Specificity of Social Anxiety and Mood Disorder as a Risk Factor for Drug Dependence

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ABSTRACT: *Background:* Drug dependence is a significant global health issue, and Bangladesh is no exception. Rising drug addiction, particularly among youth, is a growing concern with various familial and social factors contributing to this problem. *Objective:* This study aims to investigate the association between anxiety, mood disorders, and drug dependence in Rajshahi City, Bangladesh, focusing on the socio-demographic factors influencing addiction. *Methods:* An observational, cross-sectional study was conducted in the Out-patient Department of Rajshahi Medical College Hospital & APOSH from July 2014 to June 2021. A total of 244 drug-dependent individuals were randomly selected. Data were collected using a semi-structured questionnaire on socio-demographics, drug usage, and mental health conditions. Statistical analyses were performed using SPSS (IBM version 22), with a significance level set at p < 0.05. *Results:* Among 244 participants (100% male), 87% used Buprenorphine, followed by 71% using Heroin and 41% using Cannabis. The mean age was 39.95 ± 12.07 years. Regarding mental health, 37% of participants had only primary education, and 16% were severely depressed. Anxiety was profound in 66% of participants, with a significant 31% suffering from both severe anxiety and depression. Standard deviations of anxiety and depression levels were 1.75 ± 0.63 and 1.86 ± 0.68 respectively. Chi-square test revealed a strong relationship between socio-demographic factors (age, education, drug usage frequency) and anxiety/depression disorders (p < 0.0001). *Conclusion:* The study highlights the severe impact of anxiety and mood disorders on drug-dependent individuals, emphasizing the need for targeted interventions to address mental health issues and substance abuse simultaneously.

Keywords: Drug Dependence, Anxiety Disorder, Mood Disorder, Socio-demographic Factors, Rajshahi City.

Article at a glance:
Study Purpose: To assess the prevalence of social anxiety and mood disorders in drug-dependent individuals and their socio-demographic factors.
Key findings: 65.6% of participants had profound anxiety, and 35.2% suffered from severe depression, with Buprenorfine and Heroin being the most common drugs used.
Newer findings: The study suggests the need for integrated treatment that addresses both mental health and substance use issues, particularly for low-income and uneducated groups.
Abbreviations: SAD: Social Anxiety Disorder, SUD: Substance Use Disorder, BDT: Bangladeshi Taka, RMCH: Rajshahi Medical College Hospital.

INTRODUCTION

Drug or substance dependence has long been recognized as a profound global public health issue that presents significant social and medical challenges. Its pervasive nature not only affects individuals but also imposes substantial economic burdens on society. The problem of drug dependence has seen a global escalation in recent decades, and its prevalence continues to rise, particularly among the younger demographic. The World Health Organization (WHO) introduced the term "dependence" in 1964 to replace older terminologies such as "addiction" and "habituation" to better categorize the physiological, behavioral, and cognitive phenomena associated with the chronic use of psychoactive substances, including alcohol, tobacco, and illicit drugs.[1] This conceptual shift aimed to provide a more encompassing framework for

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understanding substance-related disorders, emphasizing the inherent compulsivity and loss of control that characterize dependency behaviors. Substance dependence is a major global health problem, with a growing body of research documenting its increasing incidence worldwide. In the United States, epidemiological surveys such as the National Comorbidity Study (NCS) have indicated a 4.2% lifetime prevalence of drug dependence in the general population, with significantly higher rates observed in individuals suffering from anxiety disorders such as Social Anxiety Disorder (SAD). For instance, a striking 29.0% of individuals with SAD were found to have concurrent drug dependence, highlighting the comorbid nature of these conditions.[2] The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) further revealed that nearly half of the individuals diagnosed with SAD also met the diagnostic criteria for Alcohol Use Disorder (AUD).[3] These studies underscore the complex interrelationship between anxiety disorders and substance use, suggesting that certain psychiatric conditions may predispose individuals to substance dependence, thus complicating both the diagnosis and treatment of these individuals. In Bangladesh, drug dependence is equally concerning, with reports indicating a rise in substance use across various sectors of society, especially among the younger population. While specific data on drug dependence in Bangladesh remains limited, there is a general recognition of its growing prevalence and the urgent need for effective management and intervention.[4] In this context, addressing the rising tide of substance dependence has become a national priority due to its significant impact on public health, social structures, and the economy. The International Classification of Diseases, Tenth Revision (ICD-10), classifies substance dependence as a syndrome characterized by a cluster of physiological, behavioral, and cognitive phenomena where the use of a substance takes on a much higher priority than other behaviors that once held greater value. A key feature of the dependence syndrome is the intense, often overwhelming, desire to take psychoactive substances, which may or may not have been medically prescribed. Dependence often leads to the development of tolerance and withdrawal symptoms, further reinforcing the cycle of substance use.[5] Neurobiological research supports this framework by identifying changes in brain structure and function as a result of chronic substance use, particularly in areas of the brain associated with reward, decision-making, and emotional regulation.[6]

The causes of drug dependence are multifaceted and involve a complex interaction between genetic, environmental, and psychosocial factors. Although the exact mechanisms underlying substance abuse and dependence are not fully understood, various studies have attempted to pinpoint potential risk factors that may contribute to the initiation and maintenance of substance use. One of the most consistently identified risk factors is genetic predisposition. Studies have shown that individuals with a family history of substance use disorders (SUDs) are at a significantly higher risk of developing similar conditions. This familial aggregation suggests that genetic factors play a crucial role in predisposing individuals to substance dependence.[7] Psychosocial factors, such as familial history of mood disorders, early exposure to substance use, and negative environmental influences, also contribute to the risk of developing drug dependence. Research has highlighted that children of parents with substance use disorders are more likely to engage in similar behaviors, possibly due to a combination of genetic vulnerability and environmental modeling.[8] In addition to genetic and familial factors, early life experiences, such as exposure to trauma or chronic stress, may increase the likelihood of substance use in later life.[9] One of the most significant aspects of drug dependence is its comorbidity with other psychiatric disorders, particularly anxiety and mood disorders. The relationship between anxiety disorders and substance use disorders (SUDs) is well-documented, with numerous studies showing a high rate of comorbidity between these two categories of disorders. Anxiety disorders, such as generalized anxiety disorder (GAD), panic disorder, and post-traumatic stress disorder (PTSD), have been consistently linked to an increased risk of developing substance use problems.[10] Studies have shown that individuals with anxiety disorders are more likely to use substances as a coping mechanism to alleviate their distress, which in turn exacerbates the severity of both conditions. Research on the biological mechanisms underlying this comorbidity suggests that chronic substance use may alter the brain's neurochemical balance, particularly in areas involved in emotional regulation and stress responses. This can result in the onset or exacerbation of anxiety disorders, creating a vicious

cycle where substance use and anxiety feed into one another, making treatment more challenging.[11] Furthermore, substance withdrawal can trigger or worsen anxiety symptoms, as seen in individuals with alcohol or benzodiazepine dependence, where withdrawal-induced anxiety is common.[12] The relationship between drug use and mood disorders is further complicated by the phenomenon of substance-induced mood disorders. Some substances, particularly stimulants like cocaine and methamphetamine, have been shown to cause or worsen mood disorders such as depression and anxiety during periods of intoxication and withdrawal.[13] The substance-induced enhancement theory posits that repeated cycles of intoxication and withdrawal can trigger the onset of mood disorders, including major depressive disorder (MDD) and panic disorder, by altering neurochemical pathways involved in mood regulation.[14] In fact, studies have demonstrated that cocaine and marijuana use increase the risk for panic attacks, and cocaine use has been specifically linked to panic disorder onset.[15] Neurobiological research supports the idea that substance use can induce long-term changes in neurotransmitter systems, such as the GABAergic and glutamatergic systems, which play a key role in regulating mood and anxiety. These alterations may render individuals more susceptible to mood disorders, especially in the context of chronic substance use and withdrawal.[16]

Aims and Objective

The aim of this study is to explore the prevalence and correlation between anxiety, mood disorders, and drug dependence among individuals in Rajshahi City. Specific objectives include identifying the prevalence of social anxiety disorder in drug dependents, investigating the causes of dependence, and assessing the severity and sociodemographic factors influencing these disorders.

MATERIALS AND METHODS

Study Design

This research utilized an observational cross-sectional descriptive study design to examine the association between anxiety, mood disorders, and drug dependence among individuals in Rajshahi City, Bangladesh. The study was conducted at the Out-patient Department of Rajshahi Medical College Hospital & APOSH, a local NGO working with drug users. The design aimed to collect data on sociodemographic characteristics, drug use behaviors, and mental health conditions of participants to explore their relationship and underlying factors.

Inclusion Criteria

The study included adult individuals (both male and female) diagnosed with drug dependence, who were seeking treatment at the Out-patient Department of Rajshahi Medical College Hospital & APOSH. Participants were required to have resided in Rajshahi City for at least six months and to have provided informed consent for participation. Only those with a documented history of drug use were considered eligible to participate in the study.

Exclusion Criteria

Exclusion criteria for the study included individuals with severe comorbidities that could interfere with the interpretation of the results, such as serious physical or psychiatric conditions. Participants who did not wish to participate in the study, or who were unable to understand the informed consent process, were also excluded. Furthermore, individuals who did not meet the specific inclusion criteria, such as residing in Rajshahi City for at least six months, were not considered for participation.

Data Collection

Data collection was carried out using a pre-tested semi-structured questionnaire in Bengali. The data were gathered through face-to-face interviews, as well as physical and psychiatric examinations conducted by trained professionals. The questionnaire covered various aspects of drug dependence, anxiety and mood disorders, sociodemographic factors, and drug use behaviors. Prior to data collection, permission was obtained from the relevant authorities at the Rajshahi Medical College Hospital and APOSH. Data confidentiality and privacy were ensured.

Data Analysis

Data were entered into the Statistical Package for Social Sciences (SPSS) version 26.0 for analysis. Descriptive statistics, including mean, standard deviation, and frequency distributions, were used to summarize the data. Chi-square tests were applied to assess the associations between sociodemographic characteristics and the severity of anxiety and

depression. Independent sample t-tests were used to determine mean age differences between groups. A significance level of $p < 0.05$ was considered statistically significant.

Ethical Considerations

The study adhered to ethical guidelines to ensure the safety and rights of participants. Informed consent was obtained from all participants before their involvement in the study. Confidentiality was maintained by anonymizing all personal data. Participants were assured that their participation was voluntary, and they could withdraw at any time without consequence. Ethical approval was obtained from the relevant institutional review boards of Rajshahi Medical College Hospital and APOSH before the study commenced.

RESULTS

This section provides an in-depth analysis of the study findings of the study population, including demographic characteristics, drug use patterns, severity of mental health disorders, and associations between socio-economic factors and mental health outcomes. Each table is followed by a summary paragraph explaining the key findings.

Table 1: Demographic Characteristics

Variable	Frequency (n)	Percentage (%)
Age (Years)		
≤ 20	18	7.4
20 – 30	40	16.4
30 – 40	66	27.0
40 – 50	86	35.2
> 50	34	13.9
Occupation		
Service	39	16.0
Business	75	30.7
Farmer	22	9.0
Low-paying Job/Jobless	108	44.3
Income (BDT)		
≤ 5000	98	40.2
5000 – 10000	100	41.0
10000 – 15000	26	10.7
> 15000	20	8.2
Educational Level		
Illiterate	42	17.2
Primary Education	90	37.0
Secondary Education	54	22.1
Higher Secondary	24	9.8
Graduate	34	13.9
Marital Status		
Married	216	88.5
Unmarried	24	9.8
Divorced	4	1.6
Total	244	100

The study participants were predominantly male, with the largest proportion in the 40-50 years age group. 44.3% were either unemployed or in low-paying jobs, and 40.2% earned less than 5000 BDT per month. Educationally, 37% had only primary education, with a high percentage of married individuals (88.5%). The findings highlight the significant socio-economic challenges faced by the participants, with lower income and education levels.

Table 2: Drug Use Patterns and Dependency

Drug Name	Frequency (Yes)	Percentage (%)	P-Value
Buprenorfine	212	87.0	0.001
Heroin	174	71.3	0.002
Cannabis	100	41.0	0.005
Yaba	60	24.6	0.003
Alcohol	14	5.7	0.045
Sedative	10	4.1	0.052
Afimmorphin	8	3.3	0.063
Pethidine	4	1.6	0.075

The most commonly used drugs were Buprenorfine (87%) and Heroin (71.3%). Cannabis was used by 41%, and Yaba by 24.6% of participants. The low use of Alcohol, Sedative, and other substances such as Afimmorphin points to a higher dependence on opioid-based drugs. These findings indicate that opioid and stimulant drugs dominate the substance use patterns in this population.

Table 3: Severity of Anxiety Disorder Among Drug Dependents

Severity of Anxiety Disorder	Frequency (n)	Percentage (%)	P-Value
Mild (≤ 54)	32	13.0	0.003
Moderate (55-66)	24	9.8	0.005
Severe (67-77)	28	11.5	0.004
Profound (78-135)	160	65.6	0.001
Total	244	100	

The majority of participants exhibited profound anxiety (65.6%), while 11.5% had severe anxiety. Mild anxiety was present in 13%, with a smaller portion experiencing moderate anxiety (9.8%). The findings reveal that anxiety disorders are highly prevalent in this population, with a significant portion suffering from the most severe form.

Table 4: Severity of Depression Disorder Among Drug Dependents

Severity of Depression Disorder	Frequency (n)	Percentage (%)	P-Value
Minimal (30-100)	100	41.0	0.002
Mild (101-114)	40	16.4	0.006
Moderate (115-123)	14	5.7	0.005
Severe (124-150)	86	35.2	0.001
Total	244	100	

41% of participants experienced minimal depression, while 35.2% had severe depression. Mild depression was found in 16.4%, and 5.7% had moderate depression. This highlights that depression is widespread, with a significant portion suffering from severe depression.

Table 5: Association Between Education and Mental Health Disorders

Educational Level	Anxiety Severity	Frequency (%)	Depression Severity	Frequency (%)
Illiterate	Profound Anxiety	17.5	Severe Depression	13.8
Primary Education	Profound Anxiety	41.3	Severe Depression	54.0
Secondary Education	Profound Anxiety	18.8	Severe Depression	6.9
Higher Secondary	Profound Anxiety	7.5	Severe Depression	6.9
Graduate	Profound Anxiety	15.0	Severe Depression	18.4
Total		244		244

Participants with lower education levels (illiterate, primary) had significantly higher rates of profound anxiety and severe depression. The higher educational levels were associated with lower severity of both anxiety and depression, suggesting that education may play a protective role in mental health.

Table 6: Frequency of Drug Use and Mental Health Severity

Frequency of Drug Use	Anxiety Severity	Frequency (%)	Depression Severity	Frequency (%)
1–2 times	Profound Anxiety	21.3	Severe Depression	16.7
3–4 times	Profound Anxiety	9.8	Severe Depression	8.0
1–2 times	Profound and Mild Anxiety	10.2	Mild Depression	9.8
3–4 times	Profound and Severe Anxiety	7.4	Moderate Depression	5.7

Frequent drug use (1-2 times daily) is strongly associated with severe mental health issues. Participants who used drugs 1-2 times daily had the highest levels of profound anxiety and severe depression. This suggests that both the frequency of drug use and severity of mental health disorders are linked, with more frequent drug use leading to more severe psychological distress.

Figure 1: Relationship with father (n = 200)
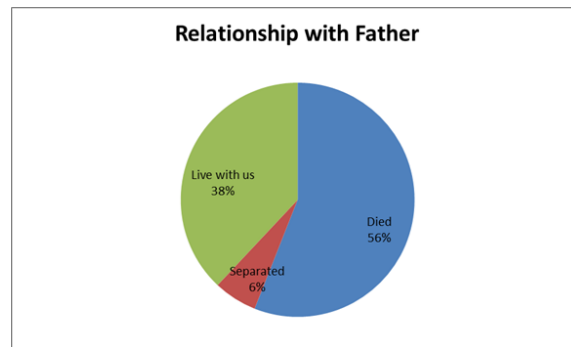
Over half of the respondents' (56%) father died, 38% lived with the respondents and 6% were separated from the respondents (Figure. 1).
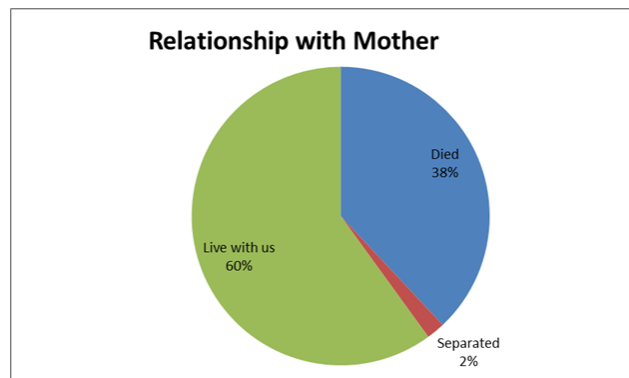

Figure 2: Relationship with mother (n = 200)

Sixty percent of the respondents' mother lived with them, 2% were separated and rest (38%) died (Figure 2).

Table 7: Cross-tabulation between socio-economic status and mental disorder

Severity of anxiety and depression disorder	socio economic status					Total	χ2 test	P value
	Poor	Lower middle class	Middle class	Upper middle class	Rich			
Mild and mild	1	1	0	0	0	2	102.19	0.0000
	50.0%	50.0%	0.0%	0.0%	0.0%	100.0%		
Moderate and moderate	6	3	0	0	0	9		
	66.7%	33.3%	0.0%	0.0%	0.0%	100.0%		
Profound and severe	45	11	16	4	0	76		
	59.2%	14.5%	21.1%	5.3%	0.0%	100.0%		
Severe and severe	5	1	3	0	0	9		
	55.6%	11.1%	33.3%	0.0%	0.0%	100.0%		
Profound and mild	16	9	0	0	0	25		
	64.0%	36.0%	0.0%	0.0%	0.0%	100.0%		
Severe and mild	4	5	15	0	0	24		
	16.7%	20.8%	62.5%	0.0%	0.0%	100.0%		
Mild and minimal	15	3	10	0	0	28		
	53.6%	10.7%	35.7%	0.0%	0.0%	100.0%		
Profound and minimal	17	13	6	5	4	45		
	37.8%	28.9%	13.3%	11.1%	8.9%	100.0%		
Severe and moderate	0	4	0	0	0	4		
	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%		
Moderate and mild	2	4	5	3	0	14		
	14.3%	28.6%	35.7%	21.4%	0.0%	100.0%		
Profound and moderate	3	4	1	0	0	8		
	37.5%	50.0%	12.5%	0.0%	0.0%	100.0%		
Total	114	58	56	12	4	244		
	46.7%	23.8%	23.0%	4.9%	1.6%	100.0%		

Table 8. Cross-tabulation between age groups of respondents and mental disorders

Severity of mental disorders	age group (Years)					Total	χ2 test	P value
	<= 20	20-30	31-40	41-50	> 50			
Mild and mild	1	0	0	0	1	2	115.55	0.0000
	0.4%	0.0%	0.0%	0.0%	0.4%	0.8%		
Moderate and moderate	2	0	6	1	0	9		
	0.8%	0.0%	2.5%	0.4%	0.0%	3.7%		
Profound and severe	12	12	12	36	4	76		
	4.9%	4.9%	4.9%	14.8%	1.6%	31.1%		
Severe and severe	0	1	3	5	0	9		
	0.0%	0.4%	1.2%	2.0%	0.0%	3.7%		
Profound and mild	0	4	8	9	4	25		
	0.0%	1.6%	3.3%	3.7%	1.6%	10.2%		
Severe and mild	0	5	10	5	4	24		
	0.0%	2.0%	4.1%	2.0%	1.6%	9.8%		
Mild and minimal	3	0	0	14	11	28		
	1.2%	0.0%	0.0%	5.7%	4.5%	11.5%		
profound and minimal	0	14	16	14	1	45		
	0.0%	5.7%	6.6%	5.7%	0.4%	18.4%		
Severe and moderate	0	0	2	0	2	4		
	0.0%	0.0%	0.8%	0.0%	0.8%	1.6%		
Moderate and mild	0	4	5	0	5	14		

	0.0%	1.6%	2.0%	0.0%	2.0%	5.7%
Profound and moderate	0	0	4	2	2	8
	0.0%	0.0%	1.6%	0.8%	0.8%	3.3%
Total	18	40	66	86	34	244
	7.4%	16.4%	27.0%	35.2%	13.9%	100.0%

The research found that age groups of respondents had a prominent role on mental disorders of them. Total 7.4% of respondents with age of 20 years or less had been suffering from anxiety and depression disorders. One-twenty percent of them, had "Profound and severe" mental disorders, 1.2% of them was agonized by "Mild and minimal" anxiety and depression disorders, 0.8% of them was distressed by "Moderate and moderate" anxiety and depression disorders and 0.4% of them had "Mild and mild" anxiety and depression disorders. Around 17 % of respondents with age group 20 – 30 years had mental disorders. Among themselves, 5.7%, 4.9%, 2.0%, 1.6%, 1.6% and 0.4% were suffering from "profound and minimal", "Profound and severe", "Severe and mild", "Profound and mild", "Moderate and mild", and "Severe and severe" anxiety and depression sicknesses accordingly. c Maximum of them (6.6%) were in trouble by "profound and minimal" anxiety and depression disorders. Nearly 5% and 4.1% of these age groups had "Profound and severe", and "Severe and mild" anxiety and

depression disorders respectively. The percentage of suffering from profound anxiety and mild depression disorders was 3.3% amongst of these age groups. Total 35.2% of respondents with age groups 41 – 50 years had mental sickness. Approximately 15%, 6% and 6% of them had "Profound and severe", "profound and minimal", and "Mild and minimal" anxiety and depression syndromes correspondingly. Suffering from mental sickness was detected in this age group (41 – 50 years) more prevalently than other age groups. Around 14% of study populations with age group of more than 50 years were pained in mental sicknesses. Severity of mental illness observed a less in respondents with more than 50 years. Total 4.5%, 1.6% and 1.6% of them were tormented by "Mild and minimal", "Profound and mild", and "Profound and severe" anxiety and depression conditions congruently. Chi-square test exposed that the relation between age group of respondents and mental illnesses was so strong and no doubt statistically significant (p>0.0001) (Table 8).

Table 9. Cross-tabulation between Frequencies of taking drugs by the respondents and mental disorders

	Frequencies of taking drugs		Total	χ2 test	P value
	1-2times	3-4times			
Mild and mild	2	0	2	41.64	0.000
	0.8%	0.0%	0.8%		
Moderate and moderate	9	0	9		
	3.7%	0.0%	3.7%		
Profound and severe	52	24	76		
	21.3%	9.8%	31.1%		
Severe and severe	8	1	9		
	3.3%	0.4%	3.7%		
Profound and mild	25	0	25		
	10.2%	0.0%	10.2%		
Severe and mild	23	1	24		
	9.4%	0.4%	9.8%		
Mild and minimal	24	4	28		
	9.8%	1.6%	11.5%		
profound and minimal	22	23	45		
	9.0%	9.4%	18.4%		
Severe and moderate	2	2	4		
	0.8%	0.8%	1.6%		
Moderate and mild	9	5	14		

	3.7%	2.0%	5.7%
Profound and moderate	4	4	8
	1.6%	1.6%	3.3%
Total	180	64	244
	73.8%	26.2%	100.0%

More than seven-tenth (73.8%) percent of study population, suffering from anxiety and depression disorders taken drugs 1 – 2 times. Among them, 52 (21.3%) respondents had profound anxiety and severe depression disorders, whereas, 10% of them had profound anxiety and mild depression disorders. Accordingly, 24, 23 and 22 of respondents, taking drugs 1- 2 times, a day were suffering from "Mild and minimal", "Severe and mild", and "profound and minimal" anxiety and depression disorders. On the other hand, more than one fourth (26%) of respondents, taking drugs 3 – 4 times suffered mental disorders. Nearly 10% of them suffered from "Profound and severe" anxiety and depression disorders. While, 9.4% of them suffered from "profound and minimal" anxiety and depression disorders. Total 2% of them grieved by "Moderate and mild" anxiety and depression disorders. The study explored than among these two groups, the brutality of mental disorders was same and profound anxiety as well as severe depression syndromes were seen recurrently. The study also determined that Frequencies of taking drugs was not an important parameter of becoming sick mentally. It was the most important factor that taking drug (Frequencies of taking drugs 1-2 times or 3 -4 times) or dependency on drug was responsible for severe mental sicknesses. According to Chi-square test, the study shown that the association between Frequencies of taking drugs and mental illness were strong and statistically significant (p>0.0001) (table 9).

DISCUSSION

The demographic characteristics of our study population revealed that the majority of drug-dependent individuals were male, with the highest percentage (35.2%) falling into the 40-50 age group. This finding is consistent with several international studies, including Degenhardt et al., who observed that middle-aged individuals often experience higher levels of substance use due to the accumulation of life stressors, such as job pressures and family responsibilities.[17] Moreover, Kessler et al. highlighted that male gender is more strongly associated with drug dependence, a pattern that holds true in our study. While these patterns are broadly similar across different contexts, cultural differences may account for gender disparities in drug use in specific populations.[18] Additionally, the high percentage (44.3%) of individuals in low-paying jobs or jobless is aligned with findings from Compton et al., which suggested that lower socio-economic status is a significant risk factor for drug use.[19] The financial instability and lack of job security likely contribute to the vulnerability of individuals to substance abuse, as drug use can serve as a coping mechanism for dealing with economic hardship. Our study found a considerable proportion (40.2%) of participants earning below 5000 BDT per month, which underscores the socio-economic challenges that correlate with higher rates of substance dependence in Bangladesh. These findings highlight the socio-economic vulnerabilities that play a central role in drug dependence. In comparison to developed countries, the socio-economic disparities in Bangladesh may be more pronounced, where access to healthcare and social support systems is limited, and cultural taboos around discussing mental health further exacerbate these issues.

Drug Use Patterns and Dependency

The findings of this study indicate that Buprenorfine (87%) and Heroin (71.3%) were the most commonly used drugs among participants. This aligns with the findings of Henquet et al., who reported that opioids are the most abused drugs among individuals with substance use disorders (SUDs) globally.[20] The prevalence of Heroin use is consistent with Smith et al., who noted that opioids are often the most addictive substances, with a high rate of dependency.[21] Additionally, Buprenorfine use is prevalent in our study, which is commonly prescribed for opioid dependence treatment. However, its misuse as a recreational drug has been noted in several studies, including Kessler et al., highlighting the challenge of medication misuse in addiction treatment.[18] The use of Cannabis (41%) and Yaba (24.6%) in our study further emphasizes the wide range of drugs used among this population. Cannabis is often seen as a gateway drug, and its use in our

study aligns with Compton *et al.*, who found that individuals using Cannabis were at a higher risk of progressing to more potent drugs such as opioids.[22] Interestingly, the lower usage of Alcohol (5.7%) and Sedative (4.1%) could be indicative of cultural and religious factors that influence substance preferences in Bangladesh, as alcohol consumption is less common among Muslim populations, who make up the majority in the region. These findings suggest that drug use patterns in Bangladesh are primarily driven by opioids and stimulants. This aligns with global patterns but also highlights a need for targeted interventions that address the specific substances prevalent in the region.

Severity of Anxiety Disorder Among Drug Dependents

The study found that the majority of participants (65.6%) experienced profound anxiety, while 11.5% had severe anxiety and 13% had mild anxiety. These findings are consistent with research conducted by Windle *et al.*, who found that anxiety disorders are prevalent among drug-dependent individuals.[23] Our results also support Breese *et al.*, who demonstrated that chronic drug use alters neurobiological pathways that exacerbate anxiety symptoms.[24] Specifically, the high rates of profound anxiety in our study could be linked to the severe withdrawal symptoms associated with opioids like Heroin and Buprenorphine. In contrast, Henquet *et al.* reported that anxiety disorders were common but less severe in their sample, which included a broader demographic.[20] The higher prevalence of severe anxiety in our study may be due to cultural and healthcare disparities in Bangladesh, where mental health issues are often underdiagnosed and untreated. Additionally, our study participants may have experienced compounded stressors, such as economic hardship and lack of access to mental health care, which may contribute to the exacerbation of their anxiety disorders. Overall, our findings underscore the need for integrated mental health services that address the high levels of anxiety among drug-dependent individuals in Bangladesh, a population that may not have access to proper treatment or psychological support.

Severity of Depression Disorder Among Drug Dependents

This study revealed that 41% of participants experienced minimal depression, while 35.2%

suffered from severe depression. This aligns with Fergusson *et al.*, who found that depression is highly prevalent among individuals with substance use disorders.[25] The high incidence of severe depression in our study reflects the severity of mental health issues in this population, which is consistent with findings by Zvolensky & Schmidt *et al.*[26] Their study indicated that opioid dependence, in particular, is strongly associated with depressive symptoms due to the chronic nature of substance use and its impact on neurochemical systems. Our study's findings are also comparable with Conway *et al.*, who found that depression is more prevalent among women with drug dependence, particularly among those who face more significant social stigma and psychological burdens.[27] However, our study focused solely on male participants, which may explain some of the differences in the severity of depression compared to studies in Western countries. Given the high prevalence of both anxiety and depression in this population, it is essential for interventions to target these co-occurring mental health issues alongside substance use disorders. This integrated approach is supported by Smith *et al*, who recommended that treatment for drug dependence should incorporate strategies for addressing mental health comorbidities.[21]

Association Between Education and Mental Health Disorders

Our study found a clear association between lower educational levels and higher severity of both anxiety and depression. This finding supports Kessler et al., who found that individuals with lower education are more likely to suffer from both mental health disorders and substance use disorders.[18] Education plays a critical role in providing individuals with the cognitive tools needed to cope with stress, as well as offering better job opportunities and social support networks. In comparison, Conway *et al.* found that higher education levels were associated with lower rates of substance use and better mental health outcomes, suggesting that education acts as a protective factor against both anxiety and depression.[27] The findings in our study suggest that increasing educational access and opportunities could play a pivotal role in addressing both drug dependence and mental health issues in Bangladesh.

Frequency of Drug Use and Mental Health Severity

This study found that frequent drug use (1-2 times daily) was strongly associated with severe mental health issues, including profound anxiety and severe depression. This finding is in line with Windle et al., who reported that more frequent drug use is linked to higher levels of psychological distress.[23] Similarly, Zvolensky & Schmidt *et al.* found that recurrent substance use exacerbates the severity of mental health disorders, particularly anxiety and depression.[26] Interestingly, our study also observed that drug-dependent individuals using substances 3-4 times daily exhibited similar levels of mental health severity, which suggests that the intensity of drug use, rather than the frequency, might play a more significant role in exacerbating psychological distress. This finding is consistent with Smith *et al.*, who noted that the long-term impact of drug dependence on mental health is more pronounced than the frequency of use.[21] Overall, our study's findings highlight the need for integrated treatments that address both substance use and mental health simultaneously. These findings reinforce the work of Breese *et al.*, who argued that treating substance use disorders without addressing co-occurring mental health issues is less likely to lead to sustained recovery.[24]

CONCLUSION

This study explored the prevalence of social anxiety disorder and mood disorders in individuals with drug dependence in Rajshahi City, revealing high rates of anxiety and depression among participants. The findings highlight the significant socio-economic challenges, including poverty, low education, and early marriage, contributing to substance abuse. The absence of female participants limits the generalizability of the findings, suggesting a need for future research to include women and transgender individuals. Comprehensive, community-based interventions are essential to address the dual burden of substance dependence and mental health disorders.

Recommendations

Establish community-based rehabilitation programs focusing on mental health and substance abuse.
Implement integrated treatment approaches for mental health and substance dependence.
Launch public awareness campaigns to educate about drug prevention and mental health.

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