

Assessment and Evaluation of Poisoning Cases

Ruthushree Podanolana Basappa¹, Nagaraja Suraj²,
Mahendra Kumar Betur Jayappa³

^{1,2,3}Department of Clinical Pharmacy, Farooqia College of Pharmacy, Mysuru, India

Abstract:

A substance is considered poisonous if it causes harm damage or death when ingested, inhaled or comes in contact of the body. Poisoning is a significant global health issue and therefore it is crucial to understand the type, cause, severity and, treatment pattern in order to take the appropriate measures because there is a massive epidemic of non-communicable diseases that can affect people of all ages. The main objective of the study was to assess and evaluate the poisoning cases. It was a retrospective and prospective study carried out for a period of 6 months from April 2023 to October 2023. The study involved 233 patients. Male preponderance (72.53%) was seen over the female (27.46%). The people between the age group of 21 to 30 years (33.47%) were more prone to poisoning cases. Most of the patients were married (62.66%). About 84.87% of people consumed poison deliberately due to various causes like financial crisis, family conflict, relationship failure, under the influence of alcohol, depression, and, other medical issues. 66.52% of people were from the rural background whereas 33.48% were from the urban background. Farmers (27.89%) were the major group of the population affected by the poisoning cases followed by the homemakers (17.16%). Antiemetics (90.99%) was the most common class of drug used, vomiting (65.24%) was the most common presenting complaint, and organophosphorus (34.76%) was the most common type of poisoning.

The study concluded that in this study the most common type of poisoning is organophosphorus poisoning followed by the pharmaceutical agents. Most of the poisoning cases were deliberate due to various reasons like family conflicts, relationship failure, personal issues, financial crises, medical issues and under the influence of alcohol. Implementing proper and strict regulation on marketing agricultural products and restricting the availability in the market. Managing the causes and educating the people regarding the importance of life, promoting the small-scale business, supporting poor, carrying out the counselling session to the pre-teens and teens, restricting the intake of alcohol, providing proper psychiatric care, keeping all the hazardous substances in a safe and difficult to reach places can prevent the poisoning cases.

Keyword: Organophosphorus, prevention strategies, antiemetics, psychiatric care.

I. Introduction

A Substance is considered poisonous if it causes harm or damage or death when it is ingested, inhaled or comes in the contact of the body. Acute exposure to toxic substances lasting less than twenty-four hours is considered as poisoning ⁽¹⁾. Poisoning is a significant global health issue. It is crucial to understand the type and severity of poisoning in order to take the appropriate preventive measures because there is a massive epidemic of non-communicable disease that can affect people all ages and socioeconomic status.

A case of poisoning is also defined as the overdose of drugs, medicaments, biological substances and wrong substances given or taken in error. [T36-T50, international classification of disease and related health problems-10th revision (International Classification of Disease)]⁽²⁾. According to World Health Organization, poisoning occurs when people drink, eat, breathe, inject or touch enough hazardous substances (poison) to cause illness or death⁽³⁾.

The majority of fatal poisoning has been reported in developing countries among agricultural workers. Every year poisoning causes about five to six death per lakh in India. Ignorance, socioeconomic factors, poverty, financial issues, self-medication, the ease of access to various toxic substances, stress and media are the frequent causes of poisoning⁽⁴⁾.

Paracelsus, the herald of Modern Toxicology, assumed that everything is poison and only the dose plays the central role. Poisoning can happen intentionally or unintentionally. The indication of poisoning cases is increasing due to the changes in lifestyle and social behavior of people. Household chemicals and prescription drugs are the most common poisons in the developed countries, but agricultural chemicals are the most common poisons in the developing countries⁽⁵⁾.

Advances in the field of industry, agriculture and medicine have provided large number of insecticides that can cause serious poisoning if exposed. In general, accidental poisoning occurs more often in the children whereas suicidal poisoning occurs in the young adults⁽⁶⁾. The incidence of poisoning in India is one of the highest in the world estimated at over 50000 people die every year from poisoning. The most common agents in India are pesticides (organophosphates, carbamates, chlorinated hydrocarbons, Pyrethroids and aluminum or zinc phosphide), sedatives, chemicals (corrosive acid and copper sulphate), alcohol, plant poisons (Datura, Oleander, Strychnos and gastrointestinal irritants such as Castor, Croton, Calotropis, etc.) and household poisons mainly cleaning products. Among children, the most common culprits are kerosene, household chemicals, medicines, pesticides and garden plants.

The European Association of Clinical Poison Centers and Clinical Toxicologist have proposed a guideline to assess the severity of the poisoning that can be applied to acute poisoning both for adults and children. According to this system, there are basically four levels of severity:

II. Material And Methods

This prospective and retrospective study was carried out on inpatients of CSI Holdsworth Memorial (Mission) Hospital, Mysuru from April 2023 to October 2023. A total of 233 patients poisoned patients were involved in this study.

Study Design: Retrospective, Prospective observational study

Study Location: This was a tertiary care teaching hospital, CSI holdsworth Memorial (Mission) Hospital, Mysuru.

Study Duration: April 2023 to October 2023.

Sample size: 233 patients.

Procedure methodology

After obtaining the approval from the institutional ethical committee, a well-designed data collection form was prepared to collect the data. This data collection form included the demographics of the patients like name, age, gender, occupation, address, economic status, and qualification, poison information, patient past medical history, laboratory abnormalities, specific antidote if administered, treatment chart, and discharge summary. The collected data was documented in the excel sheets for the easy retrieval, storage and analysis.

III. Result

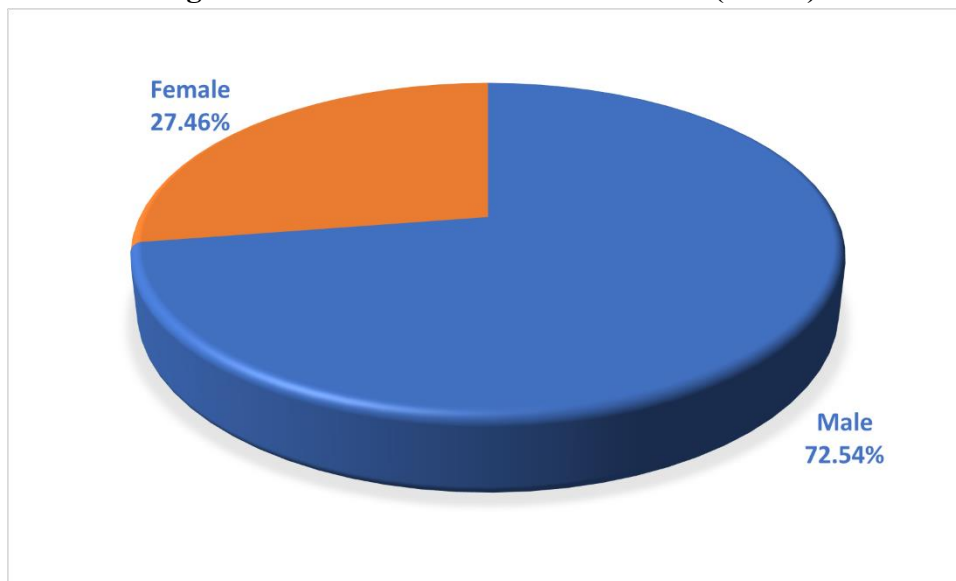
Details of Gender Distribution:

Among the 233 poisoned patients 64 (27.46%) females and 169 (72.53%) males. (Table 1 and Figure1)

Table 1: Details of Gender Distribution (n=233)

| Gender | No. of Patients | % of patients |
|--------|-----------------|---------------|
| Male | 169 | 72.54 |
| Female | 64 | 27.46 |

Figure 1: Details of Gender Distribution (n=233)



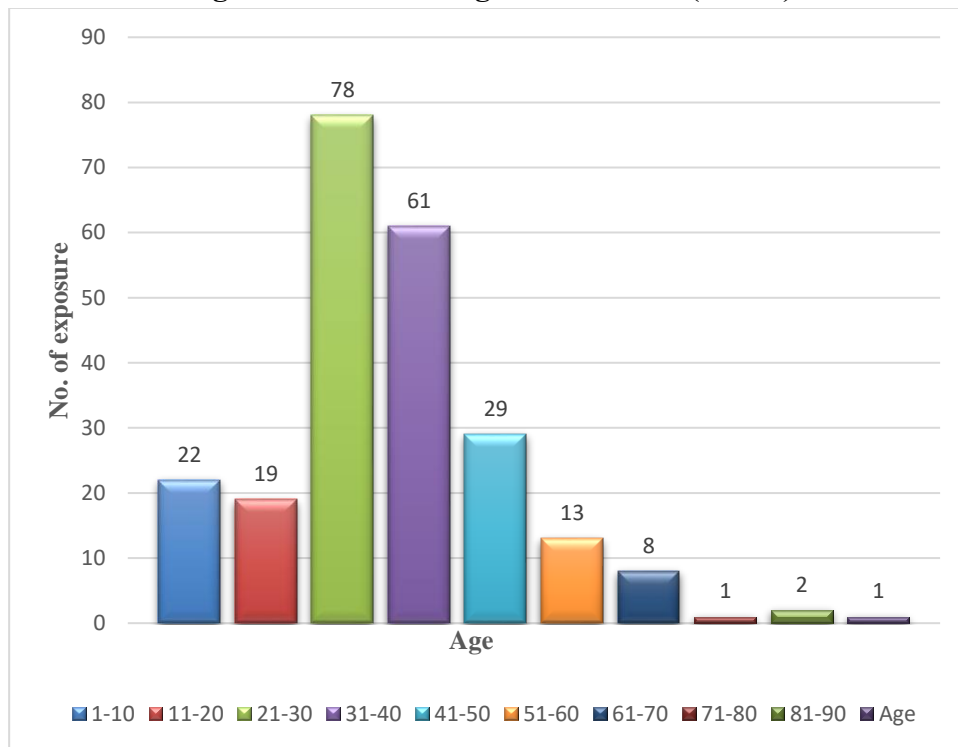
Details of Age Distribution:

The patients were grouped into different categories based on their age. Among them 22 (9.44%) patients were in the age group between 1 Month to 10 years, 19 (8.15%) patients were in the age group between 11 to 20 years, 78 (33.47%) patients were in the age group between child 21 to 30 years, 61 (26.18%) patients were in the age group between 31 to 40 years, 29 (12.44%) patients were in the age group between 41 to 50 years, 13 (5.57%) patients were in the age group between 51 to 60 years, 8 (3.43%) patients were in the age group between 51-60 years, 1 (0.42%) patient was in the age group between 71 to 80 years and 2 (0.85%) patients were in the age group between 81 to 90 years. (Table 2 & Figure 2).

Table 2: Details of Age Distribution (n=233)

| Age Group | No. of patients | % of patients |
|-----------|-----------------|---------------|
| 01-10 | 22 | 9.44 |
| 11-20 | 19 | 8.15 |
| 21-30 | 78 | 33.47 |
| 31-40 | 61 | 26.18 |
| 41-50 | 29 | 12.44 |
| 51-60 | 13 | 5.57 |
| 61-70 | 8 | 3.43 |
| 71-80 | 1 | 0.42 |
| 81-90 | 2 | 0.85 |

Figure 2: Details of Age Distribution (n=233)



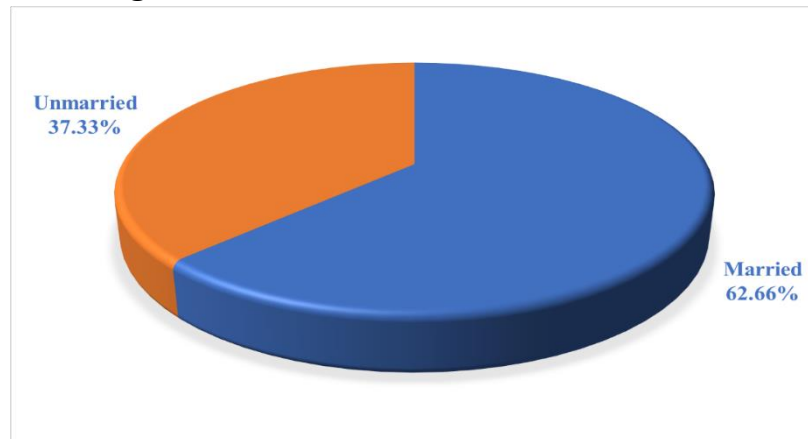
Details of Marital status:

Among 233 patients, 146 (62.66%) patients were found to be married and 87 (37.33%) patients were found to be unmarried. (Table 3 & Figure 3).

Table 3: Details of Marital status

| Status | No. of Patients | % of patients |
|-----------|-----------------|---------------|
| Married | 146 | 62.66 |
| Unmarried | 87 | 37.33 |

Figure 3: Details of Marital status



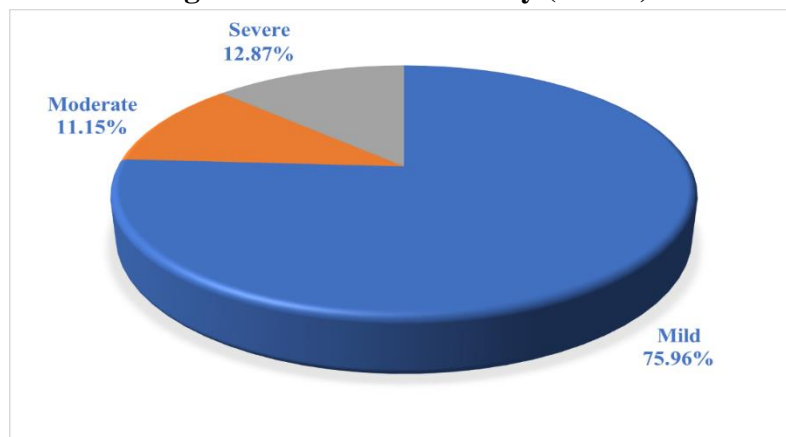
Details of Severity:

Among 233 patients, patients were categorized based on severity depending on the presenting complaints, state of consciousness and GCS scale. 177 (75.96%) patients’ condition were mild followed by 26 (11.15%) patients’ condition was moderate and 30 (12.87%) patients’ condition was severe. (Table 4 & Figure 4)

Table 4: Details of Severity (n=233)

| Severity | No. of patients | % of patients |
|----------|-----------------|---------------|
| Mild | 177 | 75.96 |
| Moderate | 26 | 11.15 |
| Severe | 30 | 12.87 |

Figure 4: Details of Severity (n=233)



Details of Residence:

There were 233 poisoned patients out of which 155 were from rural background whereas 78 were from urban background. (Table 5 & Figure 5)

Out of 155 rural patients, 126 were males and 29 were females.

Out of 78 urban patients, 36 were females and 42 were males.

Table 5: Details of Residence (n=233)

| Residence | No. of patients | % of patients |
|-----------|-----------------|---------------|
| Rural | 155 | 66.52 |
| Urban | 78 | 33.47 |

Figure 5: Details of Residence (n=233)

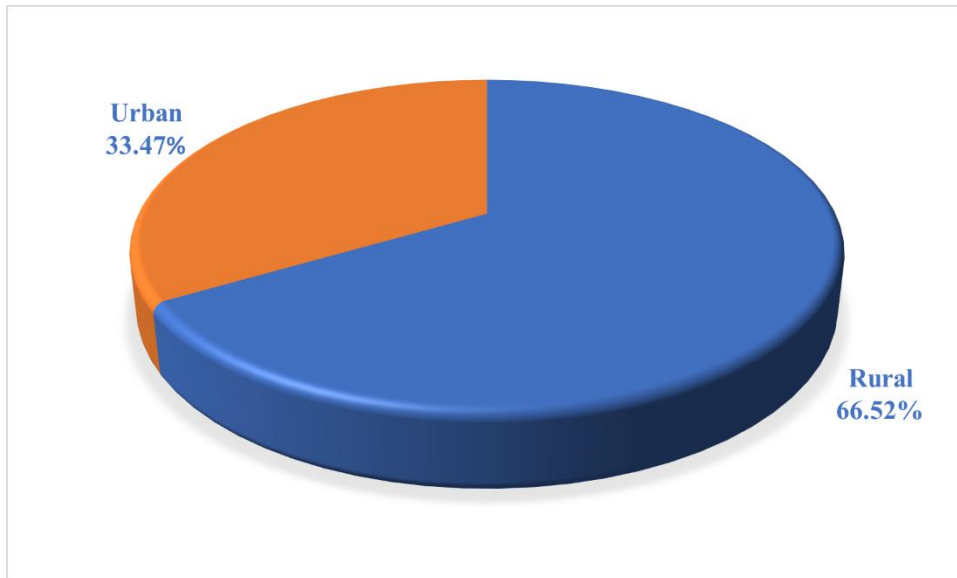


Table 5.1: Details of Rural patients (n=155)

| Rural | No. of patients | % of patients |
|--------|-----------------|---------------|
| Male | 126 | 81.29 |
| Female | 29 | 18.70 |

Figure 5.1: Details of Rural patients (n=155)

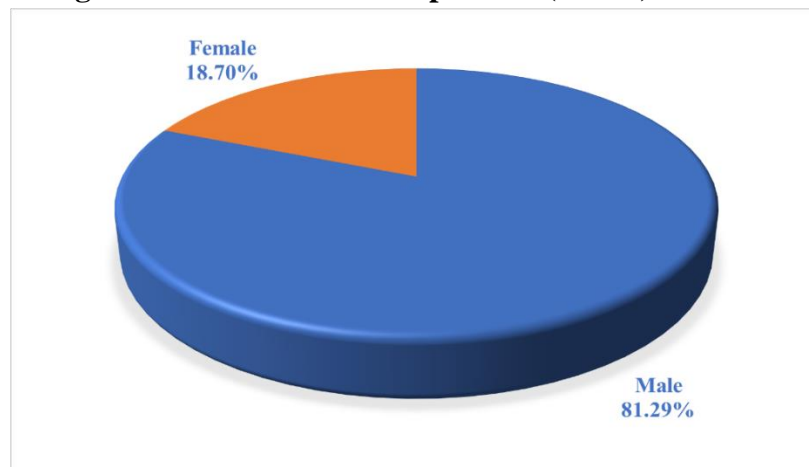
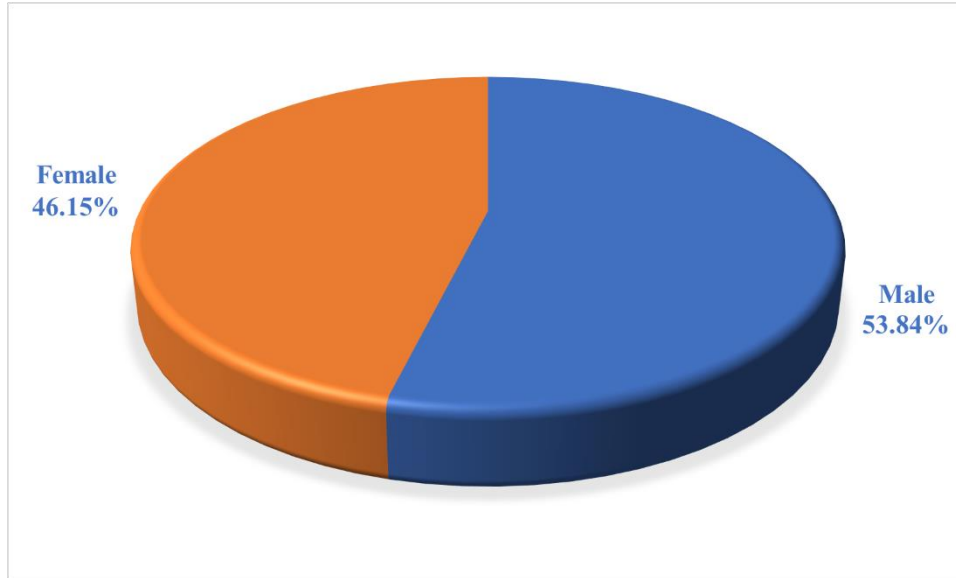


Table 5.2: Details of Urban patients (n=78)

| Urban | No. of patients | % of patients |
|-------|-----------------|---------------|
| Male | 42 | 53.84 |

| | | |
|--------|----|-------|
| Female | 36 | 46.15 |
|--------|----|-------|

Figure 5.2: Details of Urban patients (n=78)



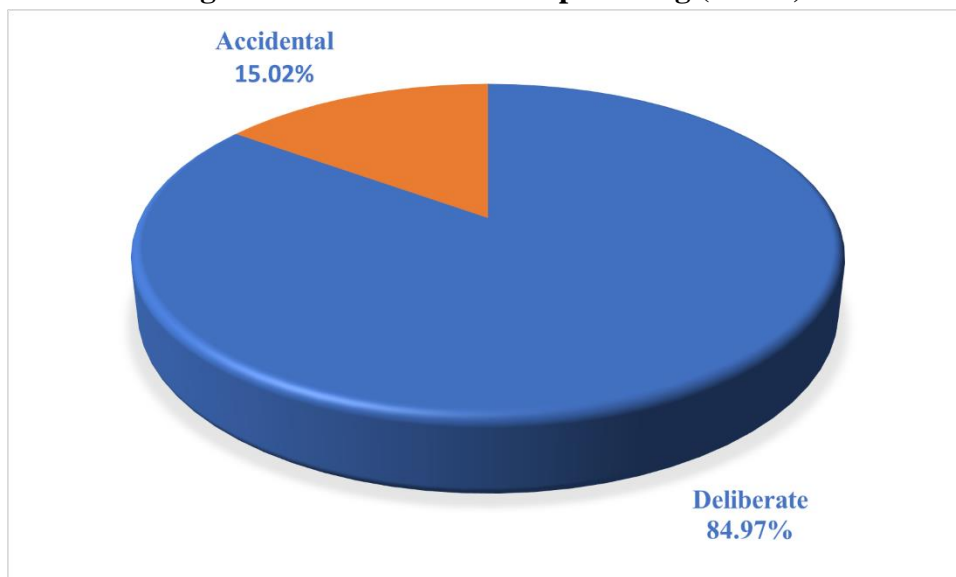
Details of cause of poisoning:

There were 233 poisoning cases out of which 198 (84.97%) were deliberate whereas 35(15.02%) cases were accidental. (Table 6 & figure 6)

Table 6: Details of cause of poisoning (n=233)

| Cause | No. of Patients | % of patients |
|------------|-----------------|---------------|
| Deliberate | 198 | 84.97 |
| Accidental | 35 | 15.02 |

Figure 6: Details of cause of poisoning (n=233)



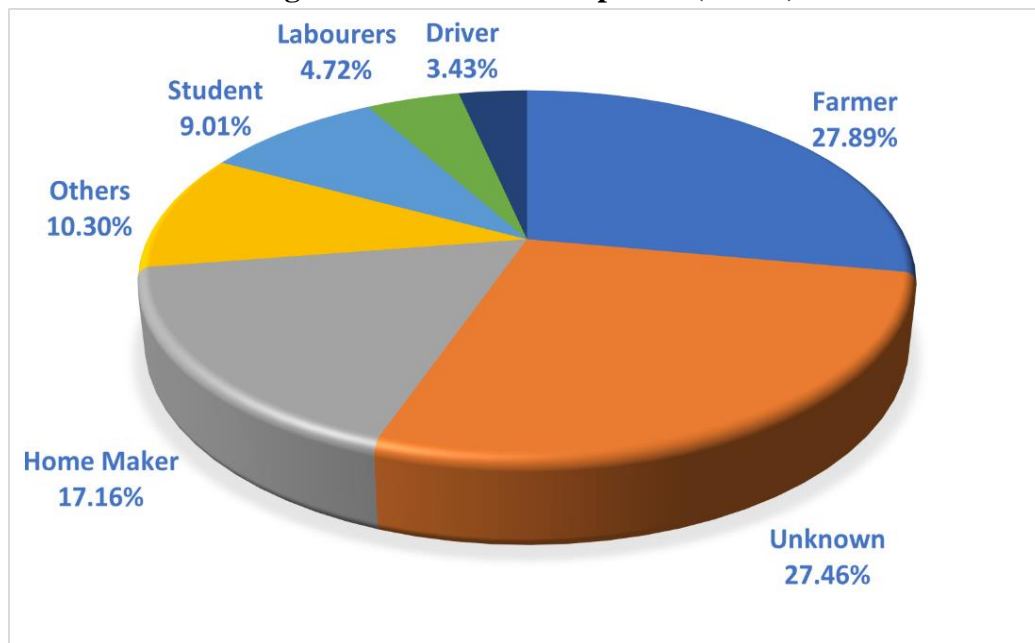
Details on Occupation:

Among the 233 poisoned patients admitted 65 (27.89%) were farmers, 64 (27.46%) patients’ occupation were unknown, 40 (17.16%) were homemakers, 21 (9.01%) were students, 11 (4.72%) were casual labourers, 8 (3.43%) were drivers and 24 (10.30%) were others. (Table 7 & figure 7)

Table 7: Details of occupation (n=233)

| Occupation | No. of patients | % of patients |
|------------------|-----------------|---------------|
| Farmer | 65 | 27.89 |
| Homemaker | 64 | 17.16 |
| Student | 21 | 9.01 |
| Casual Labourers | 11 | 4.72 |
| Driver | 8 | 3.43 |
| Unknown | 64 | 27.46 |
| Others | 24 | 10.30 |

Figure 7: Details of Occupation (n=233)



Details on Time of Consumption:

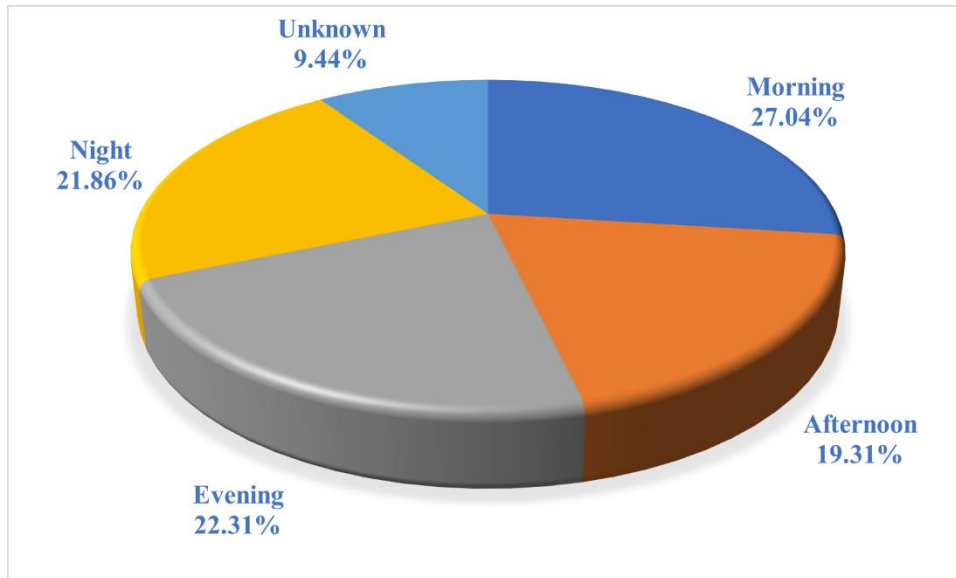
Out of 233 patients, 63 (27.04%) victims consumed poison in the morning, 45 (19.31%) victims consumed poison in the afternoon, 52 (22.31%) consumed in the evening, 51 (21.88%) consumed in the night and the time of consumption for 22 (9.44%) were unknown. (Table 8 & Figure 8)

Table 8: Details of Time of consumption(n=233)

| Time of consumption | No. of patients | % of patients |
|---------------------|-----------------|---------------|
| Morning | 63 | 27.04 |
| Afternoon | 45 | 19.31 |

| | | |
|----------------|----|-------|
| Evening | 52 | 22.31 |
| Night | 51 | 21.86 |
| Unknown | 22 | 9.44 |

Figure 8: Details of Time of Consumption (n=233)



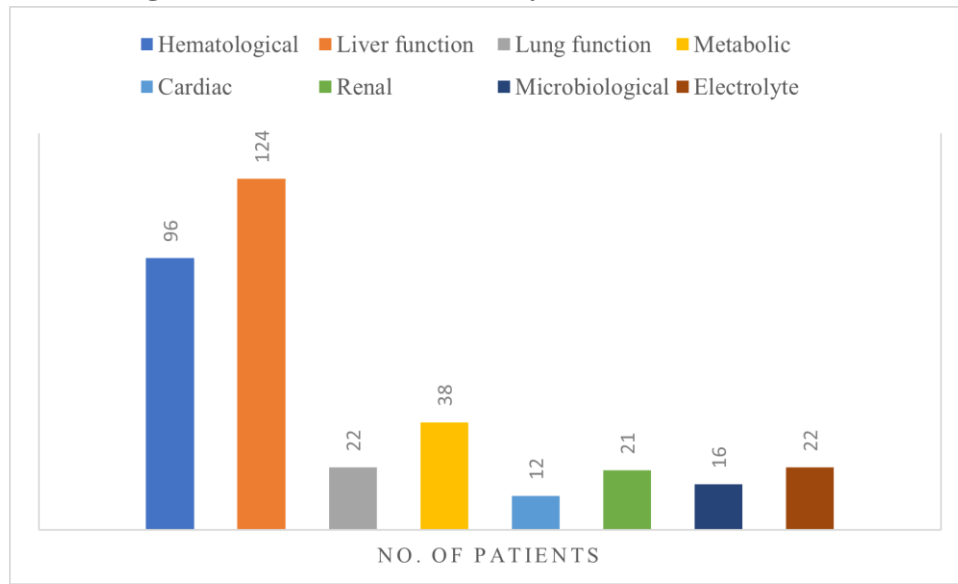
Details on Laboratory abnormalities:

Among the 233 poisoned patients, hematological parameters were abnormal in 137 (58.79%) patients, liver function test was abnormal in 109 (46.78%) patients, lung function test was abnormal in 22 (9.44%) patients, Metabolic abnormalities was seen in 38 (16.30%) patients, cardiac abnormalities were seen in 12 (5.15%) patients, Renal function abnormalities was seen in 21 (9.01%) patients, microbiological abnormalities was seen in 16 (6.86%) patients and electrolyte abnormalities was seen in 22 (9.44%) patients (Table 9 & figure 9).

Table 9: Details of laboratory abnormalities (n=233)

| Abnormalities | No. of patients | % of patients |
|------------------------|-----------------|---------------|
| Hematological | 96 | 41.21 |
| Liver function | 124 | 53.22 |
| Lung function | 22 | 9.44 |
| Metabolic | 38 | 16.31 |
| Cardiac | 12 | 5.15 |
| Renal | 21 | 9.02 |
| Microbiological | 16 | 6.86 |
| Electrolyte | 22 | 9.45 |

Figure 9: Details of Laboratory Abnormalities (n=233)



Details of medication administered:

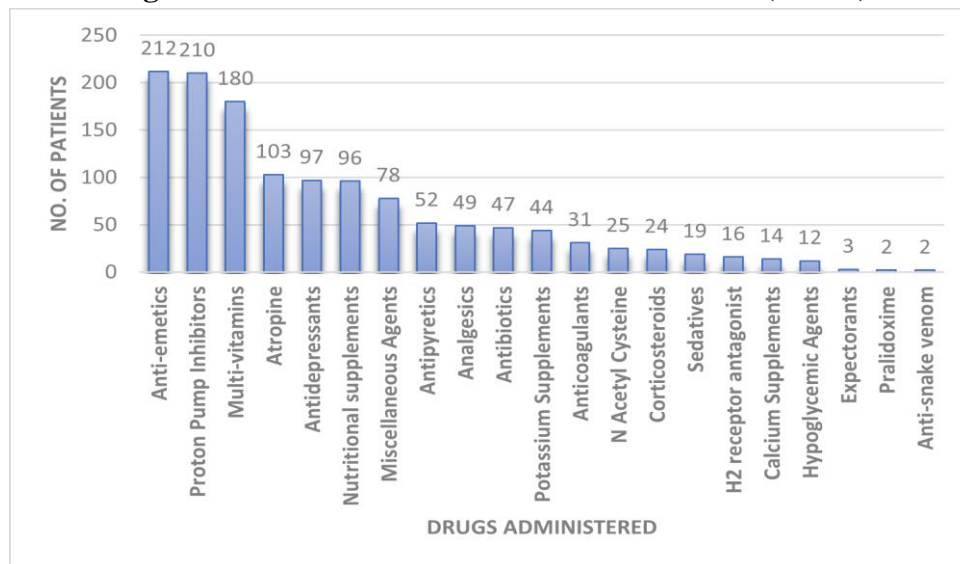
Among the medications administered during the hospital stay, Antiemetics was administered to 212 (90.99%) patients, proton pump inhibitors was administered to 210 (90.12%), multivitamins was administered to 180 (77.25%) patients, Atropine was administered to 103 (44.21%) patients, Antidepressants were administered to 97 (41.63%) patients, Nutritional supplements was administered to 96 (41.20%) patients, miscellaneous drugs were administered to 78 (33.48%) patients, Antipyretics was administered to 52 (22.31%) patients, Analgesics was administered to 49 (21.03%) patients, Antibiotics was administered to 47 (20.17%) patients, Potassium supplement was administered to 44 (18.88%) patients, Anticoagulants was administered to 31 (13.31%) patients, N Acetyl Cysteine was administered to 25 (10.73%) patients, Corticosteroids were administered to 24 (10.30%) patients, Sedatives was administered to 19 (8.16%) patients, H₂ receptor antagonist was administered to 16 (6.87%) patients, Calcium supplements was administered to 14 (6.01%) patients, Hypoglycemic agents was administered to 12 (5.15%) patients, Expectorant was administered to 3 (1.29%) patients and Pralidoxime and Anti Snake Venom was administered to 2 (0.86%) patients respectively. (Table 10 & Figure 10)

Table 10: Details of Medications administered (n=233)

| Drugs Administered | No. of patients | % of patients |
|-------------------------|-----------------|---------------|
| Anti-emetics | 212 | 90.99 |
| Proton Pump Inhibitors | 210 | 90.12 |
| Multi-vitamins | 180 | 77.25 |
| Atropine | 103 | 44.21 |
| Antidepressants | 97 | 41.63 |
| Nutritional supplements | 96 | 41.20 |
| Miscellaneous Agents | 78 | 33.48 |
| Antipyretics | 52 | 22.31 |
| Analgesics | 49 | 21.03 |
| Antibiotics | 47 | 20.17 |

| | | |
|--|----|-------|
| Potassium Supplements | 44 | 18.88 |
| Anticoagulants | 31 | 13.31 |
| N Acetyl Cysteine | 25 | 10.73 |
| Corticosteroids | 24 | 10.30 |
| Sedatives | 19 | 8.16 |
| H₂ receptor antagonist | 16 | 6.87 |
| Calcium Supplements | 14 | 6.01 |
| Hypoglycemic Agents | 12 | 5.15 |
| Expectorants | 3 | 1.29 |
| Pralidoxime | 2 | 0.86 |
| Anti-snake venom | 2 | 0.86 |

Figure 10: Details of Medications administered (n=233)



Details of Complaints on admission:

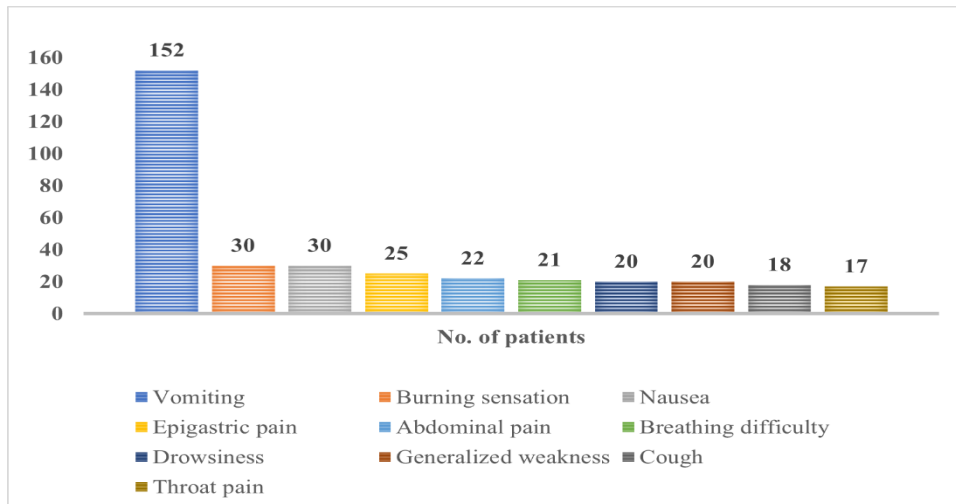
The most common complaints on admission were vomiting 152 (65.24%) followed by nausea 30 (12.88%), burning sensation 30 (12.88%), epigastric pain 25 (10.73%), abdominal pain 22 (9.44), breathing difficulty 21 (9.01%), drowsiness 20 (8.59%), generalized weakness 20 (8.59%), cough 18 (7.72%) and throat pain 17 (7.30%). The other signs and symptoms that were seen were fever, chills, involuntary urination, salivation, involuntary motion, alleged history of consumption, seizures, inability to move, loose stools, blurred vision, restlessness, tongue fasciculations, chest pain, headache, sweating, tachycardia, altered sensorium, pinpoint pupil and frothing. (Table 11 & figure 11)

Table 11: Details of complaints on admission (n=233)

| Chief complaints | No. of patients | % of patients |
|--------------------------|-----------------|---------------|
| Vomiting | 152 | 65.24 |
| Burning sensation | 30 | 12.88 |
| Nausea | 30 | 12.88 |
| Epigastric pain | 25 | 10.73 |

| | | |
|-----------------------------|----|------|
| Abdominal pain | 22 | 9.44 |
| Breathing difficulty | 21 | 9.01 |
| Drowsiness | 20 | 8.59 |
| Generalized weakness | 20 | 8.59 |
| Cough | 18 | 7.72 |
| Throat pain | 17 | 7.30 |

Figure 11: Details of complaints on admission (n=233)



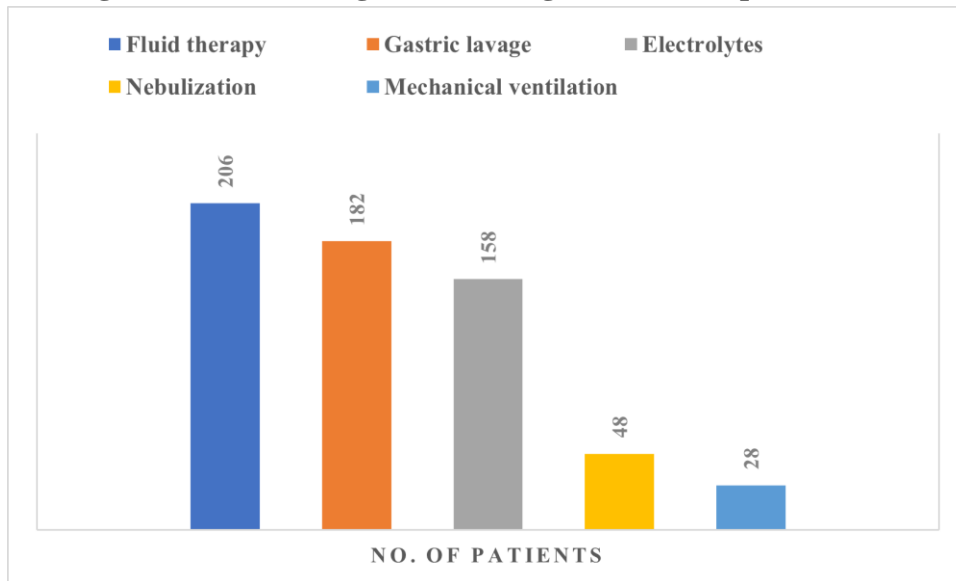
Details of general management techniques:

Among 233 poisoned patients, fluid therapy was provided to 206 (88.42%) patients, 182 (78.12%) patients were treated with gastric lavage, electrolytes were provided to 158 (67.82%) patients, 48 (20.60%) were treated with nebulization and 28 (12.01%) patients required mechanical ventilation. (Table 12 & figure 12)

Table 12: Details of general management techniques (n=233)

| Management methods | No. of patients | % of patients |
|-------------------------------|-----------------|---------------|
| Fluid therapy | 206 | 88.42 |
| Gastric lavage | 182 | 78.12 |
| Electrolytes | 158 | 67.82 |
| Nebulization | 48 | 20.60 |
| Mechanical ventilation | 28 | 12.01 |

Figure 12: Details of general management techniques (n=233)



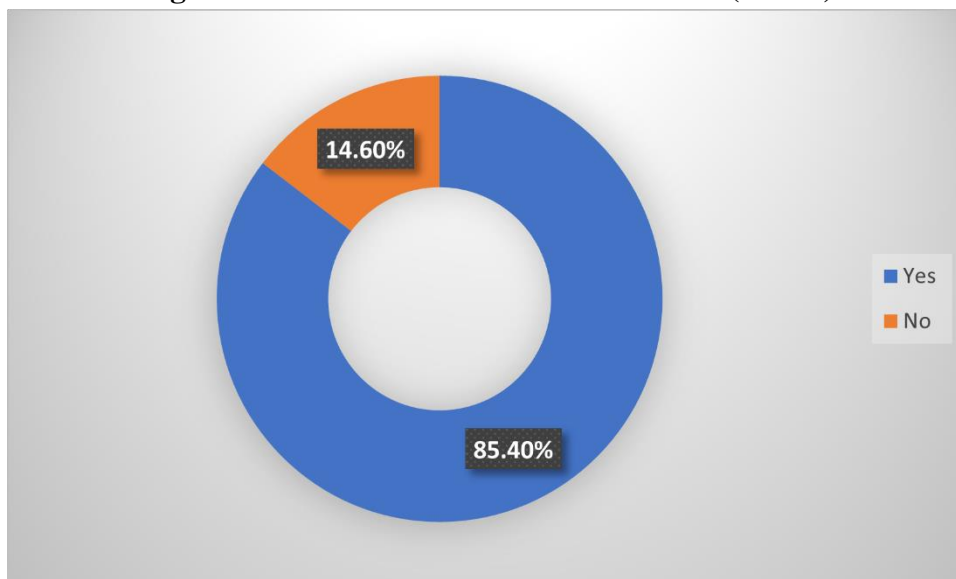
Details of state of consciousness:

233 poisoned patients were admitted among which 199 (85.40%) were conscious during the time of admission whereas 34 (14.60%) were unconscious. (Table 13 and figure 13)

Table 13: Details of state of consciousness (n=233)

| Conscious | No. of patients | % of patients |
|-----------|-----------------|---------------|
| Yes | 199 | 85.40 |
| No | 34 | 14.60 |

Figure 13: Details of state of consciousness (n=233)



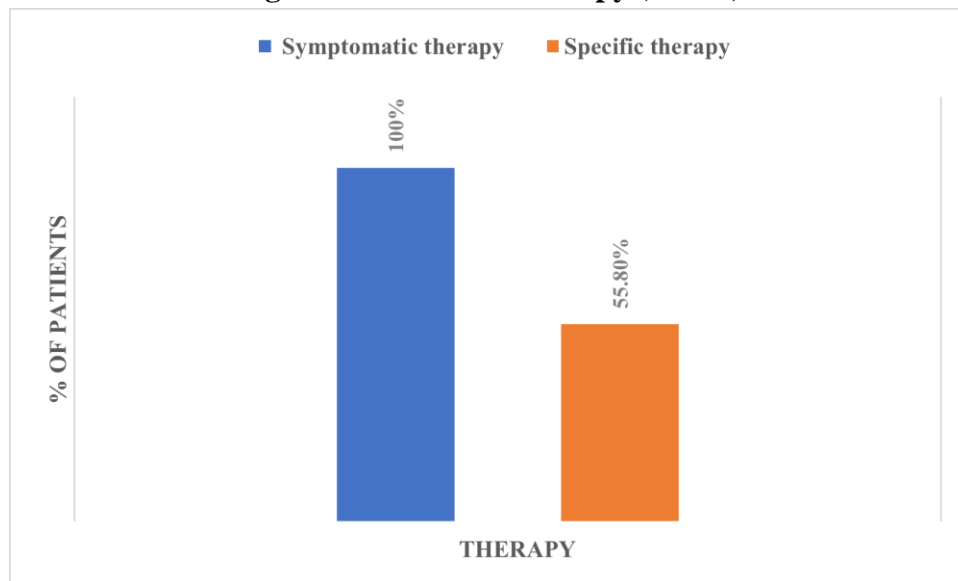
Details of therapy:

All 233 (100%) patients received symptomatic treatment, among which 130 (55.80%) patients received specific therapy. (Table 14 & figure 14)

Table 14: Details of therapy (n=233)

| Therapy | No. of patients | % of patients |
|-------------|-----------------|---------------|
| Symptomatic | 233 | 100 |
| Specific | 130 | 55.80 |

Figure 14: Details of therapy (n=233)



Details of type of poison:

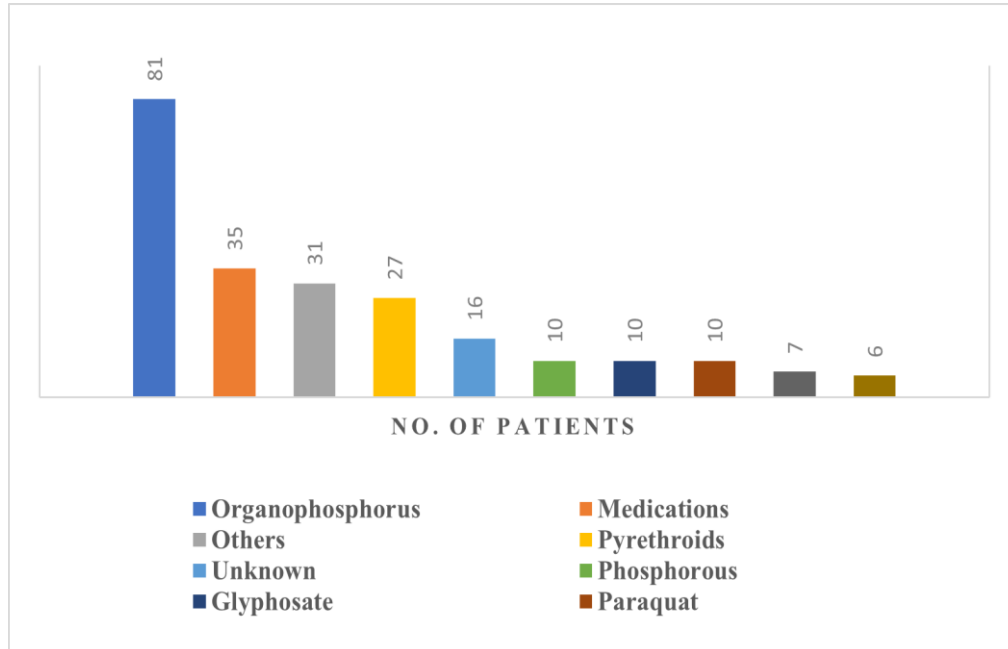
Among 233 patients, 81 (34.76%) patients consumed organophosphorus compounds, 35 (15.02%) patients consumed medicinal agents, 27 (11.58%) patients consumed pyrethroids, 16 (6.86%) patients consumed unknown compounds, 10 (4.29%) patients consumed phosphorous, 10 (4.29%) patients consumed glyphosate, 10 (4.29%) patients consumed paraquat, 7 (3.02%) patients consumed aliphatic hydrocarbons, 6 (2.57%) patients consumed neonicotinoid and 31 (13.30%) patients consumed others. (Table 15 & figure 15)

Table 15: Details of type of poison (n=233)

| Type of poison | No. of patients | % of patients |
|------------------|-----------------|---------------|
| Organophosphorus | 81 | 34.76 |
| Medications | 35 | 15.02 |
| Others | 31 | 13.30 |
| Pyrethroids | 27 | 11.58 |
| Unknown | 16 | 6.86 |
| Phosphorous | 10 | 4.29 |
| Glyphosate | 10 | 4.29 |
| Paraquat | 10 | 4.29 |

| | | |
|-----------------------|---|------|
| Aliphatic Hydrocarbon | 7 | 3.01 |
| Neonicotinoid | 6 | 2.57 |

Figure 15: Details of type of poison (n=233)



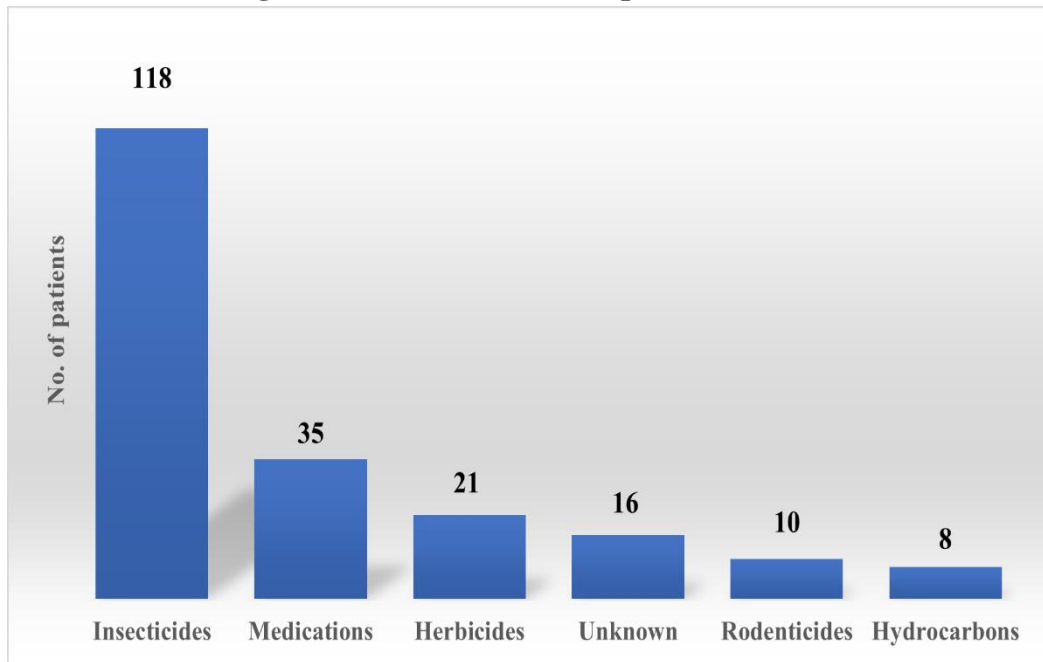
Details of class of poisons:

The different types of poisoning were categorized under the different classes of poisons. among the 233 poisoning cases, 118 (50.64%) patients consumed insecticides, 35 (15.02%) patients consumed medications, 21 (9.01%) patients consumed herbicides, 16 (6.86%) patients consumed unknown compound, 10 (4.29%) patients consumed rodenticides, 8 (3.43%) patients consumed hydrocarbons and 25 (10.72%) patients consumed other classes of poisons like inebriants (2.15%), mineral acids (2.15%), organic acids (1.28%), fire crackers (0.43%), grain preservatives (1.72%), deliriant (0.86%), fungicides (0.86%), macronutrients (0.43%) including the 2 (0.86%) of patients who had a history of snake bite. (Table 16 & figure 16)

Table 16: Details of class of poisons (n=233)

| Class of Poison | No. of patients | % of patients |
|-----------------|-----------------|---------------|
| Insecticides | 118 | 50.64 |
| Medications | 35 | 15.02 |
| Herbicides | 21 | 9.01 |
| Unknown | 16 | 6.86 |
| Rodenticides | 10 | 4.29 |
| Hydrocarbons | 8 | 3.43 |

Figure 16: Details of class of poisons (n=233)



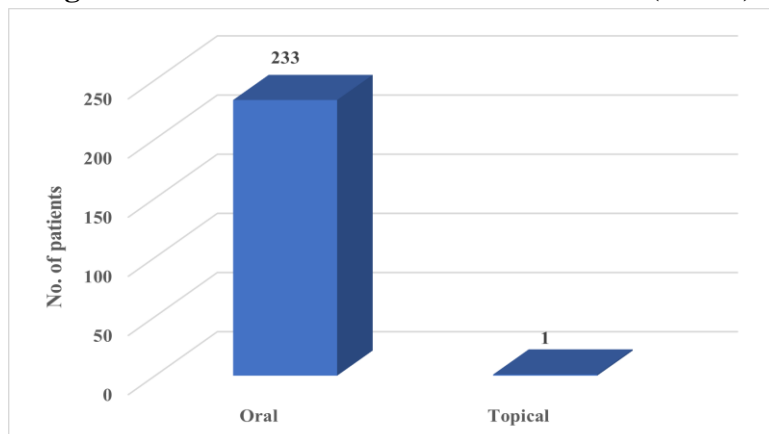
Details of route of administration

Among 233 patients all of them administered poison through oral route whereas 1 patient administered poison through both oral and topical route. (Table 17 & figure 17)

Table 17: Details of route of administration (n=233)

| Route | No. of patients | % of patients |
|---------|-----------------|---------------|
| Oral | 233 | 100 |
| Topical | 1 | 0.42 |

Figure 17: Details of route of administration (n=233)



Details of duration of hospital stay:

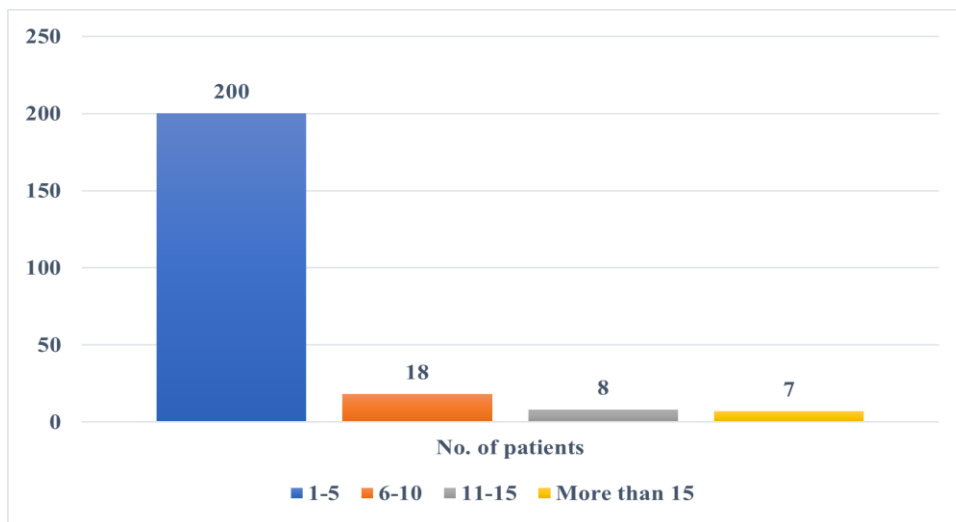
Among 233 patients, 200 (85.84%) patients stayed in hospital between 1 to 5 days, 18 (7.73%) patients stayed between 6 to 10 days, 8 (3.43%) patients stayed between 11 to 15 days, 7 (3.00%) patients stayed

in hospital for more than 15 days. The maximum days of stay in the hospital was for 21 days. (Table 18 & Figure 18)

Table 18: Details of duration of hospital stay (n=233)

| Duration of stay | No. of patients | % of patients |
|------------------|-----------------|---------------|
| 1-5 | 200 | 85.84 |
| 6-10 | 18 | 7.73 |
| 11-15 | 8 | 3.43 |
| More than 15 | 7 | 3.00 |

Figure 18: Details of duration of hospital stay (n=233)



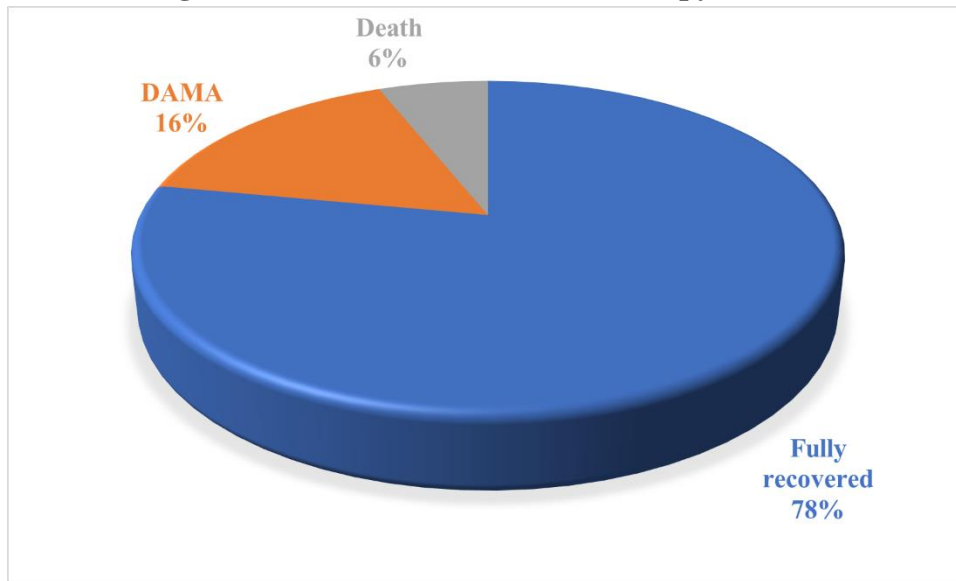
Details of result of the therapy:

Among 233 patients 181 (77.68%) patients fully recovered, 37 (15.87%) patients were discharged against medical advice, 14 (6.00%) patients were declared dead. (Table 19 & Figure 19)

Table 19: Details of result of the therapy (n=233)

| Result | No. of patients | % of patients |
|-----------------|-----------------|---------------|
| Fully recovered | 181 | 77.68 |
| DAMA | 37 | 15.87 |
| Death | 14 | 6.00 |

Figure 19: Details of result of the therapy (n=233)



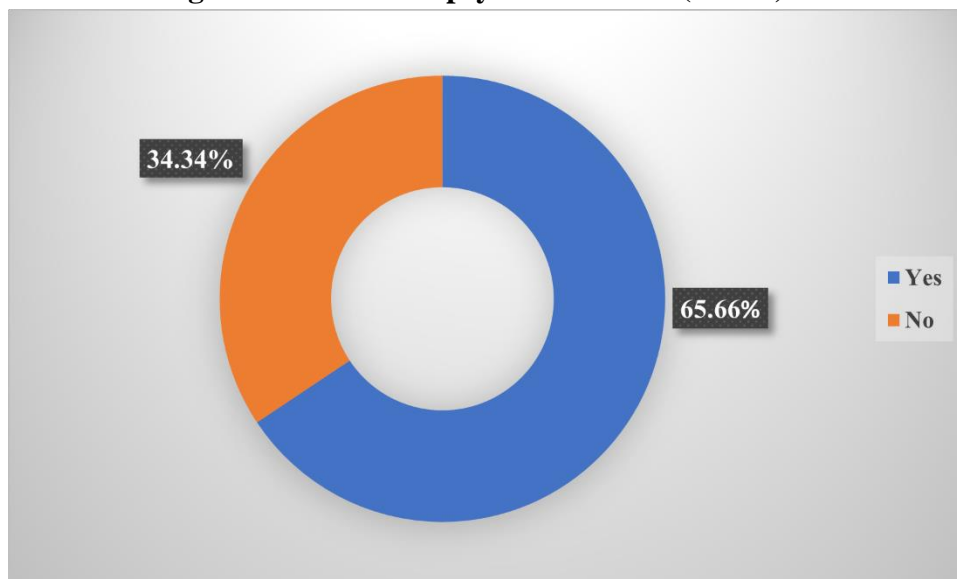
Details of psychiatrist care:

Among 198 self-harm patients, 130 (65.66%) patients received psychiatrist care whereas 68 (34.34%) patients did not receive any psychiatrist care. (Table: 20 & figure 20)

Table 20: Details of psychiatrist care (n=198)

| Psychiatrist care | No. of patients | % of patients |
|-------------------|-----------------|---------------|
| Received | 130 | 65.66 |
| Not received | 68 | 34.34 |

Figure 20: Details of psychiatrist care (n=198)



IV. Discussion

During the study period 233 poisoned cases were assessed and evaluated.

In this study, among 233 patients, 169 (72.53%) were male whereas remaining 64 (27.46%) were female. This finding was similar to a prospective observational study carried out in Adhichunchanagiri College of Pharmacy, which reported male preponderance (63.0%) than females (37.0%) (15). Male population are more prone to poisoning may be because of the factors like work pressure, stress, financial issues, family conflicts or agricultural loss or loss in business. Relationship failure is also a reason for the male young adults for intentional poisoning.

The patients were categorized based on their age. Among them 22 (9.44%) patients were between 1-10 years, 19 (8.15%) patients were between age group of 11-20 years, 78 (33.47%) were between 21-30 years, 61 (26.18%) patients were between the 31-40 years, 29 (12.44%) patients were between the age of 41-50 years, 13 (5.57%) patients were between the age of 51-60 years, 8 (3.43%) patients were between 61-70 years, 1 (0.42%) patient were between the age of 71-80 years and 2 (0.85%) patients were between the age of 81-90 years. Poisoning was most common in the age group of 21-30 years followed by 31-40 years. Young adults and middle-aged people are more prone to poisoning may be because of the work stress, socioeconomic status, financial crisis or mental condition.

The marital status of the patients showed that 146 (66.66%) were married whereas 87 (37.34%) were single. This may be because financial issues, family conflicts, failure to understand each other, being less supportive to each other or exposure or exposure to more stressful situation.

The severity the poisoning cases were categorized based on the signs and symptoms, complaints on admission, neck holding, GCS scale and was classified as mild, moderate, severe. 177 (75.96%) cases were mild, 26 (11.15%) cases were moderate and 30 (12.87%) cases were severe. Most of the cases were mild may be because of the factors like early admission to the hospital, small amount of consumption, early diagnosis and management or use of proper general management techniques.

The incidence of poisoning cases was more frequent in rural population 155 (66.52%) and 78 (33.47%) in urban population. Among the rural population 126 (81.29%) were male and 21 (18.70%) were female and among the urban population 42 (53.84%) were male and 36 (46.15%) were female. This may be because of poor literacy rate, poor socioeconomic status, agricultural loss or financial crisis.

Intentional poisoning was the most common (84.97%) manner of poisoning in this study when compared to accidental poisoning (15.02%). The reasons for the intentional poisoning were depression (5.55%), personal issues (16.16%), Fight and family conflict (18.18%), Relationship failure (8.08%), financial crisis (14.64%), overdose (1.51%), Medical issues (5.05%), under the influence of alcohol (18.68%) and unknown (12.12%). This result is similar to a study conducted at Northeast Ethiopia which was a retrospective cross-sectional study with 64.2% of intentional poisoning (5). Accidental poisoning was the most common in the younger population between the age of 0 to 10 years.

In this study the most common occupation was found to be farmer (27.89%), followed by homemakers (17.16%), students (9.01%), casual labourers (4.72%), driver (3.43%), others (10.30%) which includes occupation like businessman, mechanic, teacher, ward boy, gardener, unemployed, bar attenders etc. and unknown (27.46%). The most common occupation was found to be farmers may be due to the reasons like financial crisis natural calamities and agricultural loss. Homemakers were the next common occupation may be because of loneliness, emotional stress, family pressure and family conflicts.

This study showed that most the victims consumed poison in the morning (27.04%) followed by evening (22.31%), night (21.86%) and afternoon (19.31%).

After admission the patients were evaluated for the laboratory abnormalities. It was found that 137(58.79%) patients had hematological abnormalities followed by liver function abnormalities (46.78%), lung function abnormalities (9.44%), metabolic abnormalities (16.31%), cardiac abnormalities (5.15%), renal function abnormalities (9.02%), microbiological abnormalities (6.86%), and electrolyte imbalance (9.45%). The hematological abnormalities are seen because the poisons may interfere with the oxygen carrying capacity of red blood cells, reduces the half-life of RBCs. In most of the cases there was an elevated leukocyte and neutrophil count whereas decreased lymphocyte count. Since most of the toxin are metabolized in the liver, it tries to detoxify the toxins, which in turn causes abnormalities in liver functions altering the liver enzyme activities.

During the hospital stay the most common drug administered was antiemetics (90.99%) followed by proton pump inhibitors (90.12%) and multivitamins (70.25%). Antiemetics were most commonly used because nausea and vomiting were the most common complaint. The other medications that were used are atropine, antidepressant, nutritional supplements, antipyretics, analgesics, antibiotics, potassium supplements, anticoagulants, N Acetyl cysteine, corticosteroids, sedatives, H₂ receptor antagonist, calcium supplements, hypoglycemic agents, expectorants, pralidoxime and anti-snake venom. As most of the poison do not have any specific antidotes, the patients were treated symptomatically.

On admission the most common complaint was vomiting (65.24%) followed by nausea and burning sensation (12.88%). The other signs and symptoms at the time of admission were epigastric pain, abdominal pain, breathing difficulty, drowsiness, generalized weakness, cough, throat pain, fever, chills, involuntary urination, salivation, involuntary motion, seizures, inability to move, loose stools, blurred vision, tongue fasciculation, chest pain, headache, sweating, tachycardia, altered sensorium, pinpoint pupil and frothing.

Poisoned patients are to be evaluated and stabilized so as to prevent and treat life threatening signs and symptoms. Therefore, the patients were generally managed. The most common management method used was fluid therapy (88.42%) followed by gastric lavage (78.12%), electrolyte balance (67.82%), nebulization (20.60%) and mechanical ventilation (12.01%).

On admission 85.40% of patients were conscious during the time of admission and 14.60% of patients were unconscious.

All the 233 patients received symptomatic patients whereas 55.80% of them received specific therapy, that is the patients were treated with antidotes along with the symptomatic therapy.

The most common type of poisoning was found to be organophosphorus compounds (34.76%) followed by medicinal agents (15.02%). Organophosphorus was the most common type as it is easily available in the market or household without any law or regulations. Most of the medicinal agents that were used for the intentional poisoning were the over-the-counter drugs.

The different types of poisoning were categorized under the different classes of poisons. Among the various classes, insecticides (50.64%) were the most common followed by medications (9.01%).

All the 233 patients consumed poison through oral route, whereas one patient administered poison through both oral and topical route by spraying the poison on the wounds.

The longest stay in the hospital was found to be 21 days. Around 85.84 % patients were in the hospital in between 1 to 5 days followed by 7.73% of patients stayed between 6 to 10 days. During the hospital stay, the patients were treated symptomatically, specifically and were discharged in a healthy condition.

About 77.68% of the poisoned patients were fully recovered at the time of discharge whereas 15.87% of patients were discharged against medical advice due to the reasons like financial crisis or relatives or

family members not willing to continue the therapy. 6.00 % patients died may be because of the delayed admission to the hospital after the consumption, Multiple organ dysfunction, treatment failure, consumption of unknown compounds or lack of or insufficient primary care.

Most of the poisoning cases were deliberate self-harm and hence it is very important that the patient receives psychiatrist care so as to prevent reoccurrences and further complications. All the intentional poisoning cases were referred to the psychiatrist care where 65.66% of the patients took the psychiatrist care.

V. Conclusion

In this study the most common type of poisoning is organophosphorus poisoning followed by the pharmaceutical agents. Most of the poisoning cases were deliberate self-harm due to various reasons like family conflicts, relationship failure, personal issues, financial crisis, medical issues and under the influence of alcohol.

- Most of the poisoning cases were due to the consumption of insecticides or pesticides therefore the government has to bring a strict rules and regulation for the marketing of agricultural products.
- Awareness program has to be conducted among the people regarding the hazardous effects of the poisons.
- Financial burden was one of the causes for deliberate self-harm and hence government has to up bring certain schemes like increasing the procurement of grains and crops from the farmer, providing loan to the farmers in less interest rate, supporting small scale business, fixing up the minimum price for all the crops and grains, promoting the use of organic products, establishment of regulated market and cooperative market.
- Financial awareness has to be created among the people and restrict activities like dowry, gambling etc.
- Work pressure and stress should be managed by time management and priority management.
- People should be educated to manage the social and family fear.
- The labels of the harmful chemicals and agricultural products should contain a ‘warning’ or ‘caution’ sign with pictures of the effect and complication of consumption.
- Use of organic or natural agricultural products should be promoted.
- Maintaining a healthy family relation, fighting over small things, suspecting or not trusting each other should be avoided.
- A well-maintained social health is one of the important parameters that helps people from mental health condition like depression, anxiety, and suicidal thoughts.
- If any person is suffering from any of the mental illness like depression, anxiety etc. provide the required psychiatric care as soon as possible.
- Provide psychiatric support to the person who has already tried self-harm and also the patient who threatens to commit self-harm.
- Alcohol and suicidal thoughts are corelated to each other. Especially in India people tend to drink alcohol in grief. Alcohol increases tendency of suicidal thoughts hence intake of alcohol should be restricted especially in the painful situation.
- As the pre-teens and teenagers, grow it becomes difficult for the parents to understand the children. Therefore, it is important that the parents cope up with the children in the difficult situations.

- If the parents suspect any type of changes in the child's mental behavior, try to talk to them or seek the psychiatric counselling.
- All the pharmaceutical products should be dispensed only based on the prescription and refill information.
- Unwanted or the expired drugs should be discarded and kept away from the children and people with abnormal mental health.
- Mental health awareness programme should be conducted frequently especially in the rural areas.
- Accidental poisoning was the most common in the children and hence educating the parents regarding the disposal of the waste medications, unused liquids and syrups.
- Educating the parents to keep all the hazardous substances away from the reach of the children, not to address anything harmful as a sweet or edible substances, keep all the attractive and colorful chemicals away from the children.
- Educating people regarding the diversional therapies like listening to music, singing, yoga, aromatherapy and meditation whenever feeling low can help people to prevent suicidal thoughts.
- Covering oneself with protective clothing, masks and gloves while using the agricultural products or any hazardous chemicals can prevent the accidental exposure. Washing hands and body with the non-germicidal soap after the use and redressing with the fresh clothes.
- Wearing shoes or boots while walking in the areas rich in long and thick grass.
- Carry a torch or flashlight while walking outdoors at night.
- Snakes usually prefer the warm places to stay and hence be careful while removing or moving the firewood, logs, slippers and shoes from the slipper stand or the corners of the house.
- Use repellents for the rodents and snakes in the storerooms and basement.
- Do not handle a snake even if it is dead because some snake pretends to be dead to avoid the attack.

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