vikram Palimar, & Prateek Rastogi has conducted a study on profile of insecticide mortality by retrospective review of poisoning cases autopsied at Kasturba Medical College, Manipal, Of the total 1917 autopsies conducted, 372 cases were due to poisoning, of which 287 cases were due to insecticides with a predominance of organophosphates. Majority of the victims were belonged to rural areas. These cases were more during the winter season and indoor consumption of the poison was observed in more than three-fourth of the cases.[6] these findings were in agreement with the present study.

One more study on the poisoning trends undertaken for 2 years at Malwa region, Punjab showed that incidence of poisoning was more amongst married (68%) as compared to unmarried (32%), residing in rural (64%) as compared to urban area (36%). Incidence of poisoning was more among under-matriculates (43%) followed by illiterates (37%) and literates (14%).[7]our study correlates with the above mentioned findings.

A 6 years study conducted at Government Medical College, Chandigarh from 1994-1999 revealed that rural preponderance (66.9%) was more compared to urban (33.1%) areas.[8]These findings were in agreement with the present study.

A study Of the 285 cases of poisoning studied at SRN Hospital, Allahabad it was seen that majority of death being more among the Hindus (84.91%) followed by Muslim (12.63%) having rural background.[9] These findings are in agreement with the above study.

It was observed that of the 117 cases of organophosphorus poisoning brought to the mortuary of Gandhi Medical College, Bhopal from the year 1999-2001 revealed that married people were affected more than the unmarried. Incidence of poisoning was more in people with rural background and maximum number of deaths were seen in illiterates.[10] So these findings are in agreement with the above study.

## Conclusion

From the above study conducted on 61 cases of poisoning, autopsied at SSIMS & RC, Davangere, following conclusions were drawn, most of the victims were of rural population (68.9%) among the habitation, followed by urban population. Most of the victims are married people (63.9%). Most of the victims were educated with matriculation (62.3%). Most of the poisoning cases are seen in Hindu religion (91.8%). Most of the cases were seen in winter season (42.6%) and in most of the cases the victims has consumed the poison at home (83.9%).

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