

## PROFILE OF POISONING IN A TERTIARY CARE HOSPITAL

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### ABSTRACT

**Aims** - The aim of this prospective study was to analyze the rate and characteristics of acute poisoning cases admitted to adult intensive care unit (ICU). We report the socio-demographic, laboratory, and clinical features of cases, mortality rate, and the results of our treatment modalities.

**Methods** - The study was done in patients admitted with history of poisoning in the department of medicine at Victoria Hospital, Bengaluru from January 2011 to December 2011. This study includes 81 consecutive poisoning Patient who were admitted to ICU care. Detailed history and clinical examination were done in all patients. Ventilator support was given to required patient.

**Results** - Most of the cases were organophosphorus compound poisoning (n=61, 71.3%). Others had consumed drugs which included analgesics, amitryptiline, decongestants, antihypertensives, benzodiazepines. 3 had consumed aluminium phosphide and all 3 of them died. The most common indication for mechanical ventilation was respiratory failure which mainly consisted of OP poisoning.

**Conclusion** - Pesticides were the major cause of poisoning (80.2%), the reasons being agriculture based economic, poverty and easy availability of highly toxic pesticides. The poisoning related mortality could be decreased by improving ICU condition and appropriate supportive care.

**Key words** – Organophosphorus, ventilator

### INTRODUCTION

The word poison means "a substance that causes injury, illness, or death, especially by chemical means". Poisoning is a common day-to-day event. Acute poisoning is a common problem worldwide. WHO reports estimate poisoning as one of the most common causes of increased morbidity and mortality rate world wide. The global incidence of poisoning is not known. It may be speculated that up

to half a million people die each year as a result of various kinds of poisoning, including poisoning by natural toxins. WHO conservatively estimates that the incidence of pesticide poisoning, which is high in developing countries, has doubled during the past 10 years.[1] In the United Kingdom (UK) poisoning accounts for an estimated 10- 20% of acute medical admissions and 5-10% of the workload of Accident and Emergency (A&E) department. However, in India the exact incidence cannot be defined as there is under reporting of cases of poisoning. And also due to lack of research and systematic reporting, details with regard to nature of products, situation and outcome are not clearly known in India. Infact, there is no check on sale of poison and any body can purchase it over the counter

Various agents such as pesticides, drugs have been used for intentional and accidental poisoning in different countries[2]

Acute pesticide poisoning is one of the most common causes of intentional deaths worldwide[3]. High doses of analgesics, tranquillizers, and antidepressants are the commonly used agents for intentional poisoning in industrialized countries[4] and agriculture pesticides are used in Asian region for self poisoning particularly in rural areas

Studies have revealed that pesticides are the commonly used poisoning agents for intentional poisoning in India[5]. As agriculture is major profession in the rural part of India farmers stock the pesticides to eradicate the weeds and pests.

In the present study, we evaluated patients who came to our emergency department (ED) with diagnosis of poisoning and discussed clinical social and demographic features

### OBJECTIVES

The aim of this prospective study was to analyze the

rate and characteristics of acute poisoning cases admitted to adult intensive care unit (ICU). We report the socio-demographic, laboratory, and clinical features of cases, mortality rate, and the results of our treatment modalities.

## MATERIALS AND METHODS

The study was done in patients admitted with history of poisoning in the department of medicine at Victoria Hospital, Bengaluru from January 2011 to December 2011. This study includes 81 consecutive poisoning Patients who were admitted to ICU care. The nature of the poison was decided by history. The diagnosis was based on information taken either from the patient or from the patient's family members and friends about the agent involved in the exposure.

Sociodemographic features included age and gender, marital status, education level, economical status, suicidal purpose, and demographic region. In addition, type of poisons, follow up times and clinical symptoms were recorded. After establishing IV access, gastric lavage was done in all cases except corrosives. Specific antidotes were given when indicated. Forced diuresis was used to augment elimination of renally excreted toxins. When monitoring of vital signs showed hypotension or shock, intravenous fluids were administered according to the central venous pressure, which was combined with dopamine or dobutamine infusion to maintain the systolic blood pressure above 80 mmHg. Oxygen was given immediately with the monitoring of clinical respiratory effort of poisons pulse oximetry and arterial blood gas if respiratory distress was present. OP compound poisoning were treated with PAM 500mg/hr for 3 days. Atropine was given as 2mg bolus intravenously and titrated according to the response. Complete blood counts, renal function tests, liver function tests, electrolytes, ABG and appropriate investigations were done as indicated. Not all patients were ventilated. The indication for endotracheal intubation and mechanical ventilation were as follows: excessive secretions; a depressed level of consciousness, which causes an inability to protect

the airway; poor gas exchange, which was unresponsive to oxygen treatment; cardio respiratory arrest; and severe metabolic acidosis with hemodynamic instability (systolic blood pressure <80 mm Hg). Weaning for mechanical ventilation was carried out with pressure support weaning and T-tube trials. If the poisoning resulted in suicidal attempt psychiatric consultation and supportive care were performed during and after ICU treatment. Time to present to hospital, duration from admission to need of ICU care, Hospitalization time, duration on ventilator support and morbidity and mortality rate were also recorded.

## RESULTS

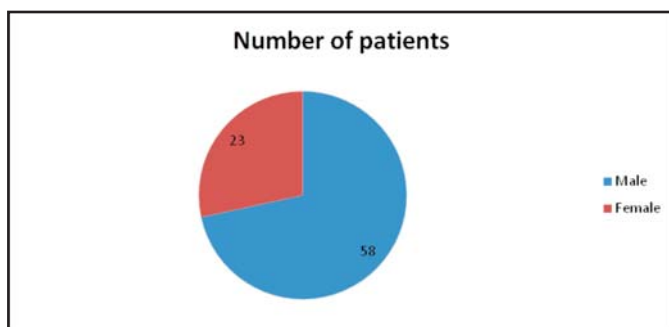
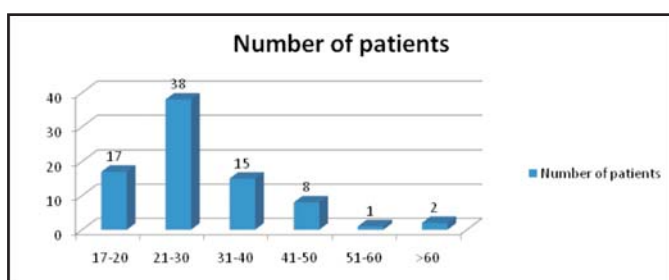
We recorded 81 cases among. Almost half of these belonged to the age group of 21-30 years with an average age 25 years. The frequency declined as the age advanced. Males outnumbered females. 58 were male (71.6%) and 23 were female (28.4%). 66.67% belonged to the lower socio economic strata And the rest were from middle income group. we did not record any patients coming from high socioeconomic group. 48 patients came from urban area while 33 were from rural settlement. 44 patients (54.3%) were referred from other hospitals.

Age in years	Number of patients	%
17-20	17	21.0
21-30	38	46.8
31-40	15	18.4
41-50	8	9.8
51-60	1	1.2
>60	2	2.4
Total	81	100.0

TABLE 1A : SOCIDEMOGRAPHIC DATA

Gender	Number of patients	%
Male	58	71.6
Female	23	28.4
Total	81	100.0

Table 1 B : GENDER DISTRIBUTION



Rural /Urban	Number of patients	%
Rural	33	40.7
Urban	48	59.2
Total	81	100.0

TABLE 1C: RURAL / URBAN

SES	Number of patients	%
Low	54	66.67
Middle	27	33.33
Total	81	100.0

TABLE 1D: SOCIO ECONOMIC STATUS

39.5% patients presented to our hospital within 3 to 5 hours consuming poison. And a majority of them were shifted to ICU by 1 to 2 hours.

## Time taken to reach hospital

Duration of hospital	Number of patients	%
1-2 hour	29	35.8
3-5 hour	32	39.5
>6 hour	8	9.8
1-2 day	4	5.0
3-5 day	3	3.7
Total	81	100.0

All the patients had consumed the poison orally and all with suicidal intent. we recorded 12 different types of poisoning agents. Most of the cases were organophosphorus compound poisoning (n=61, 71.3%). 3 patients had consumed 2 to 3 varieties of drugs which included analgesics, amitriptyline, decongestants, antihypertensives, 2 of them had overdosed on benzodiazepines. However all of them recovered. 3 had consumed aluminium phosphide and all 3 of them died. Most of them presented with nausea, vomiting, pain abdomen and altered sensorium.

Diagnosis	Number of patients (n=81)	%
OPCP	61	75.3
Carbamates	4	4.9
Phenol	3	3.7
Multiple drug	3	3.7
Unknown	2	2.5
Sleeping pill	2	2.4
Aluminium phosphide	3	3.7
Fevicol	1	1.2
Nitrobenzene	1	1.2
Paint thinner	1	1.2

Among those with OP 39.5% had excessive secretions and 50.6% had fasciculations. Low Cholinesterase levels correlated positively with mortality. The most common indication for mechanical ventilation was respiratory failure which mainly consisted of OP poisoning. 59

patients(72.8%) were ventilated. The mean duration of ventilation was 10 days. 40 patients(67.8%) were intubated and connected to ventilators by 1 to 2 days of admission .13 patients underwent tracheostomy. All patients with OP poisoning were given atropine and P2AM dose. ICU stay was longer for those with OP poisoning. PT and aPTT were increased with anticoagulant rodenticides poisoning and fresh frozen plasma was administered. None of the phenol poisoning had corrosive injuries. Of the 81 patients ,8 (9.8%) developed ventilator associated pneumonia. There were 12 deaths out of 81(14.81%).

## DISCUSSION

Poisoning is a common problem worldwide. With increasing work stress and life style changes people are under constant pressure and develop depression and suicidal tendencies. So it is not surprising that the incidence of self poisoning is on rise. Therefore it is important to know the socio demographic trend and substances commonly used in the area. Intensivists are confronted with poisoned patients on a routine basis, with clinical scenarios ranging from known drug overdose or toxic exposure, illicit drug use, suicide attempt, or accidental exposure. The protean manifestation of intoxication challenges even the most astute clinicians, particularly when patients present with altered mental status or when there is no history of intoxication. Recognition of a specific toxic syndrome helps, but symptoms are often non-specific or masked by other conditions.

The numbers of intoxicated males were greater than females in our study. These findings were comparable with the previous studies. The high incidence may be because males are more exposed to stress, strain and occupational hazards compared to females[6,7,8]. In this study the most common age group involved was between 21-30 years followed by the age group between 31-40 years. Thus, adolescent and young adults are at more risk. People living in more urbanized areas are at a higher risk of suicide than their counterparts in less urbanized areas. Bangalore city's people live in municipal areas at the rate of 58.3%. All the cases

had consumed poison with suicidal intent. This is in accordance with other studies[9,10,11]. This inference of manner of death is based on history given either by police or and relatives. The suicides may be due to various stress factors coming from financial, social, family problems, low level of education, immaturity and many more aspects of life. Easy availability of poisons made them easy victims also. The major part of suicidal attempt (59.2%) occurred at urban area. High suicide rate in urban areas is influenced by exposures to risk factors for suicide other than rural areas.

Incidence of poisoning was more in Hindu people. This can be explained as the majority of population in India are hindus.

Pesticides were the major cause of poisoning (80.2%), the reasons being agriculture based economic, poverty and easy availability of highly toxic pesticides. Occupational poisoning due to pesticides are also common in developing countries, due to unsafe practices, illiteracy, ignorance, lack of protective clothing. This is comparable with other studies done in south india[12]. However in north india the incidence of aluminium phosphide poisoning was more[13]. There were 12 different agents involved in our study.

Patients who had consumed carbamates were on ventilatory support for less number of days, as compared to patients who had consumed phosphates.

## CONCLUSION

Pattern of poisoning in present study is more or less similar to the pattern found in most of the other studies. This similarity is there in almost all parameters used in study. Most poisoning is by agricultural poison. As a conclusion, despite being a hospital-based study, we believe that these data provide important preliminary information on the pattern symptomatic poisoning in our place. In our region, intoxication especially affects young males, and most of them results from suicidal attempts. The poisoning related mortality could be decreased by improving ICU condition and appropriate supportive care.

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