

## Retrospective Analysis of Pattern of Poisoning in Tertiary Care Hospital, Hapur; NCR Region

Mahesh Kumar\*, Mansi Kumar\*\*, N.K. Aggarwal\*\*\*, Adarsh Kumar\*\*\*\*, Sudhir Kumar Gupta\*\*\*\*\*

**Authors Affiliation:** \*Assistant Professor, Department of Forensic Medicine and Toxicology, \*\*Assistant Professor, Department of Obstetrics & Gynaecology, Rama Medical College Hapur (Ghaziabad) UP. \*\*\*Professor & Head, Department of Forensic Medicine and Toxicology, University College of Medical Sciences, Delhi. \*\*\*\*Professor \*\*\*\*\*Professor & Head, Department of Forensic Medicine and Toxicology, All India Institute of Medical Sciences New Delhi.

**Reprints Requests:** Mahesh Kumar, Assistant Professor, Department of Forensic Medicine and Toxicology, Rama Medical College, Hapur (Ghaziabad), Uttar Pradesh 245304.

E-mail: mahesh25881@gmail.com

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### Abstract

A retrospective study of 140 cases of poisoning received in the casualty of Rama Medical College Hospital and Research Center Hapur (Ghaziabad) Uttar Pradesh during a span of last 3 years (2014-2016) was done to know the socio-economic profile and pattern of acute poisoning in the region. All admitted and brought dead cases of acute, known and unknown poisoning, from all age were included in the study. Males and females were 62% and 38% respectively. Most common age group was 21-30 years and majority of victims were married. Most of the victims belonged to lower (33.6%) or lower-middle (60.7%) class. Organophosphate (37.1%) was the most common poisoning, followed by Celphos (21.4%) and other unknown poisoning (18.6%) responsible for more than two-third of the cases. Majority of poisoning cases (85.7%) were suggestive of suicide, of which family quarrel (31.7%) and unemployment (22.5%) or loss in business were more common in male and ill treatment by husband/in-laws (27.5%) in female.

**Keywords:** Acute; Poisoning; Socio-Economic Pesticide; Suicide.

### Introduction

Poison is a substance which has deleterious effect on living organisms produces ill health or death by direct contact or by absorption in the body. With advancement in science and technology large number of harmful chemicals especially insecticides and pesticides are invented to protect farming. But now they become a serious threat to human lives. Acute poisoning forms one of the common causes of emergency hospital admissions. Pattern of poisoning in a region depends on variety of factors, such as availability of the poisons, socio-economic status of the population, religious and cultural influences and availability of drugs. The commonest agents of poisoning in India appear to be pesticides, sedatives, chemicals, alcohol, plant toxins, household poison

and snake bite etc. Of late, Aluminium Phosphide has begun to emerge as a major player in the toxicological field, particularly in some northern Indian states. Among the adults, females predominate in all age groups, with an evident preponderance in the second and third decades of life. Acute poisoning in children is almost entirely accidental, while in adults it is mainly suicidal. Mortality and morbidity of poisoning cases varies from country to country depending on the nature of poison and availability of facilities and treatment by qualified doctors.<sup>1</sup> Among children the commonest culprits include kerosene, household chemicals, drugs, pesticides and garden plants [2,3].

Hapur though an agriculture dominant belt of western Uttar Pradesh, its geographical proximity to National Capital Region Delhi exposes youths to

higher living standards and western culture including consumption of alcohol and other intoxicating drugs. This all forces them sometimes to take hasty decision to end their lives. Poisoning cases can be deliberate or accidental. Poisons are silent weapons, which can be easily used without violence and often without arousing suspicion [4].

## Result

A total of 140 cases of poisoning were studied out of which 87 cases were male and 53 female. Highest numbers of cases (62) were from 21-30 year age group, followed by 33 cases from 31-40 years age group. Five cases were below ten years of age and only 9

cases were more than 50 years of age (Table 1).

Most common poison found was Organophosphate (52 cases) followed by Celfos poisoning (30 cases) and 26 cases were of unknown poisoning comprising about two third of the total cases. Two cases of snake bite along with alcohol, dhatura, kerosene and acid poisoning, each below ten cases were found (Table 2).

Of the total 87 male victims, 63 were married and 24 unmarried while in females out of 53, unmarried were 12 and married 41 (Table 3).

Suicidal was the most common manner of poisoning found in 120 cases out of which 76 were male and 44 females. Accidental poisoning was found in 20 cases comprising 11 male and 9 females. No case of homicidal manner was reported (Table 4).

**Table 1:** Age and Gender wise distribution of Poisoning cases.

Age	Male	Female	Total
00-10	03	02	05
11-20	09	06	15
21-30	41	21	62
31-40	19	14	33
41-50	09	07	16
>50	06	03	09
TOTAL	87	53	140

**Table 2:** Type of Poisons

Poisons	Cases	Percentage
Organophosphate	52	37.1
Celfos	30	21.4
Unknown	26	18.6
Alcohol	10	07.1
Dhatura	07	05.0
Kerosene	06	04.3
Acid	07	05.0
Snake Bite	02	01.4
Total	140	100

**Table 3:** Marital status of the victims

Status	Male (%)	Female (%)	Total (%)
Unmarried	24 (27.58%)	12 (22.64%)	36 (25.71%)
Married	63 (72.41%)	41 (77.35%)	104 (74.28%)
Total	87 (100%)	53 (100%)	140 (100%)

**Table 4:** Manner of poisoning

Manner	Male	Female	Total	%Age
Accidental	11	9	20	14.3
Suicidal	76	44	120	85.7
homicidal	0	0	0	0
total	87	53	140	100

By detailed and thorough history it was found that most common motive behind the suicidal poisoning was family quarrel (31.7%) and ill treatment by the husband or in-laws (27.5%) followed by the

unemployment or loss in business (22.5%), while in a very large group (22.5%) the motive was still unknown. In 8.6% cases each, the motive was love affairs and failure in exams (Table 5).

Out of total 140 cases, 63 cases were successfully discharged, 69 cases left against medical advice and 8 (5.7%) cases died during the course of treatment (Table 6).

Most of the cases belonged to middle (60.7%) and lower class (33.6%) while very few cases (5.7%) belonged to high socio economic status (Table 7).

**Table 5:** Motive behind the Suicidal Poisoning.

Motive	Cases	%Age
Family quarrel	38	31.7
Unemployment/ loss in business	27	22.5
Ill treatment by husband/ in-laws	33	27.5
Failure in exams	12	10
Poverty	01	0.8
Love affairs	12	10
Loneliness	11	9.1
unknown	27	22.5

\* Total exceeds 120 cases because more than one motive involved per case

**Table 6:** In-Hospital status of all the Poisoning cases

In Hospital Status	Number of Cases
Stable	63
Lama	69
Death	08
Total	140

**Table 7:** Socioeconomic status based distribution of all cases

Socio-Economic Status	Number of Cases (%)
Low	47 (33.6)
Middle	85 (60.7)
High	08 (5.7)
total	140 (100)

## Discussion

Many retrospective studies on poisoning pattern were done by various authors of different parts of India. And they observed and emphasized a strong relationship between social parameters and the pattern of poisoning. The present study also highlights the fact that not only the availability of a poison in a region is a sole determinant but also the social parameters play an important role in pattern of poisoning. Gargi et al [5] observed that male to female ratio was nearly 3:1, majority of the victims were in the age group of 21-30 years, and 69.12% were married. Dhanya et al [6] stated that the male: female ration is of 1.27:1 and maximum victims were from the age group 15-30 (58.58%) [3].

Ali et al [7] also found that majority of the cases was young people from the age group 16-40 years (about 80%). The current study has come up with very similar findings i.e. maximum victims were from the age group of 16-30 years. However, the male: female ratio is 2:1 and in agreement with Dhanya et al. This age range is a period in which a person is most active in all respects be it family life, professional life, or social life, which increases the stress and often

leads to devastating outcomes.

Pokhrel et al [8] found that females were more susceptible to the intentional poisoning than male. Intentional poisoning for unmarried male was found to be more (34%) than for female. On the contrary, intentional poisoning in female was high in case of married subjects (57%). The present study also clearly shows vulnerability of poisoning among married subjects is high and that too in married females.

Dhanya et al observed that Organophosphorus (OP) poisoning constitute maximum number of cases (37.25%) followed by unspecified drugs in Calicut. Gupta et al [9] confirmed through chemical analysis report that insecticide was the commonest poison (72.44%) followed by aluminum phosphide (14.28%) and acid (0.63%).

Garg et al [10] reported that Aluminium phosphide is leading cause of poisoning (36.8%) followed by insecticides (31.6%) in South-West Punjab. Gargi et al also reported that Aluminium phosphide (38.23%) followed by Organophosphorus compounds (17.64%) were the commonest poison in Amritsar during 1997-98. However, the present study is in agreement with Dhanya et al and Gupta et al and observed that Organophosphorus poisoning

constitute major chunk of total cases (37.1%) in Hapur (UP) region.

It appears that OP poisoning constitutes majority of cases because of easy availability, low cost, unregulated sale and also presence in majority of households in this region.

The present study observes that the contribution of kerosene (4.3%) indicates awareness among parents about the household poisons. However, the childhood poisoning as a result of consuming any unknown substance is still common.

Suicide was the commonest manner of poisoning and many authors made this observation on the basis of history provided by the investigating officers or relatives. Ali et al. in a study on clinical pattern and outcome of OP poisoning showed that suicide is the most common modes of poisoning and reported in 65% cases, followed by accidental (27%) and homicidal (8%).

The current study has also come with a similar pattern in overall poisoning cases i.e. 85.7% suicidal, 14.3% accidental and no homicidal poisoning. Therefore suicide is still the leading cause of poisoning followed by accidental.

Roberts et al [11] mentioned that use of a poison for a purpose is determined by a number of factors including its easy availability in the market, price and popularity among the masses and appropriate laws concerning the poisonous agent. Nigam et al [12] reported that maximum incidence of OP Poisoning is seen in persons engaged with agricultural fields (39.60 %) followed by house wives (20 %) and students (16.85 %).

The current study is in complete agreement with Roberts et al and found that availability, price and laws influence the use of an agent as a poison to a great extent. Dhanya et al. mentioned that general measures like Gastric lavage (83%) and Ryles Tube Aspiration (80%) were mainly used for management of poisoning cases. The current study has come up with very similar findings. Maximum poisoning victims underwent gastric lavage as a general measure. However, remaining 5% cases in which gastric lavage was not at all done include cases of acid ingestion and kerosene. So, Gastric lavage and Ryle's Tube aspiration is still the mainstay of treatment in maximum of cases.

Maiti et al [13] conducted a review study and concluded that use of atropine and oximes derivatives in OP poisoning remains conflicting and controversial. They have no effect in moderate and severe poisoning and do more harm than good. However, Pralidoxime (PAM) is more effective in OP

poisoning than atropine. The current study shows that all cases of OP poisoning have been dealt with atropine and PAM and shows good result. So, Atropine and PAM are effective in OP poisoning cases.

Dhanya et al stated that out of the total poisoning cases, 205 patients (10.85%) died of poisoning, of which Organophosphorus poisoning accounted the maximum (88.78% of total mortality). Ali et al graded the Organophosphorus poisoning cases into mild (12%), moderate (60%) and severe (28%) and reported mortality in 20% cases. The present study also showed similar findings. OP poisoning accounted for 37.1% of poisonings which is the maximum and 5.7% victims died.

### Conclusions

The present study was planned to study the pattern of poisoning in the Hapur district region of Uttar Pradesh, The Male: Female ratio for poisoning in this region was 2:1 and 74.28% of victims were married. Maximum cases of poisoning came from the age group of 21 – 30 years of age and OP poisoning (37.1%) is still the leading cause of poisoning in this region followed by Celphos (21.4%) and unknown poisoning (18.6%).

Suicidal poisoning was responsible for 85.7% of poisoning followed by accidental. Family problems and ill treatment/depression were leading causes of poisoning in this region. Mortality due to poisoning was low with only 5.7% deaths. General measure for management of poisoning was gastric lavage which was done in 95% of cases.

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