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Pharmacoepidemiology of Poisoning Cases in Emergency Department of Tertiary Care Hospital

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Keywords: Mortality, Morbidity, Hydrocarbons, Intentional poisoning.

ABSTRACT Background: Poisoning is a major global health problem and is the leading cause of morbidity and mortality in individuals of both the gender and almost all age groups. Incidence of poisoning in India is highest when compared to other countries in the world. **Aims and Objectives:** The present study is aimed to assess and evaluate the demographic profile, pharmacotherapy and its outcomes of poisoned patients who are admitted in emergency department of a tertiary care hospital in Hyderabad. **Materials and Methods:** It is an observational, non-interventional, retrospective study carried out in the emergency department of a tertiary care hospital in Hyderabad. A total of 100 patients were involved in the study and the data was collected from the medical record department through patient profile form, treatment charts and case sheets. **Results:** The age group of 21-30 years was observed with maximum poisoning and females were dominant over males. Poisoning with drugs was more common followed by hydrocarbons and household substances. Intentional poisoning was more common. **Conclusion:** Increased incidence of intentional poisoning in females needs counseling. Public health education and awareness about anxiety, stress, and depression that results in such poisoning cases is required.

INTRODUCTION

Poisoning is a condition that occurs when the individual inhale, ingest, inject, or exposed to enough of hazardous substance, thereof producing disease and even death. [1] The clinical manifestation of the poisoning is based on whether it is acute or chronic. The severity depends upon the type of poison, its dosage, the type of dosage form and any comorbidity present in the patient [2]. As stated by WHO nearly 3 million people have been exposed to poison on an annual basis leading to death of 2200 people, moreover the incidence of poisoning in India is most enormous in the world when compared with other countries. (3, 4) In addition, Easy mode of accessibility and inexpensive cost of hazardous chemicals play a crucial part in suicidal and accidental poisoning in India, thereby leading to mortality rate around 15 to 20 percent. (5, 6, 7, 8)

On the contrary, the investigations of poisoning inquisition presented by National Poisons Information Centre, New Delhi, displayed that the foremost incidence of poisoning was mainly due to use of household ingredients (44.1%) accompanied by drugs (18.8%), agricultural pesticides (12.8%), industrial chemicals (8.9%), animals bites and stings (4.7%), plants (1.7%), unknown causes (2.9%) and diverse groups (5.6%). (4) Accordingly, prompt diagnosis, treatment and prophylaxis play a pivotal role in decreasing the burden of poisoning and its complications in any state. Recognizing the various forms of poisoning is beneficial for minimizing the probability of unintentional poisoning and also impeding intentional poisoning; henceforth it is essential to determine the degree and progression of problem. The present study is aimed to assess and evaluate the demographic profile, pharmacotherapy and its outcomes of poisoned patients who are admitted in emergency department of a tertiary care hospital in Hyderabad.

AIMS AND OBJECTIVES:

The present study is aimed to assess and evaluate the demographic profile, pharmacotherapy and its outcomes of poisoned patients who are admitted in emergency department of a tertiary care hospital in Hyderabad.

METHODOLOGY:

Materials and methods: The present study is observational and retrospective study, which was conducted in Tertiary Hospital in Hyderabad**.**

Data collection: A total of 100 cases of poisoning were collected from medical record department of the Hospital. The present study was conducted from January 2019 to February 2020.

The study has been conducted for evaluating the following:

1. Age distribution of poisoned cases

2. Gender Distribution

3. Type of poisoning

4. Nature of poisoning

5. Time lapse in reaching hospital

6. Hospital Stay

7. Treatment and outcomes of poisoning

Inclusion Criteria:

Subjects of all ages, who got admitted with the history of poisoning, were included in the study.

Exclusion Criteria:

Subjects with unknown cause of poisoning, infants less than 6 months, food poisoning, allergic reactions were excluded from this study.

Statistical Analysis:

The study data were analyzed in terms of descriptive analysis and further presented as pie charts, tables, and graph. The variables were presented as mean.

OBSERVATION AND RESULTS:

The subjects were evaluated and analyzed on various parameters.

1. AGE DISTRIBUTION: The age of the subjects ranges from 0 to 65 years. The median age was found to be in the range of 21-30 years. The patients in the age range 21-30 years were high with a percentage of 59% followed by 11-20 years, with a percentage of 19%.

Table No. 1: Patient Distribution Based on Age:

Age (in years)	%of cases
1-10	1%
11-20	19%
21-30	59%
31-40	15%
41-50	3%
51-60	2%
>60	1%

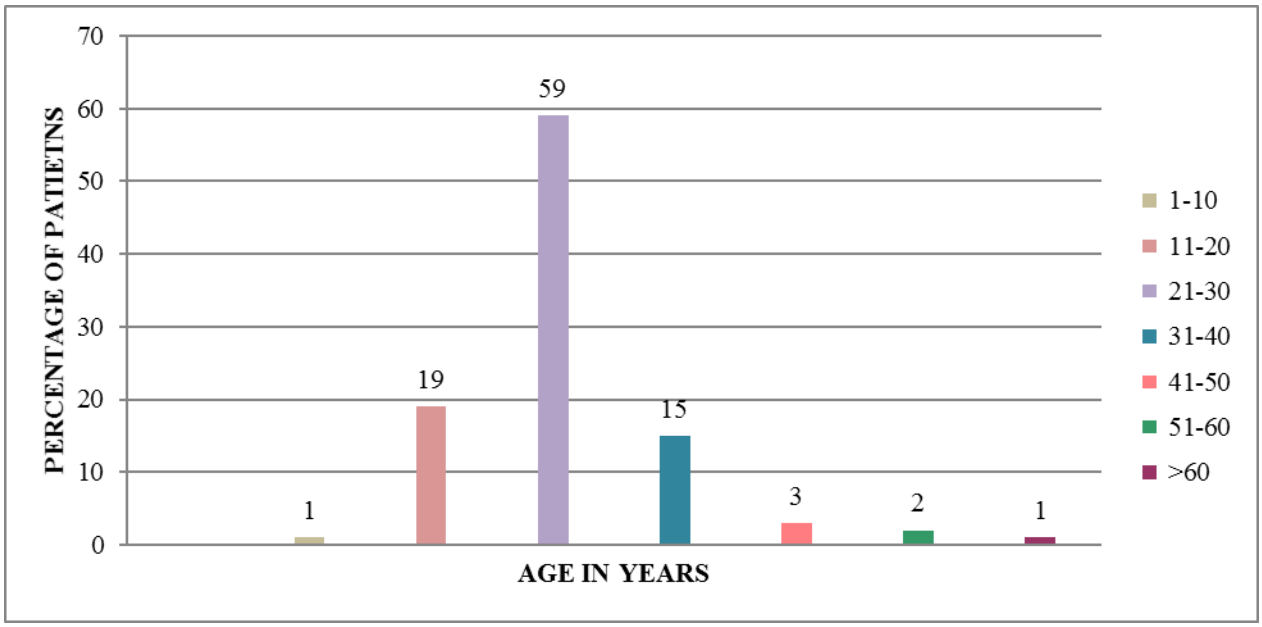

Figure No. 1: **Age-wise distribution and percentage of patients**

2. GENDER DISTRIBUTION:

Poisoning in females was predominant when compared to males and the ratio of male: female is 37:63.

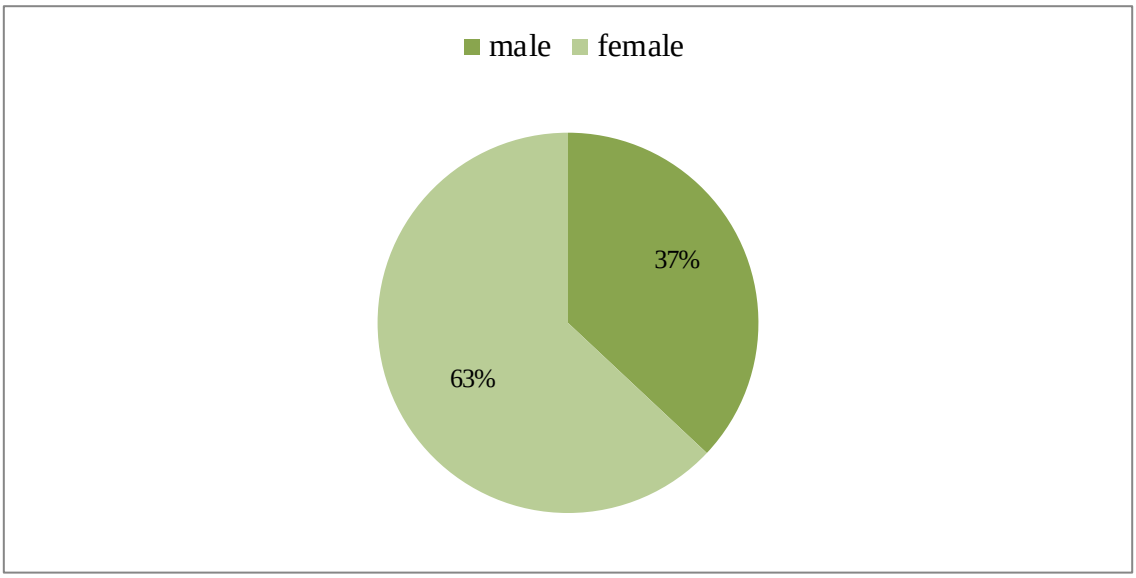

Figure No. 2: Percentage of Male and Female attributed to poisoning

3. TYPE OF POISONING:

In the present study, suicidal poisoning constitutes about 92% of cases followed by accidental and Homicidal, which were and 7% and 1 % respectively.

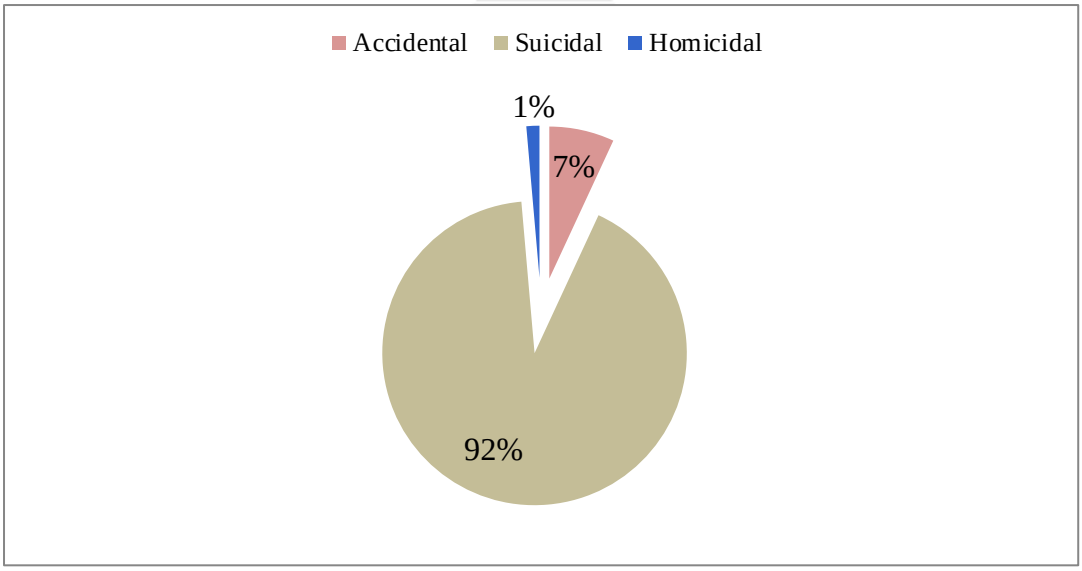

Figure No. 3: Percentage Distribution of various poisoning cases.

4. NATURE OF POISONING:

The highest cases of poisoning were due to drugs (51%) followed by Hydrocarbons (20%).

The consumption of drugs such as paracetamol, antipsychotic drugs, benzodiazepines, iron supplements, thyroxine, hypoglycaemics, calcium supplements, anti-tubercular drugs, aspirin progesterone, multivitamins, were common which included 51 cases followed by household substances such as bathroom cleaners, all out, Dettol, hair dye, Savlon liquid which constitutes of 17 cases, organophosphorus poisoning which accounts about 10% of cases followed by Hydrocarbons which includes 20% cases.

Table No. 2: Nature of poisoning along with percentage

Nature of Poison	% of cases
Drugs	51%
Household substances	17%
Biological agents	0%
Agricultural agents	10%
Hydrocarbons	20%
Bites	2%

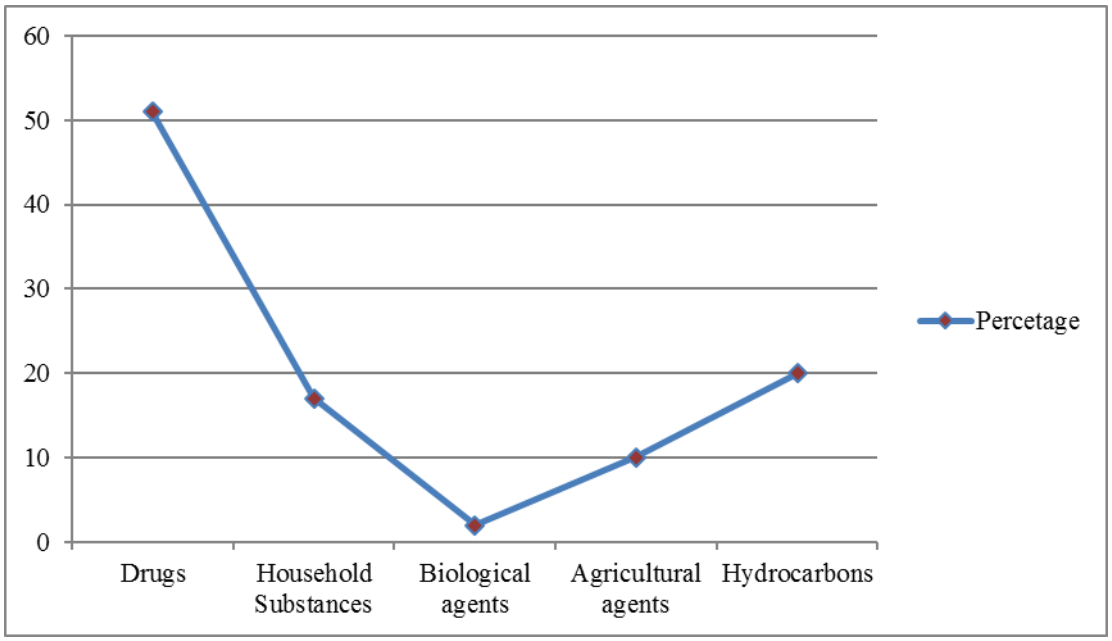

Figure No. 4: A plot of Nature of poisoning and its percentage of cases

5. TIME LAPSE IN REACHING HOSPITAL:

Maximum cases were hospitalized within 1-3 hours of poisoning. Therefore, those patients who were hospitalized within 3 hours improved significantly achieving the desired outcomes.

Table No. 3: Percentage of time lapse in hours:

Time Lapse(in hours)	% of cases
<1hr	15%
1-3 hrs	43%
3-6hrs	32%
6-9 hrs	3%
9-12hrs	2%
>12hrs	5%

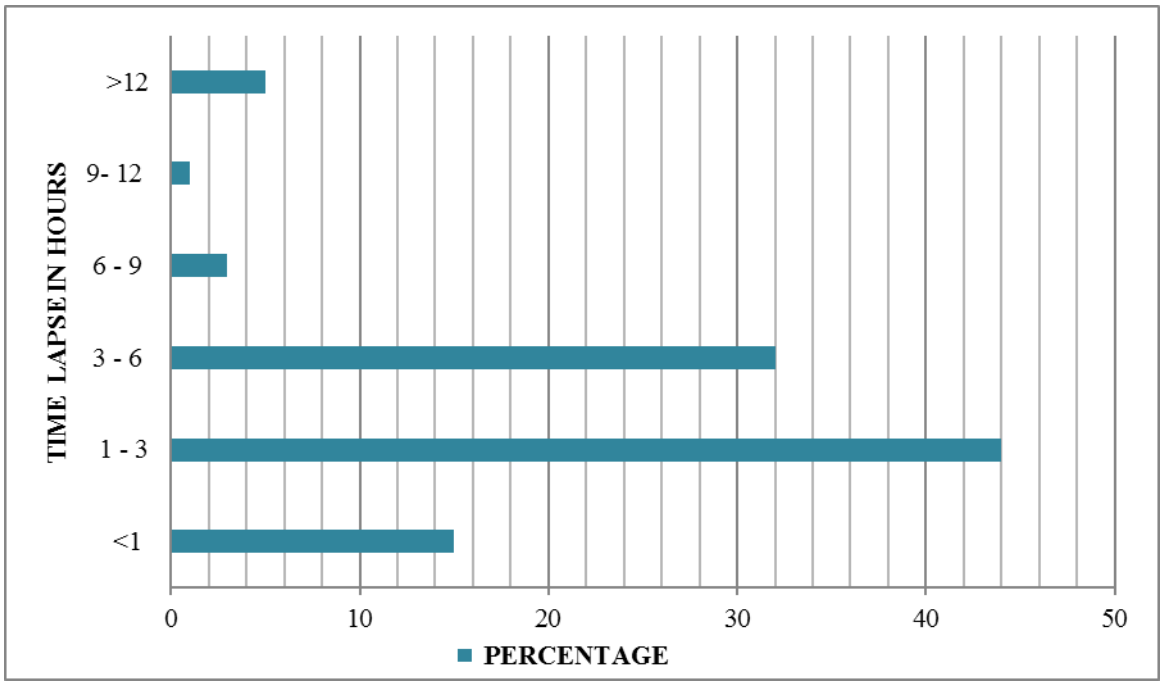

Figure No. 5: Percentage of time lapse in hours

6. HOSPITAL STAY:

Table No. 4: Duration of hospital stay

Duration of Hospital stay	% of cases
< 1 day	1%
1 – 2 days	24%
2 days to 4 days	55%
5 days to 7 days	19%
> 1 week	1%

Only 1% of cases stayed in Hospital for < 24hours, majority of cases stayed in hospital for around 2 to 4 days.

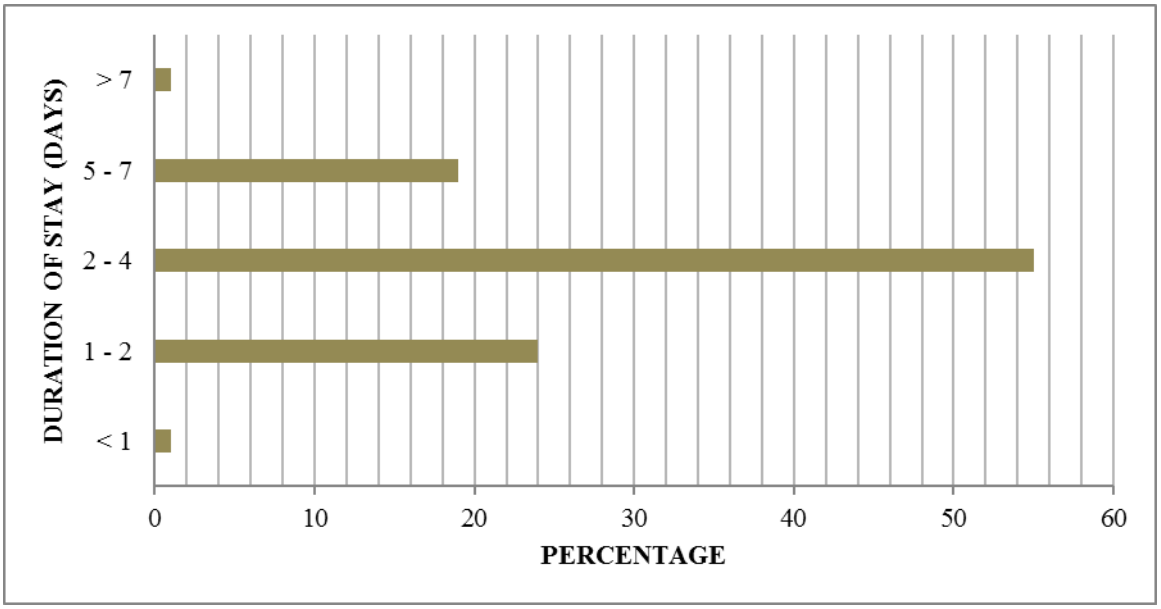

Figure No. 6: Duration of Hospital stay exhibited by patients

7. TREATMENT AND OUTCOMES OF POISONING:

Accordingly, diagnosis was done based on characteristic symptoms, meanwhile contact with poisons, or any history of previous exposure. In addition, treatment was immediately started upon admission in the casuality at the hospital. Ryle's tube was inserted and Gastric lavage with distilled water and normal saline was done in majority of patients.

For management of organophosphorus poisoning, whilst the patients were administered atropine 1-2 mg bolus, intravenously followed by pralidoxime 1gm IV Infusion bolus, thereby followed by adjuvant therapy. Additionally, those with paracetamol poisoning were given antidote acetylcysteine succeeded by antiemetic and antibiotics, moreover for treating snakebite anti-venom was administered.

Table No. 5: Nature of poisoning and its outcomes:

Nature of Poison	No of cases	Special antidote	Cure	Death
Drugs	51%	5%	100%	0%
Household substances	17%	0%	100%	0%
Biological agents	0%	0%	0%	0%
Agricultural agents	10%	8%	100%	0%
Hydrocarbons	20%	0%	100%	0%
Bites	2%	2%	100%	0%

DISCUSSION

Regarding alleged manner of poisoning in the present study pointed the highest incidence of suicidal poisoning 93% followed by accidental poisoning 7% and homicidal 1%, Similar to the findings of Avinash Kumar et al.[9]. The present study indicated that the highest number of poisoning cases belong to the age young adults (59%) followed by adolescent (19%), similar findings were noted by Hammed et al. in United Arab Emirates[10]; Afshari et al. in Iran[11], Patel et al. and Singh et al. in India[12,13], Sarkar et al. in Bangladesh [14]; The incidence of poisoning was found to be more in females similar to the studies by Hovda et al.[15] in Norway and Avsarogullari et al.[16]. The reason for female dominant findings can be parochial attitude of females towards socio-psychological problems.

In the present study, highest number of poisoning cases were due to pharmaceutical agents resembling the studies performed by Hovda et al and Avsarogullari et al [15, 16] This findings are contradictory to the results of other studies performed in India which showed Agrochemicals and household substances were responsible for majority of cases [17, 18]. The mean duration of hospital stay was 2-4 days and only one patient stays for more than a week.

CONCLUSION

In this study, pharmaceutical drugs and hydrocarbons were recognized as major cause of poisoning. Unfortunately, increased intentional poisoning in adults is likely due to stress and depression thereby causing an upsurge increase in suicidal tendencies. Henceforth it is essential to create awareness, education programs should be conducted, and psychiatric consultation is needed, wherein counselling should be provided to adolescents in order to prevent suicidal poisoning. Additionally, Proper storage and effective use of pharmaceutical agents with adequate safety measures should be guaranteed by parents. At last, every health care centre should be bounded by Poison Information Centre (PIC) to manage poisoning patients on an emergency basis.

CONFLICT OF INTEREST: The authors declare they have no conflict of interest.

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