

## Profile of Acute Poisoning at Tertiary Care Hospital in North India

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### Abstract

*Aims and objective:* Poisoning is a major problem all over the world, although its type and the associated morbidity and mortality vary from country to country. The nature of poison used varies in different parts of the world and may vary even in different parts of the same country depending on the socioeconomic factors and cultural diversity. We conducted this study to see clinical spectrum and in hospital-mortality of acute poisoning cases among adults presenting to our emergency. *Material and methods:* This prospective study was conducted in patients of acute poisoning admitted in the emergency wing of our hospital. A total of 540 patients fulfilled inclusion criterion. Cases were reviewed prospectively by a specially designed data collection form which was used to collect the detail of patient's age, sex, type of poison, method/mode of poisoning and in-hospital mortality among acute poisoning cases either referred or reported directly. *Results:* Out of 540 patients in the study, 315 were male and 225 were female, most cases of acute poisoning comprised of young population ranging from 16 to 35 years, majority of cases were from urban areas and were married. Majority of patients were educated and were students. Circumstances leading to acute poisoning were intentional in majority. Route of administration was oral in 98%. A total of 52 people died due to acute poisoning with case fatality rate of 9.63%. *Conclusion:* Acute Poisoning is not uncommon in our region. Mostly young peoples are victims of poisoning. Establishment of a poison control center in the region will help in preventing and controlling such poisoning events.

**Keywords:** Acute Poisoning; Hospital-mortality.

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### Introduction

A poison is any substance, which when administered to the body through any route, produces ill health, disease or death. 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 or pharmaceutical products, poisoning due to venomous animals, toxic plants and food contamination, all contribute to morbidity and mortality. Acute pesticide poisoning is one of the most common causes of intentional deaths worldwide (Singh et al., 2006; Jesslin et al., 2010). As per World Health Organization (WHO), about

0.3 million people die every year due to various poisonous agents (Thuniyil et al., 2008). It has been estimated that, in India five to six persons per lakh of population die due to acute poisoning every year (Narayana Reddy, 2010) and is the fourth common cause of mortality in India (Unikrishnan et al., 2005). National Crime Bureau of India showed that suicide by consumption of pesticides accounted for 19.4% and 19.7% of all cases of suicidal poisoning in the year 2006 and 2007 respectively (Banerjee et al., 2011). In developing countries such as India the reported mortality of 10% is significantly higher than the 0.5% reported in developed countries (David et al., 2007). Acute poisoning forms one of the most common causes of emergency

hospital admissions. It has been reported that acute poisoning approximately constitutes 10% of admissions in medical emergency departments in India (Sharma et al., 2002).

### Material and Methods

The present, observational, one-year prospective study was conducted in the Department of Internal Medicine, Government Medical College, Jammu. All cases of acute poisoning presenting in the emergency were reviewed. Patients enrolled were in the age group of 16 to 60 years of either sex. Cases of chronic poisoning, adverse drug reaction of drugs and snake bite/ animal bites were excluded from this clinical study. A total of 540 patients who fulfilled the inclusion criteria were studied. Cases were reviewed prospectively by a specially designed data collection form which was used to collect the detail of patient's age, sex, type of poison, method/mode of poisoning and in-hospital mortality among acute poisoning cases either referred or reporting directly to our hospital. The data collected was analysed by SPSS version 20.

### Results

Out of 540 patients included in the study, 315(58.33%) were male and 225 (41.67%). Most of the patients (n=248) were in the age group of 16 to 25 years. Mean age of the study group was 29.02 years. Majority of acute poisoning cases were from the urban areas (n=329), while remaining (n=211) were from the rural areas. As per educational status, most of the patients were educated upto high school (n=221), followed by middle pass (n=125), higher secondary (n=88) and graduate or above (n= 22). The study observed that (n=307) patients of acute poisoning reported directly to the emergency wing of our hospital, while (n= 233) patients were referred from peripheral healthcare institutions. Circumstances leading to acute poisoning were intentional in majority of cases (n=464), followed by accidental in (n=71), unknown in (n=4) and homicidal attempt in one patient. Route of administration of poison was oral in majority of the cases (n=531), followed by few cases of intravenous route (n=8) and inhalational in one patient. Type of poison included; organophosphorus by (n=147) patients, followed by rodenticides (n=56), toilet cleaning agent (n=47), aluminium phosphide (n=46), alcohol (n=39), alprazolam tablets (n= 37) and unknown in (n=36). Other types of poison

included mosquito repellents, herbicide, opiates, paracetamol tablets, acid, industrial chemicals, overdose of anti-psychotic tablets, anti-seizure tablets, paracetamol tablets, tramadol tablets, iron tablets, etc. In the study, there were total 52 fatalities. Aluminium phosphide use was fatal for (n=23), followed by organophosphorus in (n=16).

**Table 1:** Distribution of patients according to the type of poison

Type of poison	No.	% age
Organophosphorus	147	27.22
Rodenticides	56	10.37
Toilet cleaning agent	47	8.70
Aluminium phosphide	46	8.52
Alcohol	39	7.22
Alprazolam tablets	37	6.85
Unknown	36	6.67
Mosquito repellent	21	3.89
Herbicide	20	3.70
Opiates	18	3.33
Paracetamol tablets	13	2.41
Acid	10	1.85
Industrial chemicals	9	1.67
Anti-psychotic tablets	6	1.11
Anti-epileptic tablets	5	0.93
Tramadol tablets	5	0.93
Iron tablets	5	0.93
Kerosene	5	0.93
Anti-hypertension tablets	3	0.56
Antibiotics	3	0.56
Povidine iodine	1	0.19
Cement	1	0.19
Carbon monoxide	1	0.19
Anti-thyroid drugs	1	0.19
Room freshner	1	0.19
Anti-tuberculosis drugs	1	0.19
Cough syrup	1	0.19
Boric acid	1	0.19
Anti-terminite	1	0.19
Total	540	100.00

### Discussion

In the study, 315 (58.33%) were males and 225(41.67%) females with male to female ratio of 1.4:1. Mean age of the study group was 29.02 years (range, 16 to 60) years, median age being 26 years. Most of the patients were in the age group of 16 to 25 years (45.93%), followed by 26 to 35 years (33.15%), 36 to 45 years (10.92%) and 46 to 60 years (10%). Majority of cases of acute poisoning comprised of young population ranging from 16 to 35 years (79.08%). Majority of acute poisoning

cases were from the urban areas (60.93%). Most of the patients were married (55.19%). Most of the patients were educated upto high school (40.93%), followed by middle pass (23.15%), higher secondary (16.29%) and graduate or above (4.07%). Remaining were illiterates (15.56%). Most patients were students (32.59%), followed by housewives (20%), private employees (15.56%), casual workers (8.89%), farmers (7.96%), unemployed (7.04%) and unknown 3 (0.56%). 56.85% patients of acute poisoning reported directly to the emergency wing of Government Medical College, Jammu, while rest (43.15%) patients were referred from peripheral healthcare institutions. Circumstances leading to acute poisoning were intentional in majority of cases (85.92%), followed by accidental (13.15%), unknown in 4 (0.74%) and homicidal attempt in 1 (0.19%) cases. Route of administration of poison was oral in majority of the cases (98.33%), followed by few cases of intravenous route (1.48%) and inhalational 1 (0.19%). Type of poison included organophosphorus (27.22%), followed by rodenticides (10.37%), toilet cleaning agent (8.70%), aluminium phosphide (8.52%), alcohol (7.22%), alprazolam tablets (6.85%) and unknown 36 (6.67%). Pesticides were most common type of toxic agent (46.11%), consumed by 30.93% male and 15.19% female patients. Household chemical was second common type of toxic agent (16.30%) used by 8.70% male and 7.59% female patients, followed by pharmaceutical drugs (15%), used by 2.04% male and 12.96% female patients. Percentage of case fatality was 9.63%. Percentage of case fatality was more in case of pesticides (15.66%), followed by household chemicals (6.82%), opiates/alcohol (3.51%) and pharmaceutical drugs (1.23%). Out of 52 fatalities, 38 (73.08%) were male and 14 (26.92%) were female patients. Aluminium phosphide use was fatal for 23 (44.23%) patients, including 18 (34.62%) male and 5 (9.62%) female patients. This was followed by organophosphorus in 16 (30.77%) fatalities, including 12 (23.08%) male and 4 (7.69%) female patients. Other type of poisons which proved fatal were rodenticides (n=3), opiates and acid (n=2 each), kerosene and drug poisoning (n=1 each). Type of poison was unknown in 4 cases.

### Conclusion

The study concludes that younger age group especially students are more vulnerable for poisoning. Pesticide and household chemicals are the commonest agent used for poisoning. This calls for educating general population about the danger of poisoning by arranging periodic

awareness programs at community level. Students, housewives, unemployed, farmers should be personally guided/counselled by elders and medical professionals against the dangers posed by poison. Strict rules are needed against the sale and easy availability of pesticide in the open market. Medical professionals serving in the rural/suburban and far flung areas need to be trained and well equipped in diagnosis and prompt management of poisoned victims, so that complications and fatality rate can be reduced. A widespread campaign to inform people of the possible dangers of poison would be useful. Establishment of a poison control center in the region will also help in preventing and controlling such poisoning events.

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