

**Original article:**

## **Study of manner of poisoning according to sex and marital status in acute poisoning cases**

**Dr. Sandesh Datir\***, **Dr. Jamebaseer Farooqui\*\***, **Dr. Madusudan Petkar\*\*\***, **Dr. Kalidas Chavan\*\*\*\***,  
**Dr. Rajendra Bangal\*\*\*\*\***

\* MBBS, MD (Forensic Medicine), Assistant Professor, Department of Forensic Medicine & Toxicology, Dr. D.Y. Patil Medical College, Hospital and Research Center, Pune, Maharashtra.

\*\* MBBS, MD (Forensic Medicine), Associate Professor, Department of Forensic Medicine & Toxicology, Rural Medical College, Loni, Maharashtra.

\*\*\* MBBS, DFM, MD (Forensic Medicine), Assistant Professor, Department of Forensic Medicine & Toxicology, Dr. D.Y. Patil Medical College, Hospital and Research Center, Pune, Maharashtra.

\*\*\*\* MBBS, MD (Forensic Medicine), Controller of Examinations, Maharashtra University of Health Sciences, Nashik, Maharashtra.

\*\*\*\*\* MBBS, MD (Forensic Medicine), Professor & Head, Department of Forensic Medicine & Toxicology, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra.

**Corresponding author:** Dr. Sandesh Datir

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### **Abstract:**

**Introduction:** This hospital based prospective cross sectional study was carried out over a period of two years duration from 01/09/2008 to 31/08/2010 in the Rural Medical College and Pravara Rural Hospital, of Pravara Institute of Medical Sciences, Loni, Taluka Rahata, Ahmednagar (M.S) India to study distribution of acute poisoning cases according to sex, marital status and manner.

**Methods:** All admitted and brought dead cases of acute poisoning, cases of known and unknown bites and stings from all age were included in the study. Comprehensive proforma for the study was designed and relevant data of the individual poisoning cases was collected from medico-legal cases register of casualty, case papers from concerned department, inquest, post-mortem reports, chemical analysis report after taking informed consent from patient or relatives. Data was statistically analyzed in the form of percentage (%) and proportion.

**Observations:** During the study period total 557 cases of acute poisoning were reported out of which, 325(58.35%) were males while 232 (41.65%) were females. Maximum number of cases were in married group [291 (52.24%)]. In married group females [154 (27.64%)] outnumbered males [137(24.60%)] while in unmarried group males [188 (33.75%)] outnumbered females [78 (14.00%)]. Highest number of cases were suicidal [283 (50.81%)] followed by accidental [269 (48.29%)] and in only 05 (00.89%) cases the manner of death was undetermined. No case was found to be homicidal. Suicidal poisoning was observed more in married females [89 (15.98%)] as compared to unmarried females [25 (04.49%)].

**Results with conclusion:** The present study helps to interpret the manner of acute poisoning according to marital status and sex. It is imperative to identify these trends in manner of acute poisoning, as it will immensely help the health policy makers to reduce the mortality and morbidity due to acute poisoning.

**Keywords:** Manner of poisoning, acute poisoning, Suicidal poisoning, marital status and poisoning.

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### **Introduction:**

Poisons have been the subject of curiosity since ancient times. Since the dawn of recorded history poisons have had a great impact on human events. And although over the millennia the important poisons of the day have changed to some degree, toxic substances continue to challenge our everyday living. Traditionally, arsenic has been the favorite for homicide and opium for suicide, though there has been an increasing incidence of use of organophosphorus insecticides for suicide.<sup>(1)</sup> Organophosphorus compounds have come as a boon to agriculturists to control and eradicate pests and insects affecting the plants and crops. 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.<sup>(2-5)</sup> 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 manner of poisoning namely homicidal, suicidal and accidental are reported from all parts of the country. The present study is carried out at Pravara Rural Hospital and Rural Medical College of Pravara Institute of Medical Science, Loni to study distribution of acute poisoning cases according to sex, marital status and manner. The present study was planned to study distribution of acute poisoning cases according to marital status, sex and manner of poisoning at Pravara Rural Hospital, Loni.

### **Material & Methods:**

This hospital based prospective cross sectional study was carried out over a period of two years duration from 01/09/2008 to 31/08/2010 after approval by

Institutional Ethics and Research committee at Rural Medical College, Loni and Pravara Rural Hospital, of Pravara Institute of Medical Sciences, Loni, which is a tertiary care teaching hospital chiefly catering to the demands of rural area of Ahmednagar & adjacent districts of Maharashtra.

All admitted and brought dead cases of acute poisoning, cases of known and unknown bites and stings from all age were included in the study. All cases of chronic poisoning, poisoning cases admitted and referred to other hospitals, absconded cases, brought dead cases without history of acute poisoning, cases admitted without history of poisoning, bites and stings were excluded from the study. Comprehensive proforma for the study was designed which containing sex, marital status and manner of poisoning cases. The manner of poisoning was decided depending upon the information given by the patient and /or relatives of the patient and police. If there was difference of opinion regarding the manner of poisoning, manner was considered as undetermined. Relevant data of the individual poisoning cases was collected from medico-legal cases register of casualty, case papers from concerned department, inquest, post-mortem reports, chemical analysis report after taking informed consent from patient or relatives. Data was statistically analyzed using statistical software SPSS Statistic 17 and Microsoft Office Excel 2003. Data was analyzed in the form of percentage (%) and proportion.

### **Observations & Results:**

During the period of 24 months from September 2008 to August 2010 total 557 cases of acute poisoning were reported.

**Table: Distribution of acute poisoning cases according to marital status, sex and manner of poisoning.**

Manner	Marital status						Total		Grand total
	Married			Unmarried			Male	Female	
	Male	Female	Total	Male	Female	Total			No. (%)
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
<b>Suicide</b>	78 (14.00)	89 (15.98)	167 (29.98)	91 (16.33)	25 (04.49)	116 (20.82)	169 (30.34)	114 (20.47)	283 (50.81)
<b>Homicide</b>	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)
<b>Accidental</b>	58 (10.41)	62 (11.13)	120 (21.54)	97 (17.41)	52 (09.34)	149 (26.75)	155 (27.83)	114 (20.47)	269 (48.29)
<b>Undetermined</b>	01 (00.18)	03 (00.54)	04 (00.72)	00 (00.00)	01 (00.18)	01 (00.18)	01 (00.18)	04 (00.72)	05 (00.89)
<b>Total</b>	137 (24.60)	154 (27.64)	291 (52.24)	188 (33.75)	78 (14.00)	266 (47.76)	325 (58.35)	232 (41.65)	557 (100)

Out of 557 cases, 325(58.35%) were males while 232 (41.65%) were females. Males outnumbered females with male:female ratio of 1.40:1. Maximum number of cases were in married group [291 (52.24%)] as compared to unmarried group [266 (47.76%)] with the married: unmarried ratio of 1.09:1.

In married group females [154 (27.64%)] outnumbered males [137(24.60%)] while in unmarried group males [188 (33.75%)] outnumbered females [78 (14.00%)]. Highest number of cases were suicidal [283 (50.81%)] followed by accidental [269 (48.29%)] and in only 05 (00.89%) cases the manner of death was undetermined. No case was found to be homicidal. Suicidal poisoning was observed more in married females [89 (15.98%)] as compared to unmarried females [25 (04.49%)].

**Discussion:**

Males outnumbered females with male: female ratio of 1.40:1, with 325 (58.35%) males and 232

(41.65%) females. Findings of the present study are consistent with Chavan KD et al<sup>(6)</sup> with male to female ratio of 1.46:1 and also in concordance with the studies carried out by Chaudhary BL et al<sup>(7)</sup>, Tandon SK et al<sup>(8)</sup>, Sinha US et al<sup>(9)</sup>, Dash SK et al<sup>(10)</sup>, Kanchan T et al<sup>(11)</sup>, Singh TB et al<sup>(12)</sup>, Bhatukule PR<sup>(13)</sup>, Kumar A et al<sup>(14)</sup> and Sharma BR<sup>(15)</sup> with male : female ratio of 1.6:1, 2.3:1, 2.3:1, 1.14:1, 2.8:1, 1.27:1 and 2:1, 2.1:1 and 2.5:1 respectively. This may be because males are more exposed to stress and strains of day to day life as they have to run the family and bear many pressures i.e. economical problems, difficult life conditions and various psychological stresses. Males are also exposed to occupational hazards and they have easy accessibility to the agrochemicals and they often need to handle it in agricultural work.

Findings of present study are in contrast to finding of Kristinsson J et al<sup>(16)</sup>, Aggarwal P et al<sup>(17)</sup>, Alagozlo

H et al<sup>(18)</sup> and Hovda KE et al<sup>(19)</sup> who reported that females outnumbered males with female:male ratio of 1.23:1, 2.5:1, 2.26:1 and 1.18:1 respectively. This may be due to fact that females prefer toxic ingestion for inflicting self-harm relative to males and this finding might reflect a tendency by females to use deliberate ingestion as a help seeking behavior in stressful situations.<sup>(14)</sup> Finding of our study regarding the increased incidents of poisoning in married subjects (52.24%) as observed in Table No.1, was similar to findings of Chavan KD et al<sup>(6)</sup>, Dash SK et al<sup>(10)</sup> who reported married subjects to be 71.12% and 51% respectively. Similar findings were observed by Dhattarwal SK et al<sup>(20)</sup> who reported married subjects to be 64.4%.

However the findings of present study that females outnumbered male in married group were in contrast to the study done by Chavan KD et al<sup>(6)</sup> who reported that males outnumbered females in married group. This may be due to fact that married females are exposed to dowry demands which is common in this rural area and so there is higher incidence of violence against women by husband and her in laws. So social and economic instability may have lead to consumption of poisons by married females. This may be the reason for more suicidal poisoning in married females than unmarried females. Findings of our study regarding the manner of death were consistent with findings of the study done by Chavan KD et al<sup>(6)</sup>, Bhatkule PR<sup>(13)</sup> and Sinha US et al<sup>(9)</sup> as far as all these studies reports maximum number of cases to be suicidal. However these authors have found a very high percentage of suicidal poisoning cases in their studies i.e. 89.13%, 92.8% and 87.02% respectively than in present study (50.81%). This may be due to the fact that present study includes cases of snake bites, scorpion bites (stings) and

unknown bites which were excluded by these authors. As these cases of snake bites, scorpion bites (stings) and unknown bites were accidental in nature, this has resulted in lowering the percentage of suicidal poisoning in the present study. Due to the very same reason the percentage of accidental poisoning in the present study was 48.29% which is much higher than that reported by above mentioned authors which were 12.98%, 07.50% and 07.31% respectively. In spite of extensive search we could not compare variation of manner of poisoning with marital status and sex, as we could not find such studies by other workers in India.

#### **Conclusion:**

1. Males were affected more [325 (58.35%)] than females [232 (41.65%)] with male : female ratio of 1.40:1
2. Maximum number of cases were seen in married group than unmarried group with the married : unmarried ratio of 1.09:1. In married group females (27.64%) outnumbered males (24.60%) while in unmarried group males (33.75%) outnumbered females (14.00%). Highest numbers of cases (50.81%) were suicidal followed by accidental (48.29%). No case was found to be homicidal. Suicidal poisoning was more in married females (15.98%) as compared to unmarried females (04.49%).

The present study helps to interpret the manner of acute poisoning according to marital status and sex. It is imperative to identify these trends in manner of acute poisoning, as it will immensely help the health policy makers to reduce the mortality and morbidity due to acute poisoning. The vulnerable group for committing suicide should be identified and proper psychological support should be provided. To prevent

suicidal poisonings, the root cause of psychological disorders among specific groups must be diagnosed and treated by qualified psychiatrists. The high incidence of suicide in married couples can be

checked by developing satisfactory interpersonal relationship and tackling effectively social and psychological problems between the young and the elders in the society.

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