

## ORIGINAL RESEARCH

# TO STUDY THE VARIOUS CORRELATES ON VARIOUS POISONING CASES IN A TERTIARY CARE HOSPITAL

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### ABSTRACT:

**Background:** 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 to pharmaceutical products and poisoning due to venomous animals, toxic plants and food contamination, all contribute to morbidity and mortality. The present study was emphasised to cover all the aspects of poisoning. Objective: The main objectives of the study is to study the prevalence of poisoning at Guru Gobind Singh Medical College and hospital and to analyze the patients admitted to the poison centre. **Method:** The study carried out in the period of 6 months observational retrospective and prospective both. The patient included in retrospective and prospective study were those who had undergone exposure to poison either by household or agricultural, pesticides, stings bite, snake bite, industrial toxins, toxic plants, drugs or miscellaneous products. **Results:** In Poisoning exposure was grouped in to 26 toxic substance with one unknown group. In this study the number of poisoning exposures were more in male (56%) over female (44%). Total of 50 patients was hospitalized due to acute poisoning in the hospital. The majority of incidence in male was from the age group of 20-40 years. The present study revealed that self-poisoning was more common type of poisoning. Accidental exposures were more common in male than in female. **Conclusion:** Acute poisoning is a common and urgent medical problem in our country. The mortality and morbidity due to poison can be reduced by the conducting educational programs, providing counselling services and poison information service to the people. **Keywords:** Poisoning, Toxins, Occupational exposures.

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This article may be cited as: Sumbria T, Devgan S, Sourabh K, Monga S, Rupali, Arora H. To study the various correlates on various poisoning cases in a tertiary care hospital. J Adv Med Dent Scie Res 2015;3(5):S23-S27.

## INTRODUCTION

The term poison was derived from Latin word "potionem" a drink; i.e. drink, eat, breathe, inject or touch enough of a chemical (also called a poison or toxin) to cause illness or death or poison is derived from Greek word 'Toxicon' which means 'Poison'. A poison is any substance that is harmful to the body when eaten, breathed, injected or absorbed through the skin.

Poisoning is a major global health problem with significant morbidity and mortality affecting people of all age groups. Earlier reports demonstrated that everyday almost 700 people die from poisonings around the world and for every person that dies, several thousands more are affected by poisoning.<sup>1,2</sup> It is estimated that up to half a million population die every year as a result of poisoning particularly due to pesticide poisoning.<sup>2</sup>

Occupational exposure to industrial chemicals and pesticides, accidental or intentional exposure to household to pharmaceutical products and poisoning due to venomous animals, toxic plants and food contamination, all contribute to morbidity and mortality.<sup>1</sup>

The danger of poisoning range from short-term illness to brain damage, coma and death. Some poisons in very small amounts can cause illness or injury. Some poisons cause immediate injury, such as battery acid or household cleaners. Other poisons may take years of exposure to create a health problem, such as heavy metals (lead, arsenic, mercury).

Young children are particularly vulnerable to accidental poisoning in the home, as are elderly people, often from confusion. Hospitalized people and industrial workers are also vulnerable to accidental poisoning by drugs errors and from exposure to toxic chemicals, respectively.<sup>3</sup>

The damage caused by poisoning depends on the poison, the amount taken and the age and underlying health of the person who takes it. Some poisons are not very potent and cause problems only with prolonged exposure or repeated ingestion of large amounts.

Poisoning is divided into 4 broad categories: Pharmaceuticals, Insecticides and pesticides, Plants and Animals, Chemicals. The treatment of acute poisoning can be summarized in four points: life support, which involves common measures to treat any urgent and serious pathology, reducing absorption of toxin, increasing its elimination and the use of specific antidotes.<sup>4</sup>

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.<sup>5</sup> Periodic epidemiological studies are necessary to understand the pattern of poisoning in each region. Studies of this nature will act as a useful planning tool for providing healthcare facilities to reduce the poisoning associated mortality rate. This study was designed to assess the pattern of poisoning in Faridkot district.

#### METHODOLOGY

The present study was conducted at Guru Gobind Singh Medical College and Hospital, Faridkot, Punjab. The study was carried out for the period of 6 months. The patients included in the study were those who had undergone exposure to poison either by household or agricultural pesticides, stings, bite, snake bite, industrial toxins, toxic plants, drug or miscellaneous products.

All cases of poisoning irrespective of age, sex, type and mode of poisoning, ingredients of poisons and the status of patients after poisoning admitted to the hospital were included in this study. The data including demographic profile of patients, time of exposure to poison, time interval between poisoning and hospitalization, duration of hospital stay, nature and class of poison, clinical manifestations of patients, treatments delivered to patients, outcome and circumstances of poisoning were obtained from medical records and were documented on a pre-structured proforma. The diagnosis of poisoning was based on history given by the patients or their entourage and clinical examination. The poisons were categorized in different groups depending upon their usage and/or chemical classification. The collected data were analyzed using Microsoft Excel software (Microsoft Corp., Redmond, WA, USA). P values of equal or less than 0.05 were considered as significant. Ethical clearance was taken from the institutional ethics committee before initiation of this research project.

#### RESULTS

A total of 50 reported cases were included into the study out of which 62% (n=31) patients were male and 48% (n=19) were female. Most of the patients 29(58%) were aged between 20-40 years and those aged between 40-60 years were lowest i.e. 8(16%). Most of the patients were reside in rural area 20(80%) as compare to urban areas 10(20%). A higher frequency of poisoning were experienced by the married individuals 39(78%). Most of the patients 24(48%) were hospitalized between 1-6 hours of exposure followed by less than one hour of exposure i.e. 18(36%).(Table- I)

**Table I:** Demographic profile of patients and time of poisoning (n= 50).

Variables	Results
<b>Gender</b>	
Male	31(62%)
Female	19(48%)
<b>Age groups</b>	
20-40 years	29(58%)
40-60years	8(16%)
60-80years	13(26%)
<b>Areas</b>	
Urban	10 (20%)
Rural	20 (80%)
<b>Marital status</b>	
Married	39(78%)
Unmarried	11(22%)
<b>Time interval between poisoning and hospitalisation</b>	
<1 hr	18(36%)
1-6 hrs	24(48%)
6-12 hrs	01(2%)
12-24 hrs	01(2%)
>24 hrs	06(12%)

### TYPE OF POISON

The majority of poisonings (42%) was due to consumption of pesticides followed by household products (14%) and pharmaceutical agents (12%) (Figure1). Among poisonings with Pesticides most cases comprised of baygon, organophosphorus compounds, rat poison, and insect repellents. Household items, were the second commonest cause of poisoning seen in 7 cases (14%) out of which (66.7%) were due to phenol poisoning while the rest were due to petroleum products (20%) and camphor (13.3%). All 5 cases (12.2%) of envenomation were due to snakebites.

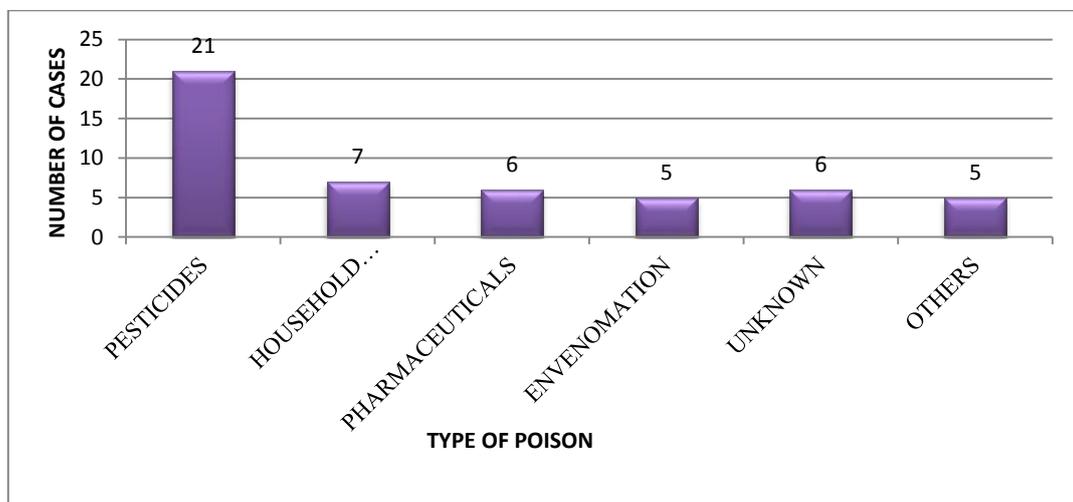
it can be seen, neurologic manifestations were the most common findings (62%) followed by gastrointestinal manifestations (36%). The procedure of gastric lavage was done for 11 patients (22%). Specific antidotes were given to patients 9(18%). All patients received adequate symptomatic and supportive treatments. Lifesaving treatment in the form of mechanical ventilation and intubation were used for critical cases (23%). All patients were treated successfully with no mortality.

### CLINICAL FINDINGS AND TREATMENTS

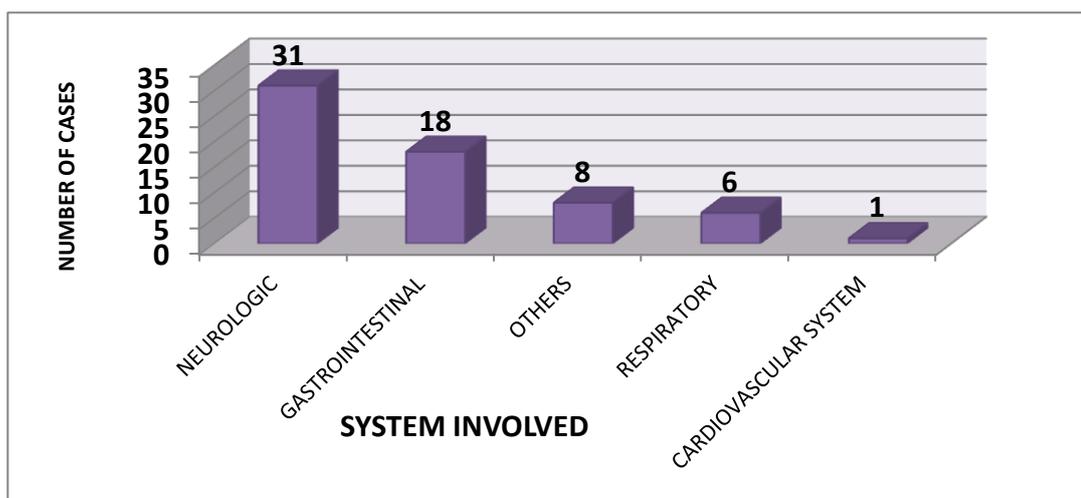
In figure II the frequency of each organ system involvement in the study population is shown. As

### INTENTION OF POISONING

The intention of poisoning was found to be accidental in 29 cases (58%) and suicidal in 21 cases (42%) while none of them was homicidal in nature (Table 2).



**Figure I:** Type of Poisons (\*others include poisoning with: acetone cyanide, multiple poisoning, psychotics, yellow phosphorus and unknown poison)



**Figure II:** System symptomatology (Details of manifestations: neurologic (headache, drowsiness, loss of consciousness and dizziness), gastrointestinal (nausea, vomiting, pain in abdomen, difficulty in swallowing), others (swelling at the site of bite, chemosis)

**Table 2:** Showing intention of poisoning

	INTENTION OF POISONING	
	ACCIDENTAL	SUICIDAL
<b>GENDER</b>		
<b>MALE</b>	<b>23</b>	<b>8</b>
<b>FEMALE</b>	<b>06</b>	<b>13</b>
<b>MARITAL STATUS</b>		
<b>MARRIED</b>	<b>19</b>	<b>20</b>
<b>UNMARRIED</b>	<b>10</b>	<b>1</b>

## DISCUSSION

In this study, the epidemiological profile of poisoning in Guru Gobind Singh Medical College and Hospital was assessed. Among the cases studied, men slightly outnumbered women that was similar to findings of other studies conducted in India.<sup>6-9</sup> This can be due to the fact that men are more exposed to stress and dangerous environmental conditions.

The present study shows that the highest number of patients belonged to the age group of 20 to 40 years with a secondary peak seen in the age group of more than 60 years that resembles the age pattern of poisoning which was found by other researchers.<sup>6-12</sup> The possible reason for the secondary peak seen in old age is due to veining immunity and defence power people with age more than 60 years are more hospitalised in tertiary care hospital.

Furthermore, a significantly higher frequency of poisoning was seen in married patients which was similar to other studies conducted in Bangladesh and India.<sup>10,13,14,15</sup>

Suicidal poisoning was most commonly seen in married men and women. This finding is similar with the study done in south Karnataka.<sup>16</sup>

The present study showed that the highest frequency of poisoning occurred with pesticides followed by household products. Similar results were found in several studies done in India.<sup>6,7,17-22</sup>

The possible explanation to this fact is that the most of the patients in our study was from rural background hence more exposed to pesticides and insecticides. Second most common cause is household products as household cleaning products like phenol, bleaches, and their derivatives are stored in most houses and easy availability of such products makes them responsible for higher incidence of poisoning. Similarly, household chemicals were responsible for the highest number of accidental poisoning cases in a study done in selected hospitals of South Africa.<sup>23</sup> Fan et al. also revealed household products as one of the most common causes of

poisoning in children and adolescents less than 19 years old in New Zealand.<sup>24</sup>

Moreover, in a study done by Presgrave Rde et al. in Brazil, it was found that unintentional poisoning was most commonly occurred in children due to ingestion of household cleaning products, pesticides or corrosive agents.<sup>25</sup> Parjapati et al. also reported household chemicals as the second most common toxic agents abused in poisonings in Ahmedabad with the highest mortality.<sup>26</sup>

It has been aptly said by various researchers that the pattern of poisoning in a region depends upon various factors such as availability, cost and access to toxic agents, socioeconomic status, cultural and religious characteristics of people, and regional considerations.<sup>27-29</sup>

In this study, none of the patients died. Mortality due to poisoning depends on various factors including age, toxicity of the poison, amount consumed, health status of the patient, early hospitalization and proper management.

In the present study, 84% of the patients were hospitalized within 6 hours of toxic exposure, and thus early management was possible. Most of the patients consumed relatively less toxic and non-fatal dose of the poison. These factors might have contributed to non-fatality seen in these cases. Similar outcomes were also noted in a research done in Brazil which household products were the most common cause of poisoning.<sup>25</sup>

## CONCLUSION

In the present study, pesticides were identified as the main cause of poisoning in rural areas of India. This finding warrants education of the general population about the risk of poisoning due to pesticides and insecticides. The health and hospital authorities should take initiatives in creating awareness about the dangers of such poisons. Establishment of a poison control center in the region will also help in preventing and controlling such poisoning events.

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**Source of support:** Nil

**Conflict of interest:** None declared