

# Study Of Incidence And Pattern Of Acute Poisoning Cases At Out Teritiary Care Hospital

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## Abstract

**Introduction:** A poison is a substance that is capable of causing illness or harm to living organisms on contact or upon introduction into the body and may be used deliberately with this intent. Toxins and venoms are poisons of biological origin, with the latter term usually reserved for those injected by the bite or sting of a poisonous animal. Acute poisoning is a medical emergency. It is important to know the nature, severity and outcome of acute poisoning cases in order to take up appropriate planning, prevention and management techniques to save innumerable lives. Management of critically ill patients of acute poisoning will greatly improve if the common causes of poisoning are properly defined.

**Aim and Objective of the study:** to assess the incidence and pattern of acute poisoning cases during hospital stay in a tertiary care hospital.

**Materials and Methods:** A detailed history had been taken from the patient or patient's family. Data regarding age, sex, time elapsed after intake, circumstances of poisoning, name of poisonous substance, chemical type, duration of hospitalization, severity and outcome are collected. Data is collected for general physical examination and systemic examination of the patients. Data were collected from patient's case sheets and transferred to data entry format for evaluation.

**Discussion and conclusion:** It is important to know the nature and severity of poisoning in order to take appropriate preventive measures. Studies of this nature will be a useful tool in planning and management of critically ill acute poisoning cases. The initial approach to the poisoned patient should focus on six major areas: (1) resuscitation and stabilization; (2) history and physical examination, including evaluation for a specific toxidrome; (3) appropriate decontamination of the gastrointestinal tract, skin, and eyes; (4) judicious use of laboratory tests, electrocardiograms, and radiographic studies; (5) administration of specific antidotes, if indicated; and (6) utilization of enhanced elimination techniques for selected toxins. By taking proper measures mortality of acute poisoning cases can be decreased.

**Keywords:** acute poisoning, outcomes, chemical type, duration of hospitalization, severity and preventable measures.

## INTRODUCTION

A poison is a substance that is capable of causing illness or harm to living organisms on contact or upon introduction into the body and may be used deliberately with this intent. Toxins and venoms are poisons of biological origin, with the latter term usually reserved for those injected by the bite or sting of a poisonous animal [1]. According to the World Health Organization (WHO), [1] nearly 200,000 people die worldwide from accidental poisoning and around 84% of them occur in low- and middle-income countries. In 2012, unintentional poisoning led to loss of over 10.7 million years of healthy life in terms of disability-adjusted life years. Of the nearly million suicides recorded each year, the WHO estimates [1] that deliberate pesticide ingestion accounts for 370,000 deaths. Snakebites are an important public health problem in many countries, with rough estimates of about 5 million snakebites every year, resulting in up to 2.5 million envenomations, up to 100,000 deaths, and up to 300,000 cases of amputations and other permanent disabilities [1].

However, the nature, intent, severity and outcome of poisonings, and envenomations vary widely across nations, and often, in large countries, there are large regional disparities as well. In India, according to the National Crime Records Bureau reports, poisoning was estimated to contribute 4.6% of the 451,757 accidental deaths recorded in the country in 2014 and 6.3% of the 413,457 accidental deaths in 2015 [2,3]. Food poisoning and snakebites caused an estimated 1624 and 8554 deaths, respectively, in 2015 [3]. Among modes adopted to end life by suicide victims, poisons contributed to 26.0% (34,254) and 27.9% (37,232) of total cases in 2014 and 2015, respectively, with another 0.5% in both years being contributed by sleeping pills [3].

Acute poisoning is a medical emergency. It is important to know the nature, severity and outcome of acute poisoning cases in order to take up appropriate planning, prevention and management techniques to save innumerable lives. Management of critically ill patients of acute poisoning will greatly improve if the common causes of poisoning are properly defined [4].

## AIM AND OBJECTIVES OF THE STUDY:

To assess the incidence and pattern in acute poisoning cases during hospital stay at our tertiary care Hospital.

## MATERIALS AND METHODS

A prospective observational study is conducted on patients of various acute poisoning due to drugs and chemicals in people above the age of 12 years. Cases of snake bite, food poisoning and allergic reactions to drugs were not included in the study. Patients were assessed at the time of admission. A detailed history had been taken from the patient or patient's family. Data regarding age, sex, time elapsed after intake, circumstances of poisoning, name of poisonous substance, chemical type, duration of hospitalization, severity and outcome are collected. Data is collected for general physical examination and systemic examination of the patients.

**Study Setting:** Identify the type of poisoning inclusion in the study - cases of different poisonings being admitted for the treatment of poison with various co-morbid conditions are selected.

**Study Population:** Defining criteria, standards and design of data entry format

1. **Inclusion criteria:** In patients having OP poisoning, agricultural pesticides, industrial toxins, toxic plants, drugs, acid, and any comorbid conditions were included in the study.
2. **Exclusion criteria:** In patients having snake bite, stings bite, food poisoning and allergic reactions to drugs are excluded from the study.

**Sample Size:** All the patients of acute poisoning with various co-morbid conditions admitted in General Medicine at our Hospital during the period of data collection.

**Design of the Study:** Observational descriptive study

**Study Period:** The study was carried out for a period of one year from January 2021 to December 2021.

**Sample Design:** No sampling technique will be applied as all the patients of acute poisoning with various comorbid condition will be included in my study.

**Control** - Not required

**Methods of Data Collection:** A detailed history had been taken from the patient or patient's family. Data regarding age, sex, time elapsed after intake, circumstances of poisoning, name of poisonous substance, chemical type, duration of hospitalization, severity and outcome are collected. Data is collected for general physical examination and systemic examination of the patients. Data were collected from patient's case sheets and transferred to data entry format for evaluation.

### Study Procedure:

- Informed consent form will be filled up and duly signed by patients/ persons accompanying the patients before enrolling them in this study.
- Detailed history will be taken from the victims or relatives of the patients of acute poisoning with various co-morbid condition
- Full clinical examination will be done and will be recorded in pre-designed proforma (enclosed).
- To note the duration of hospital, stay and outcome of the patients in relation to
  - Nature of poison consumed
  - Amount of poison consumed
  - Duration between ingestion and initiation of treatment
  - Therapy received before hospitalization
- All the patients should be treated as per standard protocol.

**Data analysis and interpretation:** The collected data were analyzed for their appropriateness and suitability. The interpretation was made for the collected data

## RESULTS:

We included a total of 324 subjects based on inclusion and exclusion criteria in the age group > 5 years and < 50 years, who presented with CSOM.

**Table 1: Shows age-wise distribution of study subjects**

VARIABLES	Number =324	Percentage
<b>AGE GROUP</b>		
13-20 yrs.	64	19.75
21-30 yrs.	178	54.93
31-40 yrs.	54	16.66
>40 yrs.	28	8.64
Total	324	100
Male: Female	136:182	42%:58%

Majority of the cases were in the age group of 21-30 years, followed by age group 13-20 years. In our study, 42% were males and 58% were females.

**Table 2: Distribution of study population by type of poisoning**

Poisons	Number of Cases=324	Percentage
Cockroach killer	4	1.23
CuSO <sub>4</sub>	09	2.77
Cypermethrin	11	3.39
Datura	2	0.617
HNO <sub>3</sub>	1	0.308
Kerosine	14	4.32
Lice killer	15	4.62
Mosquito repellent	19	5.86
Muriatic acid	32	9.87
OP	88	27.16
Paraquat	22	6.79
Phenyl	30	9.25
Rat killer	20	6.17
Tab Alprazolam	26	8.02
Tab Amitriptyline	6	1.85
Tab Lorazepam	6	1.85
Tab Nitrazepam	9	2.77

It is evident from the table 2 that the most common poisoning was OP poisoning followed by muriatic acid.

**Table 3: Distribution of study population based on clinical features**

Clinical presentation	No = 324	Percentage
CNS	146	45
CVS	102	31.4
RS	39	12.03
GIT	202	62.3

There was significant difference in outcome in terms of average duration between poisoning and initiation of treatment in hospital (p value 0.00) and there were significant differences in outcomes in different poisonings (data not shown).

## DISCUSSION

Poisoning is a major problem all over the world, although its type and the associated morbidity and mortality vary from country to country depending on the socioeconomic factors and cultural diversity. According to the legal system of our country, all poisoning death cases are recorded as unnatural death and a medico-legal autopsy is routine.

Animal poisons usually referred to the venom from poisonous animals. Although the venom from poisonous snakes has always been among the most commonly feared poisons, poisons from toads, salamanders, jellyfish, stingrays, and sea hares are also of concern. Nicander of Colophon, a Greek poet and physician who is considered to be one of the earliest toxicologists, experimented with animal poisons on condemned criminals. [5]

Poisonous plants used in India at this time included *Cannabis indica* (marijuana), *Croton tiglium* (croton oil), and *Strychnos nux vomica* (poison nut, strychnine). [6] [7]

The mineral poisons of antiquity consisted of the metals antimony, arsenic, lead, and mercury. Undoubtedly the most famous of these was lead. Lead was discovered as early as 3500 B.C. [8, 9] In addition to its considerable use in plumbing, lead was also used in the production of food and drink containers. [10] It was common practice to add lead directly to wine, or to intentionally prepare the wine in a lead kettle to improve its taste. Not surprisingly, chronic lead poisoning became widespread. Nicander described the first case of lead poisoning in the 2nd century B.C. [11]

Pesticides are substances or mixtures of substances intended to prevent, destroy, repel, or mitigate any pest and any substances or mixture intended for use as a plant regulator, defoliant, or desiccant [13]. The ideal insecticide is one that has low acute toxicity to humans and nontarget species is inexpensive to apply and produce but would have no environmental persistence or bioaccumulation [12].

A rodenticide is any product commercially marketed to kill rodents, mice, squirrels, gophers and other small animals. Rodenticides are a heterogeneous group of chemicals bearing little or no relationship to one another, apart from their current or historic use as rodenticides [13].

Opioid use is widespread. Overdose and toxicity, both intentional and unintentional, remain major causes of drug-related morbidity and mortality. Lethality related to opioids is primarily caused by respiratory depression. Thus, mechanical ventilation, or administration of a short-acting opioid antagonist such as naloxone, should be adequate initial therapy. An appreciation of the pharmacologic differences between the various opioids allows for the identification and appropriate management of patients poisoned or otherwise adversely affected by these agents. [14]

The NSAIDs are a large class of drugs that share similar clinical toxicity based on their ability to inhibit COX. The toxicity that results from overdose usually consists of epigastric pain, nausea or vomiting, and mild CNS depression. Uncommonly, severe overdoses result in metabolic acidosis and CNS toxicity, including seizures, apnea, and coma. Necessary clinical management usually is limited to general supportive care and assessment for the presence of additional substances (especially acetaminophen) and risk factors for organ system toxicity. Activated charcoal is indicated as GI decontamination [15].

## CONCLUSION

It is important to know the nature and severity of poisoning in order to take appropriate preventive measures. Studies of this nature will be a useful tool in planning and management of critically ill acute poisoning cases. The initial approach to the poisoned patient should focus on six major areas: (1) resuscitation and stabilization; (2) history and physical examination, including evaluation for a specific toxidrome; (3) appropriate decontamination of the gastrointestinal tract, skin, and eyes; (4) judicious use of laboratory tests, electrocardiograms, and radiographic studies; (5) administration of specific antidotes, if indicated; and (6) utilization of enhanced elimination techniques for selected toxins. By taking proper measures mortality of acute poisoning cases can be decreased.

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