Original Research

A STUDY ON THE EPIDEMIOLOGICAL PROFILE OF ACUTE DRUG POISONING CASES ADMITTED TO OUR HOSPITAL

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ABSTRACT

Background: Acute drug poisoning is a major public health problem and one of the most common medical emergencies encountered in hospitals. It contributes significantly to morbidity and mortality, particularly among young adults. The pattern of poisoning varies depending on the availability of drugs, socioeconomic factors, and regional prescribing practices. Understanding the epidemiological profile of acute drug poisoning is essential for early diagnosis, effective management, and prevention strategies.

Methodology: This hospital-based observational study was conducted in the Department of Emergency Medicine at from May 2025 to February 2026. A total of 40 patients above 18 years of age admitted with a history of acute drug poisoning were included in the study after obtaining informed consent. Patients with multiple modes of poisoning and those who did not provide consent were excluded. Detailed clinical history, demographic profile, type of drug consumed, duration since consumption, symptoms, clinical findings, and outcomes were recorded using a structured proforma. Data were analyzed using descriptive and inferential statistical methods.

Results: The mean age of the study participants was 37.36 ± 41 years, with the majority belonging to the 31–40 years age group. Most participants reached the hospital within 7–24 hours following drug consumption, with a mean duration of 11.67 ± 5.15 hours. Benzodiazepines were the most commonly consumed drugs (17.5%), followed by NSAIDs (12.5%) and antihypertensive medications (10%). Vomiting was the most common presenting symptom observed in 35% of participants, followed by giddiness (32.5%), abdominal pain (17.5%), and altered sensorium (15%).

Conclusion: Acute drug poisoning predominantly affects young and middle-aged adults, with benzodiazepines and NSAIDs being the most frequently implicated agents. Early hospital presentation and prompt management play an important role in reducing complications. Public awareness regarding safe drug usage, mental health counseling, and regulation of medication accessibility are essential to reduce the burden of acute drug poisoning.

Keywords: Acute Drug Poisoning, Benzodiazepines, Nsaids, Epidemiological Profile, Toxicology, Deliberate Self-Harm.

INTRODUCTION

Acute drug poisoning is a major global public health problem and constitutes one of the most common medical emergencies encountered in hospitals. Poisoning may occur following exposure to toxic substances through oral, inhalational, transdermal, rectal, or parenteral routes.[1] The severity of poisoning depends upon several factors including the nature of the poison, dose consumed, route of exposure, duration between exposure and treatment, and the general health condition of the individual.

Even substances considered safe under normal conditions may become toxic when consumed in excessive quantities.

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Acute drug poisoning is also recognized as one of the most frequent methods of deliberate self-harm and suicide attempts, particularly among young adults and adolescents.[2] The toxic effects of drugs and chemicals are largely influenced by their absorption, distribution, metabolism, and elimination. The rate of absorption varies depending upon the route of administration and the physiological condition of the gastrointestinal tract. Drugs taken orally are absorbed more rapidly when the stomach is empty compared to a stomach filled with food.[3] Certain substances may enhance the absorption of poisons; for example, oils increase the absorption of phosphorus compounds, thereby intensifying their toxic effects.[4] Surgical procedures such as gastroenterostomy can hasten the passage of toxic substances into the small intestine and increase absorption.[5] In contrast, conditions such as sleep, narcosis, trauma, and gastrointestinal stasis may retard absorption and delay the onset of symptoms.[6]

The skin generally acts as a poor absorptive barrier; however, lipid-soluble substances and certain chemicals may still be absorbed transdermally and produce systemic toxicity.[7] Similarly, inhalational exposure may rapidly lead to poisoning because of the large surface area of the lungs and the rich pulmonary blood supply. Parenteral administration bypasses first-pass metabolism and often results in more severe toxicity even at lower doses.[8]

Acute drug poisoning remains an important cause of morbidity and mortality worldwide, especially in developing countries. The epidemiological profile of poisoning varies significantly according to geographical region, socioeconomic conditions, educational status, occupational exposure, and accessibility to drugs and toxic agents.[9] In recent years, there has been a notable rise in poisoning cases involving pharmaceutical agents, particularly psychotropic medications, analgesics, opioids, and non-steroidal anti-inflammatory drugs (NSAIDs).[10] Paracetamol poisoning is one of the leading causes of acute liver failure in many countries.[11] Drugs used for neurological and cardiovascular disorders also contribute to poisoning cases, although less frequently.[12]

Understanding the epidemiological characteristics of acute drug poisoning is essential for identifying high-risk populations, implementing preventive strategies, and improving clinical management. Hospital-based epidemiological studies provide valuable insights regarding demographic distribution, patterns of poisoning, commonly implicated agents, clinical presentation, treatment modalities, and outcomes. Such information can aid healthcare professionals and policymakers in designing effective poisoning prevention programs and optimizing emergency care services.

Therefore, the present study aims to evaluate the epidemiological profile of patients admitted with acute drug poisoning in our hospital and to analyze the demographic characteristics, pattern of exposure, and clinical outcomes associated with poisoning cases.

Aim and Objectives of the Study

Aim

To study the epidemiological profile of patients admitted with acute drug poisoning in our hospital.

Objectives

To evaluate the demographic characteristics of patients admitted with acute drug poisoning.

To identify the commonly implicated drugs responsible for poisoning.

To assess the mode, route, and circumstances of poisoning among the study population.

METHODOLOGY

This hospital-based observational study was conducted in the Department of Emergency Medicine at over a study period from May 2025 to February 2026. The study included all patients aged more than 18 years admitted to the toxicology ward with a history of acute drug poisoning. A detailed clinical history was obtained from the patient or relatives, including demographic details, type of poison consumed, route and mode of poisoning, time elapsed since exposure, clinical presentation, associated comorbidities, treatment received prior to admission, and outcome. Patients with or without comorbid conditions such as hypertension, diabetes mellitus, depressive disorder, and other chronic illnesses were included in the study. Written informed consent was obtained from all participants or their legally authorized attendants before inclusion in the study.

Patients who had consumed multiple modes of poisoning, patients who did not provide consent for participation, and patients below 18 years of age were excluded from the study. Relevant clinical examination findings and laboratory investigations were recorded using a structured proforma. The collected data were compiled and analyzed using appropriate statistical methods. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used to summarize demographic and clinical variables. Categorical variables were analyzed using the Chi-square test or Fisher's exact test wherever appropriate, while continuous variables were analyzed using Student's t-test. A p-value of less than 0.05 was considered statistically significant.

RESULT

Table 1: Age group of the study Participants

Age group(in years)	No.	Percentage
11-20	02	05
21-30	07	17.5
31-40	17	42.5
41-50	08	20
51-60	05	12.5
61-70	01	2.5
Total	40	100

The mean age of the study participants was 37.36 ±41 years. Majority of participants were from 31 to 40 years. 08 participants were in 41 to 50 years age group, 07 were from 21 to 30 years age group,

05 were from 51 to 60 years age group, 02 were from 11 to 20 years age group and 1 participant was above 61 years.

Table2: Time since Consumption Participants

Age group (in years)	No.	Percentage
1 to 6hours	09	22.5
7to 24 hours	30	75
Morethan24 hours	01	2.5
Total	40	100

The mean time since consumption to arriving to hospital was 11.67 ±5.15 hours. 09 participants arrived from 1 to 6 hours, 30 participants from 7 to 24 hours and 1 participant arrived after more than 24 hours.

Table3: Type of drug Consumed by the study Participants

Type of drug	No.	Percentage
Benzodiazepines	07	17.5
NSAID	05	12.5
Anti-hypertensive	04	10
Beta blocker	03	7.5
Anti-psychotic	03	7.5
Anti-epileptic	02	05
Anti-thyroid	02	05
Vitamins	02	05
Oral hypoglycemic	01	2.5
Tricyclic antidepressant	01	2.5
Calcium channel blocker	01	2.5
Multiple tablets	01	2.5
Alpha blocker	01	2.5
Antifungals	01	2.5
Anti-helminthic	01	2.5
Anti-histamines	01	2.5
Antibiotic	01	2.5
Barbiturate	01	2.5
Sedatives	01	2.5
Tetracyclines	01	2.5
Total	40	100

Among the total study participants, 07 participants had consumed Benzodiazepines followed by 05 participants had consumed NSAIDs. 04 participants had Anti-hypertensive, 03 hadBeta blocker, 03 had Anti-psychotic, 02 had Anti-epileptic, 02 had Anti thyroid, 02 had Vitamins, 01 had Oral hypoglycemic, 01 had Tricyclic antidepressant, 01 had Calcium channel blocker, 01 had Multiple tablets, 01 had Alpha blocker, 01 had Anti fungals, 01 had Anti helminthic, 01 had Anti histamines, 01 had Antibiotic, 01 had Barbiturate, 01 had opiod and 01 had Tetracyclines.

Table4: Symptoms of the study Participants

Type of drug	No.	Percentage
Vomiting	14	35
Giddiness	13	32.5
Abdominal pain	07	17.5
Altered sensorium	06	15
Drowsiness	02	05
Palpitation	02	05
No symptoms	01	2.5
Unconscious	01	2.5
Seizures	01	2.5

Loosestools	01	2.5
Diaphoresis	01	2.5
Confusion	01	2.5
Total	40	100

Majority of the study participants had vomiting as the main symptom (14 participants). 13 participants had giddiness, 07 participants had abdominal pain, 06 participants had altered sensorium, 02 participants had drowsiness, 02 participants had palpitations, 01 participants had no symptoms, 01 were unconscious, 01 had seizures, 01 had loose stools, 01 had diaphoresis and 01 had confusion.

DISCUSSION

Acute drug poisoning remains an important medical emergency associated with significant morbidity and mortality worldwide. The present study evaluated the epidemiological profile, pattern of drug consumption, and clinical presentation among patients admitted with acute drug poisoning. The mean age of the study participants was 37.36 ± 41 years, with the majority belonging to the 31–40 years age group. Similar findings have been reported in several previous studies where young and middle-aged adults constituted the predominant population affected by acute poisoning.[13,14] This may be attributed to increased psychosocial stress, occupational pressure, financial difficulties, and psychiatric illnesses commonly seen in this productive age group.[15]

In the present study, most participants reached the hospital within 7–24 hours following drug consumption, with a mean duration of 11.67 ± 5.15 hours. Early presentation to healthcare facilities plays a crucial role in reducing morbidity and improving outcomes in poisoning cases.[16] Delayed presentation may occur because of lack of awareness, social stigma, poor transportation facilities, or delayed referral from peripheral centers.[17] Timely gastric decontamination and supportive management are essential in improving survival in acute poisoning cases.[18]

Benzodiazepines were the most commonly consumed drugs in the present study, accounting for 17.5% of cases, followed by NSAIDs and antihypertensive medications. Similar observations were noted in previous hospital-based studies where psychotropic medications and analgesics were frequently implicated in deliberate self-poisoning.[19,20] Easy accessibility to prescription medications, unsupervised drug storage, and increasing prevalence of psychiatric disorders may contribute to the rising incidence of benzodiazepine poisoning.[21] NSAIDs are commonly available over-the-counter medications and are frequently consumed in overdose because of their widespread use.[22]

The study also observed poisoning with beta blockers, antipsychotics, antiepileptics, calcium channel blockers, oral hypoglycemic agents, and tricyclic antidepressants. Cardiovascular drugs such as beta blockers and calcium channel blockers can result in severe toxicity including hypotension, bradycardia, and arrhythmias.[23] Tricyclic antidepressants are known to produce significant neurological and cardiac complications in overdose.[24] Although less frequent, poisoning due to antibiotics, antihistamines, antifungals, barbiturates, and opioids was also observed in the present study.

Vomiting was the most common presenting symptom among the study participants, followed by giddiness, abdominal pain, and altered sensorium. These findings are consistent with previous studies which reported gastrointestinal and neurological manifestations as the predominant clinical features in acute drug poisoning.[25,26] Vomiting and abdominal pain may result from direct gastrointestinal irritation caused by ingested drugs, whereas altered sensorium, drowsiness, seizures, and unconsciousness are commonly associated with central nervous system depressants and psychotropic agents.[27] Palpitations and diaphoresis observed in a few participants may be secondary to autonomic disturbances caused by certain cardiovascular and sympathomimetic drugs.[28]

The findings of the present study highlight the changing pattern of acute drug poisoning and emphasize the importance of early recognition and prompt management. Public awareness regarding safe storage of medications, early hospital referral, mental health counseling, and regulation of over-the-counter drug availability may help reduce the burden of acute drug poisoning.[29]

The present study highlights that acute drug poisoning is a significant medical emergency predominantly affecting young and middle-aged adults. Most patients presented to the hospital within 24 hours of drug consumption, emphasizing the importance of early medical intervention in improving patient outcomes. Benzodiazepines and NSAIDs were the most commonly implicated drugs, reflecting the easy accessibility and widespread use of these medications. Vomiting, giddiness, abdominal pain, and altered sensorium were the common clinical manifestations observed among the study participants.

CONCLUSION

The study emphasizes the need for public awareness regarding the dangers of unsupervised drug usage, safe storage of medications, and the importance of timely hospital referral following poisoning. Strengthening mental health services, improving counseling facilities, and regulating over-the-counter drug availability may help reduce the incidence of acute drug poisoning. Early diagnosis, prompt supportive care, and appropriate toxicological management remain crucial in reducing morbidity and mortality associated with poisoning cases.

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