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Original article

Exploring the link between Sexual Behavior and Depression among Male Methamphetamine Users Engaging in Injection of Other Drugs in a Chosen District of Bangladesh

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Background: Drug abuse is a growing challenge in Bangladesh, with most of the drug abusers are young and middle age, between 8 and 50 years. Methamphetamine (Yaba) abusers are vulnerable for their risky sexual behavior and unstable mental health. There are lack of information about sexual behavior and mental health of Yaba abusers. We need research to assess current situation among young people of Bangladesh. To fill up the gap of knowledge a study was conducted with the objective of assess the current status of sexual behavior and depression among Yaba abuser in selected drop in center (DIC) of Save the Children in Cumilla district. ***Methodology:*** The study was cross-sectional and done from January to December 2018. Adult male aged between 18-69 years who were enrolled in 'Harm Reduction Services' and were diagnosed as methamphetamine drug user by verbal consent. The modified semi structured CDC questionnaire data was collected from 263 young study respondents in two DICs by face-to-face interview. Before collection both written and verbal consents was obtained from respondents. 'Depression' was accessed by Montgomery-Asberg depression rating scale and graded score range from 0 to 60. Data was analyzed by SPSS software version 2.1 where we observed descriptive and bivariate analysis with frequency, percentage and cross tabulation. ***Results:*** The result found that more than half 151(57.4%) of respondents were 26-35 years of age, 253(96.2%) as Muslim. 252(95.8%) was married, 183(69.6%) had business as occupation, 240(91.3%) had with family, 201(76.4%) have 5 or more siblings. Half of the respondents' Yaba consumption was >24 months, 140(53.2%) consumed Yaba with 1-4 friends. The prevalence of any kind of sexual contact except wife (Extramarital affair) was 47(17.9%) and prevalence of any kind of sexual contact without condom in last 12 months except wife was 32(12.2%). Majority respondents reported they always use condom when have sexual contact with sex workers. More than one third 101(38.4%) respondents bought condoms from pharmacy and 105(39.9%) population bought condom from HIV program. Majority 258(98.1%) respondent said they experienced decrease satisfaction on condom use. Around 53(20.2%) population had discontinued condom use. Majority respondents 252(95.8%) perception was Yaba affects discontinuation of condom use and 37(14.2%) respondents said they were affected by STDs. The prevalence of depression among Yaba abuser was 107(41.0%) and among them 62(58.2%) asymptomatic, 34(31.9%) had mild depression, 7(6.8%) had moderate depression and 3(3.1%) had severe depression. Conclusion: Methamphetamine abuse is a rising problem for young people. They have risky sexual and mental health problem.

Keywords: Sexual Behavior and depression, male Methamphetamine users

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Introduction

Drug addiction is a substantial concern for Bangladesh and the global community. Over the past two decades, Bangladesh has witnessed a prolonged history of drug usage, primarily involving substances such as opium and cannabis. The issue of drug use first manifested in Bangladesh during the 1980s. Notable categories of available drugs in Bangladesh include: A. Opium (including Heroin, Pethedine, and Cocaine) B. Cannabis (comprising Ganja, Chorosh, Bhang, and Hashish) C. Stimulants (such as Methamphetamine, Ecstasy, and Viagra) D. Sleeping pills (including Tranquilizers and Diazepam) E. Cough Syrup (marketed under the trade name Phensidyl, containing codeine, pseudoephedrine, and chlorpheniramine).Moreover, there exists a significant association between the use of methamphetamine and risky sexual behavior, as indicated by numerous research articles spanning various countries. This correlation underscores the need for comprehensive interventions and preventive measures to address the multifaceted challenges posed by drug addiction in Bangladesh and beyond.[1]

In recent years, numerous studies have indicated a noteworthy escalation in the prevalence of methamphetamine usage. Amphetamines, ranking as the second most widely utilized class of substances globally, follow closely behind cannabis. Over the past two decades, a considerable surge in the accessibility of amphetamine-type stimulants (ATS) has been observed on a global scale. In the United States, adolescents constitute 20% of all admissions, and this percentage continues to exhibit an upward trajectory with each passing day.[2] The geographical areas exhibiting the highest prevalence of amphetamine utilization encompass North America, Europe, Southeast Asia, and Australia. Within the global population of 200 million individuals who engaged in drug consumption during the years 2009 and 2010, approximately 35 million individuals were identified as users of amphetamine-like stimulants.[3] Owing to its accessibility in transportation and substantial demand among student populations, it occupies a prominent position within the drug trafficking industry. The global prevalence of risky sexual behaviors among individuals grappling with substance addiction has been substantiated by numerous studies. The term "risky sex" encapsulates a spectrum of behaviors that place an individual at heightened vulnerability for unintended pregnancy, sexually transmitted infections (STIs), sexual violence, or other adverse outcomes.[4] Methamphetamine exhibits greater potency than amphetamine due to its inherent lipophilic properties, facilitating enhanced penetration of the central nervous system.[5] Upon the prompt ingestion of Methamphetamine, individuals undergo a series of effects characterized by notably pleasurable sensations. These sensations encompass euphoria, instigated by elevated dopamine levels. Additionally, Methamphetamine usage is linked to heightened productivity, increased attentiveness and curiosity, hyper sexuality, diminished anxiety, and augmented energy levels.[6] Hence, the prevalence of precarious sexual conduct may be elevated as a consequence of the impact of methamphetamine on hyper sexuality. The administration of an excessive dose of methamphetamine has been associated with severe health complications, including cerebrovascular hemorrhage, acute cardiac failure, and hyperthermia.[7] No formal studies have been conducted concerning the correlation between risky sexual behavior and the utilization of methamphetamine in Bangladesh. It is noteworthy that methamphetamine has been observed to augment sexual desire and arousal in both men and women. However, protracted usage has been linked to sexual dysfunction, with certain reports indicating instances of erectile and orgasmic dysfunction.[8] One international study finding which include intravenous drug use and risky sexual behavior stated that, Twenty one percent of the total participants reported condom use during the last sexual intercourse. Another study stated that, Condom use during the last sexual intercourse was highest in Nepal (37%) and lowest in Bangladesh (10%) among south East Asian countries.[9]

In an additional investigation, a noteworthy univariate association was identified between individuals engaging in unprotected anal intercourse and the abuse of amphetamines within the gay population. Furthermore, a study conducted in Colombia revealed that adolescents who disclosed elevated levels of drug consumption concurrently exhibited increased numbers of sexual partners and higher frequencies of engaging in unprotected sexual activities. It is pertinent to note that substantial data lacunae persist in

certain countries, notably India and China. Additionally, in some countries within the region, reported data on recreational drug use relies on expert estimates rather than formally collected data.[10] Now a day's depression also a great issue which also endanger public health. Drug addiction due to depression is a well-known trend. Depression is highly co morbid with substance abuse. There is little knowledge about clinical course and outcome of methamphetamine.[11] Depression often occurs among person who uses methamphetamine.[12] In Thailand, association between methamphetamine and high depression level is shown in a study.[13] In that study they find approximately 12% of individual who reported ever using methamphetamine had high levels of depressive symptoms. One limitation of that study is that the study was based on adolescent, parents did not give consent and many difficultly arise regarding giving consent of adolescent due to Thai stigmatization. Another limitation of that study was, no study was done in rural region of Thailand where there was epicenter of an existing methamphetamine epidemic in Thai rural areas. My study population was adult (18-69), so no parental consent needed. I shall go to Cumilla to collected sample which represent rural area of Bangladesh to encounter previous study limitations.[14] In country like Bangladesh depressive patient is increasing day by day. A study in Bangladesh showed that 2.88% of outdoor patient were suffering from substance use disorder. From another study from National Institute of Mental Health 7.66% of their outdoor patient was suffering from substance related disorder. Another study conducted in a private psychiatric clinic in Dhaka showed 29.6% of admitted patient were also suffering from substance related disorder.[15] In relation to individuals experiencing homelessness, it has been observed that 69% of males engaged in the utilization of various forms of substances.[16] However, there exists a notable dearth of comprehensive investigations aimed at elucidating the simultaneous occurrence of depression and methamphetamine use.[17] Despite the recognized association between methamphetamine and depression, the precise prevalence of depressive conditions among methamphetamine users remains indeterminate. It is imperative to undertake additional research endeavors to ascertain the contemporary prevalence of coexisting depression and methamphetamine use within the Bangladeshi population.[18]

Materials and methods:

The Study was cross-sectional study. Study site was Harm reduction program was started from 2008 under the supervision of Save the Children. There are 21 DIC (drop in center) in 7 districts under Save the Children supervision. My study areas were 2 DIC (drop in center) of save the children in Cumilla, Bangladesh. Total People who inject drugs (PWID) is about 815 which is enlisted in Save the Children DIC (drop in center), Cumilla. 2 DIC (drop in center) is located in Chalkbazar and Race course in which 410 methamphetamine addict enlisted out of 520 in race course and 292 methamphetamine addict enlisted out of 295 in Chalkbazar.

Study populationwasadult population, male aged between 18-69 years who were enrolled in "Harm reduction services" conducted by Save the Children in Cumilla. Sampling technique was purposive sampling. By using sample size for cross sectional study, $N=Z^2 *P(1-P)/d2$ our sample size for this study is 263

A pretested semi-structured modified questionnaire derived from CDC Atlanta and from other literature review for sexual behavior status and Depression is rated by Montgomery-Asberg Depression Rating scale (MADRS). Regarding modified CDC questionnaire and other from other literature review, we did not find any languages barrier which is not understandable to Bangladeshi people. After doing pretesting from 10 participants, I took expert opinion from my supervisor if any change is needed. Section A was containing different socio demographic information such as age, marital status, educational status etc. Section B was included question about sexual behavior like number of multiple sexual partners, sexual contact without condom except wife etc. Section C was included according to Montgomery – Asberg Depression rating Scale which already have validate questionnaire including Bangali Language 20scoring range from 0 to 60 where 0 to 6 is asymptomatic, 7 to 19 is mild depression, 20 to 34 moderate depression and more than 34 represent severe depression.

Face to face interviews- pretesting were conducted in another DIC center in Dhaka, where 10 methamphetamine drug users were included. The questionnaire had containing sections which include -The socio-demographic characteristics, sexual behavior and depression status among methamphetamine drug user who also inject other drugs.

Data management procedure was after completion of data collection all questionnaires was checked and edited by researcher. A data base in SPSS (v-21) was developed according to questionnaire. Data regarding all questions were entered in the developed data base. Outliers and missing values were checked and corrected. Data was cleaned, entered and analyzed by Statistical Package for the Social Sciences (SPSS) software version [21]. All the question data was entry in the developed data based by using questionnaire. Outliers and missing values were checked and corrected. Data exploration was done to visualize and general feature of data. After exploration percentage was used to assess to level of socio demographic status. Data was presented by using tables and pie chart only. Depres-

sion was accessed by Montgomery-Asberg depression rating scale and graded as an overall score (range 0 to 60). Cut-off points include: 0 to 6 – symptoms absent, 7 to 19 – mild depressions, 20 to 34 – moderate, more than 34 – severe depressions. It was presented by various graphs and table.[22]

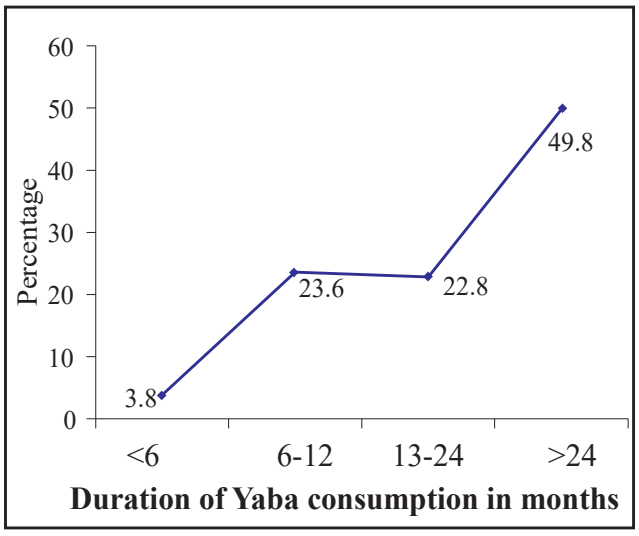
Result:

Table 1: Distribution of the study populations by socio demographic characteristics (N=263)

Socio demographic variable	Number (n)	Percentage (%)	Mean±SD
Age (in years)			33.21±7.65
18 - 25	33	12.5	
26 - 35	151	57.4	
36 - 45	56	21.3	
46 - 55	21	8.0	
>55	2	0.8	
Education			
No institutional education	55	20.9	
Do not complete primary education	79	30.0	
Complete primary education	104	39.5	
Complete secondary education	17	6.5	
Complete higher secondary education	5	1.9	
Complete graduation	3	1.1	
Religion			
Islam	253	96.2	
Hindu	10	3.8	
Marital status			
Unmarried	14	5.3	
Married	252	95.8	
Occupation in last 12 months			
Business small	237	90.1	
Day labourer	26	9.9	
Present occupation			
Business	183	69.6	
Service	54	20.5	
Unemployeed	26	9.9	
Stay with family			
Yes	240	91.3	
No	23	8.7	
If no where you stay			
House	254	96.6	
Home and road	9	3.4	
Siblings			
≤5	201	76.4	4.54±2.14
>5	62	23.6	

Table 1 shows the distribution of the study populations by socio demographic characteristics. It was observed that more than half 57.4% population belonged to age 26-35 years. The mean age was found 33.21±7.65 years with ranged from 18 to 57 years. More than one third 39.5% population were completed primary education than 30.0% in did not complete primary education, 20.9% had no institutional education, 6.5% had complete secondary education, 1.9% had complete higher secondary education and 1.1% had complete graduation. Majority 96.2% population was Muslim and 3.8% Hindu. Majority 95.8% population was married and 5.3% unmarried. Majority 90.1% were business small and 9.9% in day laborer. More than two third 69.9% were business than 20.5% in serves and 9.9% in unemployed. Majority 91.3% population had stay with family. Three fourth 76.4% population belonged to 5 siblings. The mean number of sibling was 4.54±2.14 with ranged from 0 to 14.

Figure 1: Distribution of the study population by duration of Yaba consumption in months (N=263)



Line chart shows the distribution of the study population by duration of Yaba consumption in months. It was observed that almost half 49.8% study respondents belonged to duration of Yaba consumption >24 month. The mean duration of Yaba consumption was 42.61±31.84 months with ranged from 1 to 120 months.

Table 2: Distribution of the study respondent by Yaba consumption and condom use (N=263)

Yaba consumption with friends	**Number (n)**	**Percentage (%)**
0	110	41.8
1-4	140	53.2
>4	13	4.9
Always use condom when have intercourse with female sex worker		
Yes	245	93.2
No	18	6.8
Most condom bought in last 1 month		
Pharmacy	101	38.4
DICCenter	91	34.6
Did not brought condoms in last 1 month	71	27.0
Price of condom when use last time		
0	105	39.9
1-15	97	36.9
16-25	48	18.3
>25	13	4.9

Table 2 shows the distribution of the study population by Yaba consumption with friends. It was observed that more than half 53.2% study respondents belonged to 1-4 Yaba consumption with friends, 41.8% in 0 and 4.9% in >4 Yaba consumption with friends. The distribution of the study population by always use condom when have intercourse with female sex worker. It was observed that majority 93.2% study respondents had always use condom when have intercourse with female sex worker. Source of condom buying in last 1 month of the study population. It was observed that more than one third 38.4% study respondents brought condoms from pharmacy, 34.6% from DIC center and 27.0% did not brought condoms in last 1 month than. The distribution of the study population price of condom when use last time. It was observed that 39.9% population had 0 price of condom when use last time than 36.9% in 1-15 price of condom when use last time, 18.3% in 16-25 price of condom when use last time and 4.9% in >25 price of condom when use last time.

Table 3: Distribution of the study respondent by HIV history (N=263)

Brought condom ever from HIV program	**Number (n)**	**Percentage (%)**
Yes	105	39.9
No	158	60.1
Ever test HIV		
Yes	224	85.2
No	39	14.8

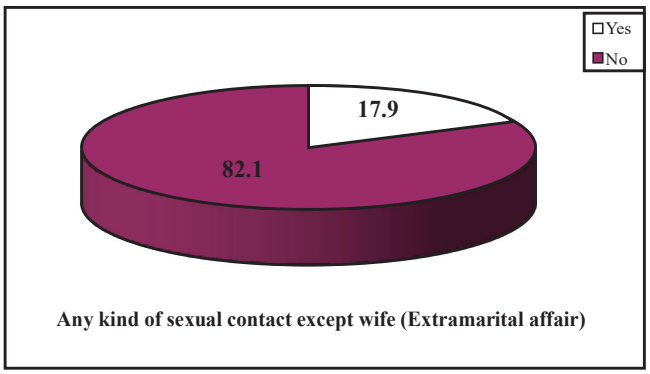
Table 3 shows the distribution of the study population brought condom ever from HIV program. It was observed that more than one third 39.9% population had brought condom ever from HIV program. The distribution of the study population ever tests HIV. It was observed that majority 85.0% population had ever test HIV. The distribution of the study population knows HIV test result. It was observed that all 100.0% population had known HIV test result.

Table 4 shows the decrease Satisfaction on condom use according to Yaba abuser. It was observed that majority 98.1% population had decrease satisfaction on condom use according to Yaba abuser. It was observed that 20.2% population had discontinued condom use during sexual intercourse. Majority respondent (95.8%) perception was that, Yaba had affect on discontinuation of condom use. It was observed that 14.2% population had ever effected by sexual transmitted diseases.

Table 4: Percentage distribution of Yaba affect on condom user (N=263)

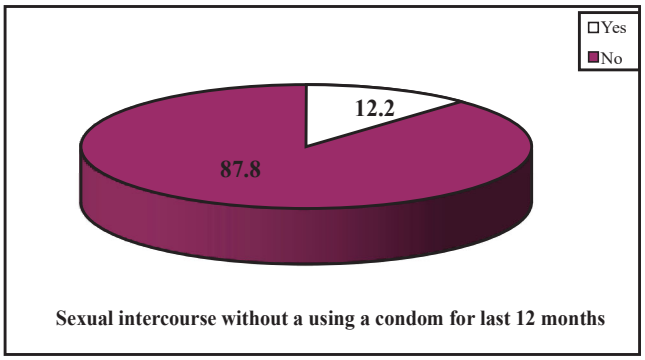
Dissatisfaction on condom use	**Number (n)**	**Percentage (%)**
Yes	258	98.1
No	5	1.9
Discontinue condom use during sexual intercourse		
Yes	53	20.2
No	210	79.8
Perception on discontinuing using condom due to Yaba		
Yes	252	95.8
No	11	4.2
Ever effected by sexual transmitted diseases		
Yes	37	14.2
No	226	85.8

Figure 2: Distribution of the study population by sexual contact except wife (N=263)



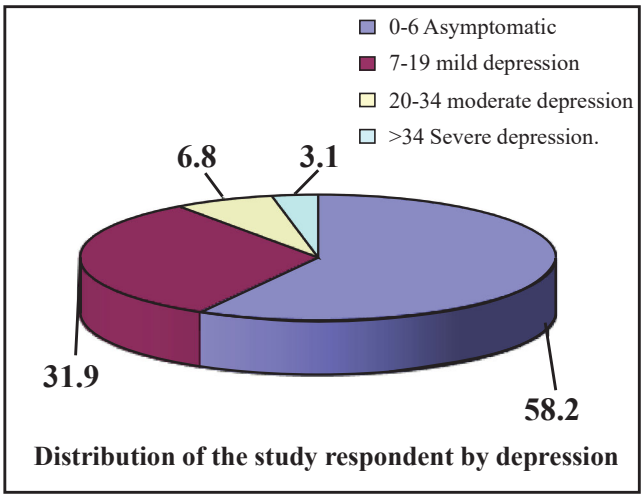
Pie chat shows the distribution of the study population by percentage of sexual contact except wife. It was observed that the prevalence of any kind of sexual intercourse except wife (Extramarital affair) was 17.9%.

Figure 3: Distribution of the study population by sexual intercourse without using a condom for last 12 months (N=263) except wife



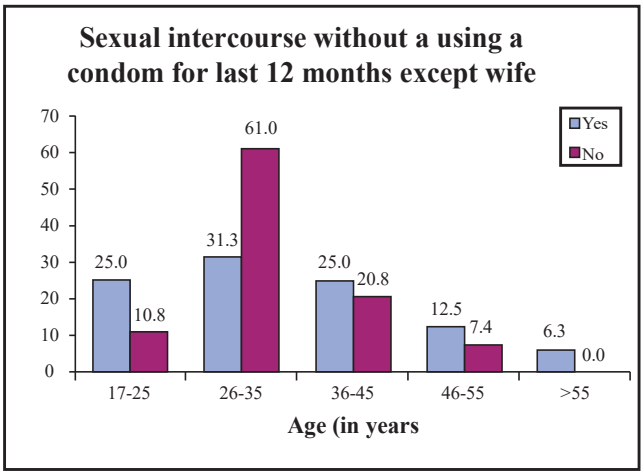
Pie chart shows the distribution of the study population by percentage of sexual contact except wife. It was observed that the prevalence of any kind of sexual intercourse without using a condom for last 12 months except wife was 12.2%.

Figure 4: Distribution of the study population by depression (N=263)



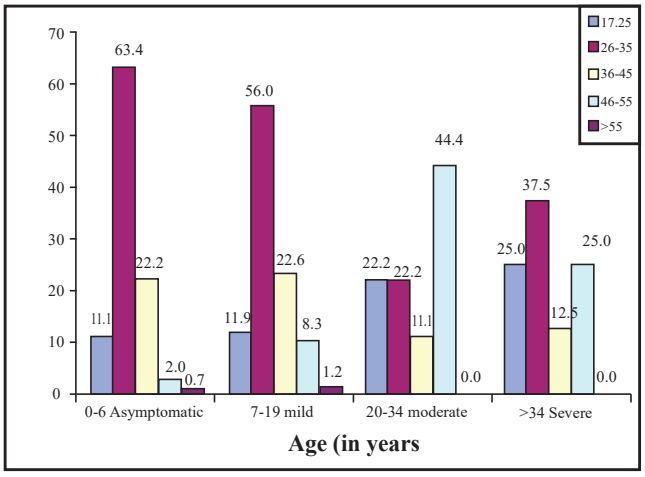
Pie chart shows depressionof the study population. It was observed that more than half 58.2% study respondents had 0-6 Asymptomatic, 31.9% 7-19 mild depression, 6.8% 20-34 moderate depression and 3.1% >34 Severe depression.The prevalence of depression among methamphetamine user was 41%

Figure 5: Comparison between age with sexual intercourse without a using a condom for last 12 months (N=263) except wife



Bar diagram shows comparison between age with sexual intercourse without a using a condom for last 12 months. It was observed that among 32 study respondents almost one third 31.3% belonged to age 26-35 years

Figure 6: Comparison between age with depression (n=263)



Bar diagram shows comparison between age with depression. It was observed that Asymptomatic and mild depression was higher in 26-35 years of age (Asymptomatic 63.4% and mild 56.0%) where total asymptomatic population were 153 and total mildly depressed population were 84. Whereas moderate and severe depression was higher in 46-55 years of age (moderate 44.0% and severe 25.0%) where total moderately depressed population were 18 and severely depressed population were 8.

Discussion:

In the present study, an examination of the educational background of the population revealed that 39.5% had completed primary education, while 30.0% did not complete primary education, and 20.9% had no institutional education. Moreover, 6.5% completed secondary education, 1.9% completed higher secondary education, and 1.1% had completed graduation. These findings are consistent with prior research by Islam and Hossain (2017),[13] who reported that 46.0% of drug users were undergraduates, 30.0% were graduates, and 24.0% were master's or postgraduate degree holders. Comparable observations regarding education status were also noted in studies conducted by Zhang et al. (2015), DiMiceli et al. (2016),[7] and Borders et al. (2013).[1] However, Maruf et al. (2016)[23] reported differing results, with 38.1% having graduated, 28.6% holding higher secondary qualifications, 17.1% having secondary education, 9.5% being postgraduates, and only 6.7% having completed primary education.

In terms of religious affiliation, the current study observed that 96.2% of the population identified as Muslim, while 3.8% identified as Hindu. This aligns with findings from Maruf et al. (2016),[23] where 98.1% identified as Muslim, 1.0% as Hindu, and 1.0% as Christian. Additionally, DiMiceli et al. (2016)[7] reported 100% Thai ethnicity and 99% Buddhist affiliation in their study.

Marital status in the present study indicated that 95.8% of the population was married, while 5.3% were unmarried. This contrasts with Maruf et al. (2016),[23] where 57.1% were single, 34.3% were married, 1.0% were widowed, 1.0% were separated, and 6.7% were divorced. Similarly, DiMiceli et al. (2016)[7] found that 79.0% were single, separated, widowed, or divorced.

Occupationally, the majority of participants in the current study (90.1%) were engaged in small businesses, with 9.9% working as day laborers. In contrast, Maruf et al. (2016)[23] reported unemployment at 31.4%, business involvement at 31.4%, students at 20.0%, service-holders at 7.6%, housewives at 3.8%, and retirees. Another study by Glasner-Edwards et al. (2009)[21] found 60.0% of their subjects were employed.

Family composition in the present study revealed that 91.3% of the population resided with their families, consistent with findings by Islam and Hossain (2017),[13] where 90.0% of recent drug users lived in nuclear families. Housing arrangements indicated that 96.6% lived in houses, with 76.4% belonging to families with five or fewer siblings.

Regarding Yaba consumption duration, almost half (49.8%) of the respondents in the current study had been consuming Yaba for over 24 months. This contrasts with findings by DiMiceli et al. (2016),[7] where 19.0% reported ever consuming methamphetamine, and 31.0% of lifetime users reported recent methamphetamine use within the past 3 months. The current study also highlighted that 53.2% of respondents engaged in Yaba consumption with friends, possibly for financial benefits and sexual pleasure.[7]

Sexual behavior outcomes in the current study indicated that 17.9% engaged in extramarital affairs, though potential bias due to respondents concealing their sexual history was acknowledged. Borders et al. (2013)[1] reported similar findings in rural stimulant users, emphasizing a significant reduction in the odds of multiple sexual partners over time. Additionally, the study noted that crack cocaine, non-prescribed pharmaceutical opioids, and alcohol to intoxication were associated with greater odds of multiple sexual partners.

In terms of condom use, 12.2% reported engaging in sexual intercourse without using a condom for the last 12 months, and 20.2% discontinued condom use during sexual intercourse. Borders et al. (2013)[1] found inconsistent condom use among rural stimulant users and noted associations with substance use, emphasizing the need for expanded sexual risk prevention programs.

Concerning HIV testing, the present study indicated that 85.0% of the population had undergone HIV testing, possibly influenced by community outreach efforts. In contrast, Kumar et al. (2008)[24] reported that 25.0% of participants in five countries had not heard of HIV/AIDS, with awareness varying across regions.

Depression prevalence in the current study showed that 58.2% had asymptomatic to mild depression, 6.8% had moderate depression, and 3.1% had severe depression. These findings align with prior research linking methamphetamine use to depression. Additionally, the study highlighted potential contributing factors such as social and political unrest, job dissatisfaction, low job security, financial issues, familial problems, and future uncertainty.[10]

In summary, this discussion has provided a detailed overview of various demographic and behavioral aspects observed in the current study, comparing and contrasting findings with relevant literature. The results underscore the multifaceted nature of substance use, emphasizing the importance of tailored interventions and comprehensive understanding in addressing associated issues.

Conclusion:

Drug abuse is a multidimensional problem, and it should be viewed from multidimensional perspective and be addressed accordingly. This study was undertaken to explore the sexual behavior and depression status among male inhaled methamphetamine user who also inject other drugs in selected district of Bangladesh. Most of the population age belonged to age 26-35 years, poor education level, came from Muslim family, married, involve with business, Stay with family and sibling belonged to <5. Most of the study respondents belonged to duration of Yaba consump-

tion >12 months, consumption with friends. The prevalence of any kind of sexual intercourse except wife (Extramarital affair) was 17.9% and that the prevalence of any kind of sexual intercourse without using a condom for last 12 months except wife was 12.2%. Majority of study respondents always used condom when have intercourse with female sex worker. More than one third population had brought condom from HIV program and most population had decrease satisfaction according to Yaba abuser. Nearly one fourth population had stop using condom during sexual intercourse, most of the respondent perception had Yaba effect on condom nonuse according to Yaba user. Ever effected by sexual transmitted diseases found 14.2% of the population. Majority (85.0%) population had ever test HIV and all had know HIV test result. More than half of the study respondents had 0-6 Asymptomatic. Almost one third belonged to age 26-35 years had sexual intercourse without a using a condom for last 12 months except wife. Most of the mild depression observed in age belonged to 26- 35 years. These findings highlight the need for management and prevention strategies for substance use in Bangladesh.

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