Original Research Article

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Pattern of deliberate self-poisoning cases: A study in a tertiary care hospital in Bangladesh

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Abstract

Background: Deliberate self-poisoning (DSP) is a significant cause of morbidity and mortality, particularly in developing countries. Common substances used for self-harm include pesticides and medications, which are readily available in these settings. Understanding the patterns and risk factors associated with DSP is crucial for effective intervention and prevention strategies. This study aimed to identify the demographic patterns, of DSP cases at a tertiary care hospital in Bangladesh.

Materials and Methods: This prospective observational study was conducted at the Department of Forensic Medicine, Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh, from January 2021 to December 2023. A total of 113 DSP cases treated during the 24-month study period were identified from the emergency department register and enrolled purposively. Data were analyzed using Microsoft Office tools.

Results: The study found that 39.8% of DSP cases were between 20 and 29 years old, with a slight majority of females (52%). Most participants were single (54%) and unemployed (30.1%). Regarding toxicology, 76.1% involved drugs, with family quarrels being the leading cause (44.2%). The majority (71.7%) had poisonings at home, with 45.1% requiring intensive care unit (ICU) admission. Most had a Glasgow Coma Scale >8 (89.4%), and 11.5% had prior suicide attempts.

Conclusion: DSP is a major concern in Bangladesh, particularly among young adults and females. Family quarrels were the leading cause, with drug poisoning being the most common method. Most cases occurred at home, and a significant number required ICU admission.

Keywords: Aluminum phosphide, death, deliberate self-poisoning, drug, suicide.

Introduction

Suicide remains a significant global issue, particularly in low- and middle-income countries.[1] Deliberate self-poisoning (DSP), the third-most common method of suicide, is responsible for over 70% of serious suicide attempts. As the leading form of suicide attempt, DSP constitutes 85–95% of suicide-related hospital admissions. Non-fatal self-poisoning leads to hundreds of thousands of emergency room visits each year, imposing a substantial burden on healthcare systems.[2,3] DSP is recognized worldwide as one of the primary methods of suicide.[4] In 2014, the World Health Organization categorized Egypt as one of the countries with the lowest suicide rates,

reporting fewer than five suicides per 100,000 people.[1] However, the incidence of suicide may be underreported, as suggested by several studies. El Mahdy *et al*.[5] highlighted the number of suicidal attempts among teenagers attending the National Egyptian Centre of Environmental and Toxicological Research, with 2,350 reported cases over 6 months. Similarly, Mahmoud *et al*.[6] noted in their evaluation of suicides in Mansoura city from 2009 to 2014 that pesticides and drug overdoses were the most common methods, regardless of age. In the USA, suicide ranks as the tenth leading cause of death among adults.[7] A large-scale study there found that 19% of adults had experienced suicidal thoughts, 15% had made specific plans, 8.8% had attempted suicide, and 2.6% needed significant medical care.[8] DSP is reported to be the most common method of suicide among both adult men and women.[8,9] It is important to note that not all suicide attempts are driven by the intent to die; many may involve motives such as seeking attention, expressing distress, or attempting revenge.[10]

Materials and Methods

This prospective observational study was conducted at the Department of Forensic Medicine, Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh from January 2021 to December 2023. A total of 113 DSP cases treated over 24 months were identified from the emergency department register and enrolled purposively. DSP diagnosis was based on psychiatric assessments documented in the medical records. Data collected included patients' demographic profiles, the type of toxic agent used, the time of exposure, the interval between poisoning and hospitalization, hospital stay duration, clinical manifestations, treatments administered, outcomes, and circumstances surrounding the poisoning. Information regarding previous suicide attempts, methods, and causes of DSP were also obtained from the records. In line with the inclusion criteria, cases treated during the study period who were eligible or whose attendants gave consent were included. Exclusion criteria included patients with incomplete information, those who left the hospital against medical advice, or individuals with a history of accidental, homicidal, or travel-related poisoning. Data analysis was conducted using Microsoft Office tools.

Results

The age distribution of participants showed that 39.8% were between 20 and 29 years, 27.4% were under 20 years, 15.9% were between 30 and 39 years, 9.7% were between 40 and 50 years, and 7.1% were over 50 years [Table 1]. As per the gender distribution of cases, we found that the majority of cases (52%) were female and the rest of cases (48%) were male [Figure 1]. The sociodemographic status of participants revealed that 54.0% were single, 39.8% were married, and 1.8% were divorced or widowed. Regarding employment, 16.8% were students, 23.9% were housewives, 23.0% were businessmen, and 30.1% were unemployed. In terms of education, 54.0% had higher secondary certificate (HSC)-level education, 22.1% had secondary school level, and 11.5% were graduates or above. A majority (73.5%) resided in urban areas [Table 2]. The toxicological features of the cases revealed that 76.1% of poisonings involved drugs, followed by 10.6% from aluminum phosphide. Most poisonings (71.7%) occurred at home, with 98.2% having oral exposure. Family quarrels were the leading cause (44.2%), and 45.1% of patients required intensive care unit (ICU) admission. The majority had a Glasgow Coma Scale (GCS) >8 (89.4%), and 11.5% had a history of previous suicide attempts [Table 3].

Discussion

In this study, the highest number of DSP cases were observed in the 20–29 age group, with 27.4%, 15.9%, 9.7%, and 7.1% in the <20, 30–39, 40–50, and >50 age groups, respectively. These findings are consistent with another study.[11] Regarding gender distribution, 52% of DSP cases were female, whereas 48% were male, similar to another study where 51% of participants were female.[12] In terms

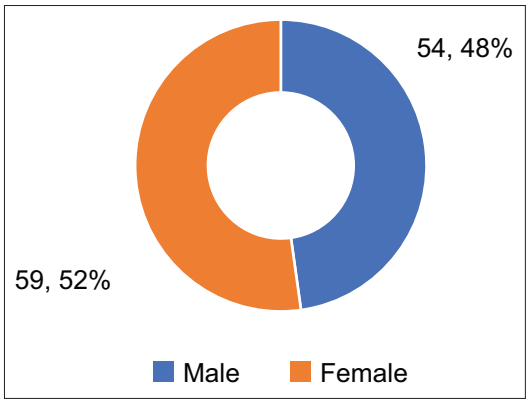

Figure 1: Gender distribution of cases

of sociodemographic status, 54% of DSP cases were single, followed by 39.8% married, 1.8% divorced or widowed, and 4.4% unknown. This aligns with a study from KwaZulu-Natal, which found that most cases were young and single.[13] Regarding employment status, nearly one-third of cases (30.1%) were unemployed, whereas 23.9%, 23.0%, and 16.8% were housewives, businessmen, and students, respectively. Another study reported an employment rate of 65.6% for the population.[14] In terms of educational status, the majority (54.0%) had completed the HSC level. Regarding residence, a significant proportion (73.5%) of cases were from urban areas, a finding consistent with a study conducted in western Iran.[4] As for the toxicological features, more than three-fourths (76.1%) of cases had used drugs as the poisoning agent, with 10.6% and 5.3% using aluminum phosphide and organophosphates, respectively. In drug-related poisonings, a report indicated that analgesics were the most frequently ingested agents,[15] whereas another study found psychotropic drugs to be the most common poisoning agents.[16] Regarding the place of poisoning, nearly three-fourths of cases (71.7%) occurred at home. Almost all cases (98.2%) had oral exposure to poison. In terms of hospital admission timing, over one-third of cases were admitted in the evening (6 pm–12 am), with 33.6% admitted in the afternoon (12 pm–6 pm), 18.6% at night (12 am–6 am), and 12.4% in the morning (6 am–12 pm). Less than half of

Table 1: Age distribution of participants

Age (Years)	*n*	%
<20	31	27.4
20–29	45	39.8
30–39	18	15.9
40–50	11	9.7
>50	8	7.1

Table 2: Socio-demographic status

Variables	*n*	%
Marital status		
Single	61	54.0
Married	45	39.8
Divorced or widowed	2	1.8
Unknown	5	4.4
Employment status		
Student	19	16.8
Homemaker	27	23.9
Businessman	26	23.0
Unemployed	34	30.1
Others	7	6.2
Educational status		
Illiterate	3	2.7
Primary school level	8	7.1
Secondary school level	25	22.1
HSC level	61	54.0
Graduate or above	13	11.5
Residence		
Urban	83	73.5
Rural	30	26.5

HSC: Higher secondary certificate

the cases (45.1%) required ICU admission. Regarding the causes of DSP, nearly half (44.2%) were linked to family quarrels, followed by mental disorders (20.4%), love and emotional problems (12.4%), substance/drug abuse (2.7%), poverty and unemployment (4.4%), and unknown causes (15.9%). Several studies highlight psychological disorders as a significant risk factor for self-harm and DSP, particularly in successful suicides.[17] Approximately 10% of patients had used ARVs for their DSP attempt.

Table 3: Toxicological features of cases

Variable	*n*	%
Agents of poisoning		
Drug	86	76.1
Aluminum phosphide	12	10.6
Organophosphates	6	5.3
Opium	2	1.8
Zinc phosphide	2	1.8
Cleaning agents	2	1.8
Others	3	2.7
Place of poisoning		
Home	81	71.7
Outside of home	9	8.0
Unknown	23	20.4
Route of exposure to poison		
Oral	111	98.2
Injection	2	1.8
Time of admit to hospital		
Morning (6 am–12 pm)	14	12.4
Afternoon (>12 pm–6 pm)	38	33.6
Evening (>6 pm–12 am)	40	35.4
Night (12 am–6 am)	21	18.6
History of addiction		
Yes	10	8.8
No	103	91.2
Admitted to ICU		
Yes	51	45.1
No	62	54.9
Cause of DSP		
Family quarrel	50	44.2
Mental disorder	23	20.4
Love and emotional problems	14	12.4
Substance/drug abuse	3	2.7
Poverty and unemployment	5	4.4
Unknown	18	15.9
Level of consciousness GCS		
GCS ≤8	12	10.6
GCS >8	101	89.4
Previous suicide attempts		
Yes	13	11.5
No	100	88.5

ICU: Intensive care unit, DSP: Deliberate self-poisoning, GCS: Glasgow Coma Scale

By 2012, about 1.4 million South Africans were receiving ARV treatment, with 2,205 centers dispensing them.[18] According to the GCS, 89.4% of cases had a GCS >8, whereas the remaining 10.6% had a GCS ≤8. Previous suicide attempts were found in 11.5% of cases, consistent with a previous study.[2] Regarding the outcomes, 41.6% of cases had hospitalization duration of 24–72 h, whereas 34.5% and 23.9% had stays longer than 72 h and shorter than 24 h, respectively. In terms of satisfaction, the majority of cases survived completely, 21.2% were self-satisfied, and 2.7% of cases died.[2]

Limitation of the study

This study has several limitations. First, it was conducted at a single tertiary care hospital, which may limit the generalizability of the findings to other settings. Second, the study relied on retrospective data from medical records, which may be incomplete or inaccurate. In addition, the study did not assess long-term outcomes or psychological factors in detail.

Conclusion

DSP remains a significant concern in Bangladesh, with young adults, particularly females, being the most affected. Family quarrels were the leading cause, and drug poisoning was the most common method. Most cases occurred at home, and a considerable proportion required ICU admission. These findings highlight the need for targeted mental health interventions, public awareness, and improved access to healthcare facilities to address the rising issue of DSP in the country.

Recommendations

Based on the findings, it is recommended that awareness programs be implemented to address the psychological factors leading to DSP, particularly in young adults. Improved mental health support services, timely intervention, and access to preventive care should be prioritized. Further research should focus on long-term outcomes and preventive strategies.

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Conflict of Interest

None declared.

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