

Profile of Poisoning Cases Presenting to the Emergency Department of a Private Medical College in Manipur

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Abstract

Background: Poisoning is a global health problem and has been considered as one of the common causes for attending emergency department of a hospital¹. Hospital-based data are useful for identifying commonly encountered poisons and developing appropriate preventive and emergency management strategies. The present study describes the demographic and epidemiological profile of poisoning cases presented to the emergency department of a private medical college in Manipur.

Methods: A retrospective study was conducted between Jan 2024 – Dec2024 among patients presenting with poisoning to the Emergency Department of a Shija Academy of Health Sciences. A total of 69 poisoning cases were analyzed using descriptive statistics and expressed as frequency and percentage.

Results: Among the 69 cases, 39 (56.5%) were males and 30 (43.5%) were females, giving a male-to-female ratio of 1.3:1. The largest age group was 31–40 years (15; 21.7%), followed. The majority of patients were Hindu (66; 95.6%). Suicidal poisoning was the predominant mode of poisoning, accounting for 52 cases (75.4%), followed by accidental poisoning in 17 cases (24.6%); Herbicide poisoning with paraquat was the most frequently identified type of poisoning (19; 27.5%), followed by organophosphorus insecticides (12; 17.4%). Most patients presented within six hours of poisoning (43; 62.3%). The commonest time of occurrence was afternoon (28; 40.6%). Regarding outcome, 46 patients (66.7%) were admitted, 17 (24.6%) were discharged and 6 (8.7%) left against medical advice. Fifty-four patients (78.3%) were brought by family/attendants, while 15 (21.7%) were referred from other hospitals.

Conclusion: Suicidal poisoning constituted the majority of poisoning presentations in this study. Paraquat and organophosphorus compounds were the most frequently encountered toxic agents. The predominance of intentional self-poisoning, particularly with agricultural chemicals, highlights the need for early emergency management, mental health assessment and preventive strategies aimed at reducing access to highly hazardous pesticides. Strengthening poisoning surveillance and community-based prevention may help reduce the burden of poisoning in Manipur.

Keywords: Poisoning, Emergency Department, Paraquat, Organophosphorus Poisoning, Pesticide, Suicidal Poisoning, Manipur, India.

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Introduction

Poisoning is a global health problem and has been considered as one of the common causes for

attending emergency department of a hospital [1]. As per National Crime Bureau of India, Poisoning

accounts for 4.7% of all cause of year 2024 [2]. The epidemiological pattern of poisoning differs between regions and is influenced by the availability of pesticides, pharmaceuticals, household chemicals and other toxic substances. In India, pesticides are an important means of intentional self-poisoning, particularly in areas where agricultural chemicals are readily accessible. The World Health Organization recognizes pesticide self-poisoning as an important contributor to suicide, particularly in low- and middle-income countries [3]. Previous Indian hospital-based studies have demonstrated substantial variation in the demographic characteristics and agents responsible for poisoning. Manipur has its own distinctive demographic, socioeconomic and agricultural characteristics, and local data are important for understanding the pattern of poisoning and planning appropriate preventive and emergency-care services. However, hospital-based information from private medical colleges in the state remains limited. Therefore, the present study was undertaken to describe the demographic and epidemiological profile of poisoning cases presenting to the Emergency Department of a private medical college in Manipur.

Materials and Methods

Study Design: Retrospective study.

Study Duration: 1 year (Jan 2024 – Dec 2024).

Study Setting: Emergency Department and Forensic Medicine and Toxicology Department, SAHS.

Study Population: The study included patients presenting to the Emergency Department with a history or clinical diagnosis of poisoning during the study period.

Inclusion Criteria: All patients with history on clinical diagnosis of poisoning during study period

Exclusive criteria

- Cases with incomplete medical record

- Chronic poisoning cases or drug abuse without acute toxidrome.

Data collection: Information was obtained from the available emergency case records. The variables analyzed included:

- Age
- Sex
- Religion
- Mode of poisoning
- Type of poison
- Estimated quantity consumed
- Time of occurrence
- Time interval between poisoning and presentation
- Referral pattern
- Hospital outcome
- Monthly distribution of cases

Statistical Analysis: The data were summarized using descriptive statistics. Categorical variables were expressed as frequencies and percentages. The denominator for percentage calculations was 69.

Ethical Consideration: Institutional Ethics Committee, SAHS approval obtained before the start of the study, No objection certificate was also obtained from the institute before assessing the medical record. All patient data were anonymized and kept strictly confidential.

Results

A total of 10232 cases were reported in the emergency department during the study period. About 7% cases were medicolegal cases, of which 9.5% (69) cases were of poisoning.

Demographic Profile: Of the 69 patients, 39 (56.5%) were males and 30 (43.5%) were females, with a male-to-female ratio of 1.3:1. The largest proportion of patients belonged to the 31–40-year age group (21.7%), followed by 21–30 years (20.3%) and 11–20 years (18.8%). Patients aged 61 years and above constituted 13.0% of cases as shown in table no. 1.

Table 1: Age and sex distribution of poisoning cases

Variable	Number (n=69)	Percentage
Sex		
Male	39	56.5
Female	30	43.5
Age group		
0–10 years	4	5.8
11–20 years	13	18.8
21–30 years	14	20.3
31–40 years	15	21.7
41–50 years	8	11.6
51–60 years	6	8.7
≥61 years	9	13.0

Religion: The majority of patients were Hindu (66; 95.6%), while 3 (4.3%) were Christian. No Muslim patients were recorded in the study population as shown in figure no.1.

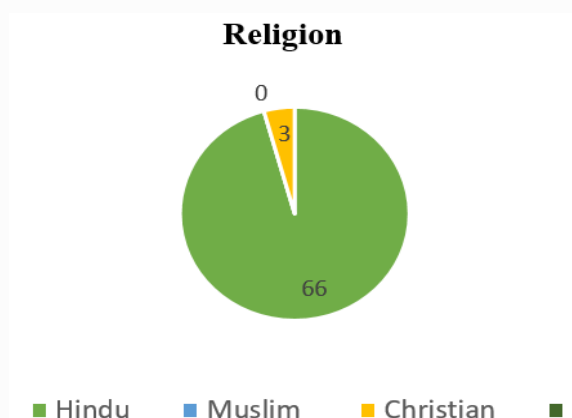


Fig 1: Distribution of Cases according to Religion

Outcome: Of the 69 patients, 46 (66.7%) were admitted, 17 (24.6%) were discharged and 6 (8.7%) left against medical advice as shown in figure no. 2.

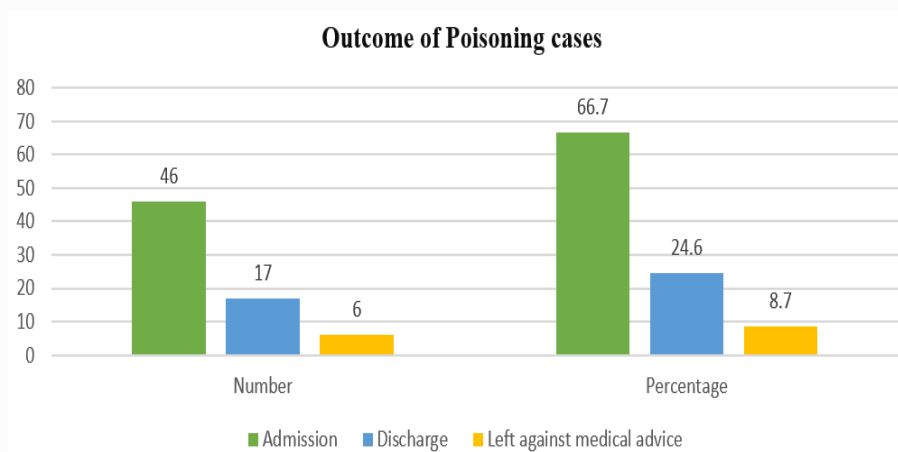


Figure 2: Outcome of poisoning cases

Time of occurrence: The majority of poisoning incidents occurred during the afternoon period (12 noon–6 PM), accounting for 28 (40.6%) cases. Twenty-four cases (34.8%) occurred during the night, while 17 (24.6%) occurred in the morning as shown in figure no. 3.

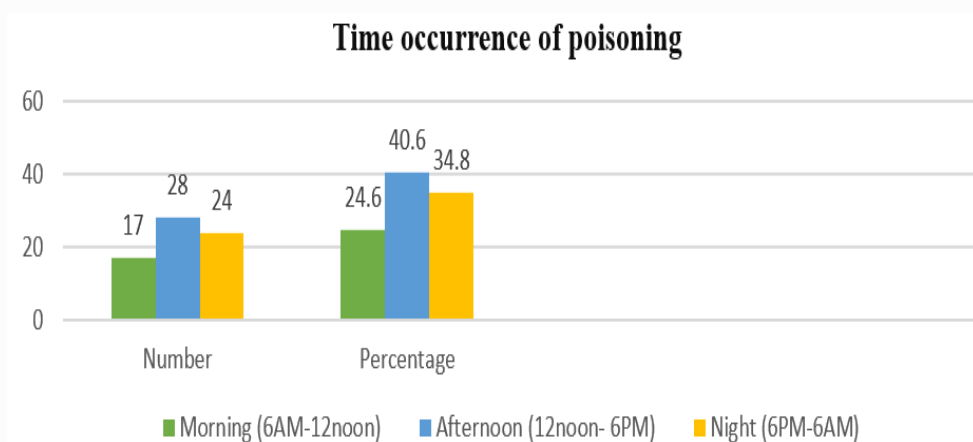


Figure 3: Time of occurrence of poisoning

Time interval between poisoning and presentation: Most patients presented within six hours of poisoning. Forty-three (62.3%) patients presented within 0–6 hours, 21 (30.4%) within 6–12 hours and 5 (7.2%) within 12–24 hours as shown in figure no.4.

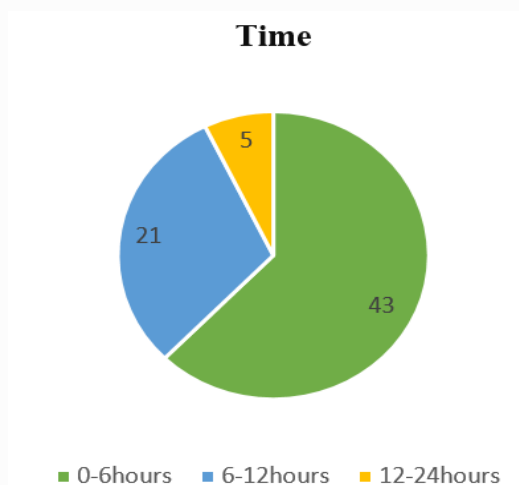


Figure 4: Time interval between poisoning and presentation

Referral pattern: Fifty-four patients (78.3%) were brought by family/attendants, while 15 (21.7%) were referred from other hospitals as shown in figure no. 5.

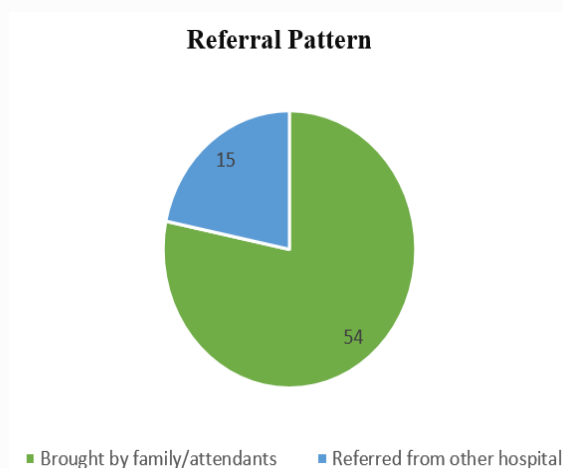


Figure 5: Referral pattern

Mode of poisoning: Suicidal poisoning was the predominant mode, accounting for 52 (75.4%) cases. Accidental poisoning accounted for 17 (24.6%) cases. No homicidal poisoning was documented as shown in figure no.6.

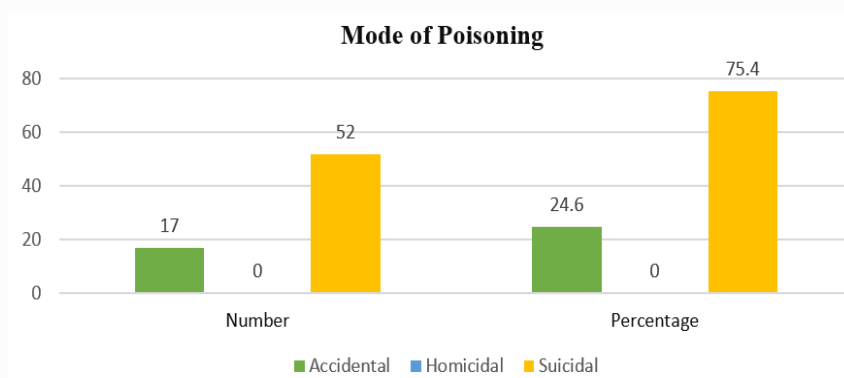


Figure 6: Mode of poisoning

Type of poison: Among the identified agents, paraquat/herbicide poisoning was the most common, accounting for 19 (27.5%) cases. Organophosphorus insecticides and antidepressants/other medicines each accounted for 12 (17.4%) cases. Snakebite was documented in 8 (11.6%) cases as shown in Table no. 2.

Table 2: Type of poisoning

Type of poison	Number	Percentage
Opioid overdose	3	4.3
Liquids/solvents/petrol etc.	3	4.3
Organophosphorus insecticides	12	17.4
Paraquat/herbicides	19	27.5
Antidepressants and other medicines	12	17.4
Snakebite	8	11.6
Other miscellaneous agents	5	7.2
Dishwasher/other cleaning agents	7	10.1
Total	69	100

Estimated amount consumed: The quantity of poison consumed was not known in 26 (37.7%) cases. Among cases where an estimate was available, 14 (20.3%) reported consumption of 10–100 mL, while 11 (15.9%) reported consumption of more than 100 ml as shown in Table no. 3.

Table 3: Estimated amount of poison consumed

Estimated amount	Number	Percentage
0–10 mL	7	10.1
10–100 mL	14	20.3
>100 mL	11	15.9
<10 tablets	7	10.1
>10 tablets	4	5.7
Not known	26	37.7
Total	69	100

Monthly distribution: The highest number of cases was recorded in November, with 12 cases (17.4%), followed by September and October, with 8 cases each (11.6%). February had the lowest number of cases, with 2 (2.9%) as shown in table no. 4.

Table 4: Monthly distribution of poisoning cases

Month	Number	Percentage
January	1	1.4
February	2	2.9
March	5	7.2
April	5	7.2
May	8	11.6
June	4	5.7
July	5	7.2
August	7	10.1
September	8	11.6
October	8	11.6
November	12	17.4
December	4	5.7
Total	69	100

Discussion

The present study provides a snapshot of the epidemiological profile of poisoning cases presented to the Emergency Department of a private medical college in Manipur. The study population consisted of 69 patients, with a slight male predominance. Males constituted 56.5% of cases compared with 43.5% females, producing a male-to-female ratio of 1.3:1. This finding is comparable with several Indian hospital-based

studies in which males constituted a substantial proportion of poisoning presentations. This is in agreement with findings of Liu et al [4] and Das [5]. This can be due to the fact that men are more exposed to stress and dangerous environmental conditions.

The largest proportion of patients in the present study belonged to the 31–40-year age group, followed by 21–30 years and 11–20 years. Also, the findings of the present study are contrary to the

other studies done by Nishanthi Anandabaska et al [6] and Anamika Das et al [7]. Thus, a considerable proportion of cases occurred among adolescents and young and middle-aged adults. This is clinically important because poisoning in these age groups may be associated with acute psychosocial stressors, interpersonal difficulties, occupational problems and other social determinants.

A striking finding was the predominance of suicidal poisoning, which accounted for 75.4% of all cases. This finding is in concurrence with the studies done by Anamika Das et al [7] and Roshan Mathew et al [8].

Accidental poisoning constituted 24.6%, and no homicidal poisoning was recorded. Similar predominance of intentional self-poisoning has been reported in other Indian emergency-department studies. The high proportion of suicidal poisoning emphasizes that the management of poisoning should extend beyond immediate toxicological treatment and include psychosocial assessment and appropriate mental-health intervention.

The most frequently identified toxic agent in the present study was paraquat/herbicide, accounting for 27.5% of cases. Organophosphorus insecticides accounted for another 17.4%. Thus, pesticides collectively represented a substantial proportion of the poisoning burden in this population. This finding is particularly relevant in the context of India, where agricultural pesticides are readily available in many communities. WHO identifies pesticide self-poisoning as an important means of suicide, particularly in low- and middle-income countries, and recommends measures to reduce access to highly hazardous pesticides as part of suicide prevention. [3]

Paraquat poisoning deserves particular attention because it can produce severe systemic toxicity and has been associated with poor outcomes in Indian hospital-based studies. Recent Indian data have documented substantial mortality and multiorgan involvement following paraquat ingestion. Therefore, the relatively high proportion of paraquat poisoning in the present study has implications for emergency preparedness, early recognition and appropriate referral. Snakebite accounted for 11.6% of cases which reflect the local environmental and occupational exposure patterns in Manipur.

More than three-fifths of the patients (62.3%) reached the hospital within six hours of the poisoning event. Early presentation provides an important opportunity for timely stabilization, appropriate decontamination when indicated, antidotal therapy where available and close monitoring for complications. However,

approximately one-third of patients presented after six hours, emphasizing the importance of community awareness and efficient referral and transport systems. The largest proportion of poisoning events occurred during the afternoon (40.6%), followed by night (34.8%). November recorded the highest number of cases (17.4%). Seasonal and temporal variations in poisoning have been described in previous studies, although the pattern may differ according to geographical and occupational characteristics. The monthly pattern observed in the present study should therefore be interpreted cautiously because the sample size was relatively small.

Regarding outcome, 66.7% of patients were admitted, 24.6% were discharged and 8.7% left against medical advice. The present dataset did not record deaths among these 69 emergency presentations. However, outcome in this study represents the documented emergency/hospital disposition and should not necessarily be interpreted as complete clinical recovery unless this was confirmed by follow-up.

The high proportion of patients brought by family members or attendants (78.3%) highlights the important role of families in recognizing poisoning and facilitating access to emergency care. Fifteen patients (21.7%) were referred from other hospitals, suggesting that an effective referral network is important for patients requiring specialized toxicological or critical-care management.

Conclusion

The present study demonstrates that poisoning is an important emergency presentation at Shija Academy of Health Sciences. There was a slight male predominance, with the largest proportion of cases occurring among adults aged 31–40 years. Suicidal poisoning was the predominant mode, accounting for three-fourths of all cases. Paraquat/herbicide poisoning was the most common toxic exposure, followed by organophosphorus insecticides and antidepressants/other medicines.

The findings highlight the need for early recognition and treatment of pesticide poisoning, efficient referral systems, safe storage and restricted access to highly hazardous pesticides, and routine psychosocial assessment of patients presenting following intentional self-poisoning. Larger multicentric studies involving both public and private hospitals in Manipur are recommended to establish the broader epidemiological pattern and identify modifiable risk factors.

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