

Prevalence of substance use in Bangladesh

Md Faruq Alam,¹ Mekhala Sarkar,² Mohammad Tariqul Alam,³ Helal Uddin Ahmed,⁴ Avra Das Bhowmik,⁵ Susmita Roy⁶

¹Ex-Director-cum Professor, National Institute of Mental Health (NIMH), Sher-E-Bangla Nagar, Dhaka, Bangladesh; ²Associate Professor (Psychiatry), NIMH, Sher-E-Bangla Nagar, Dhaka, Bangladesh; ³Associate Professor (Psychiatry), NIMH, Sher-E-Bangla Nagar, Dhaka, Bangladesh; ⁴Associate Professor, Child, Adolescent and Family Psychiatry, NIMH, Sher-E-Bangla Nagar, Dhaka, Bangladesh; ⁵Associate Professor (Psychiatry), NIMH, Sher-E-Bangla Nagar, Dhaka, Bangladesh; ⁶Professor, Jalalabad Ragib Rabeya Medical College, Sylhet, Bangladesh.

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Correspondence

Md Faruq Alam,
Mobile: +8801711244749
E-mail: faruqalam60@gmail.com

Summary

The prevalence of substance use is on rising trend in the country. This two-stage nationwide multicentric community based cross sectional study was conducted by National Institute of Mental Health (NIMH), Dhaka during the period of September 2017 to July 2018 to determine the prevalence of substance use as well as to identify the proportion of users used different substances and to find out socio-demographic correlates of substance use in Bangladesh. The sample were collected by cluster sampling technique. In the first stage data were collected from 19692 respondents aged between 7 years and above in 140 clusters through face-to-face interview using semi-structured questionnaires to collect information by trained data collector. Diagnoses of substance use were made in the second stage of interview by research psychiatrists following DSM-5 diagnostic criteria of mental disorders. Descriptive and inferential statistics of the collected data was done using standard statistical parameters. SPSS programme (Version 23) was used to summarize and to analyze the data. The results showed that, the prevalence of substance use was found as 3.3% among the population 18 years and above. Prevalence of substance use was 4.8% in male and 0.6% in female. Most frequently used substances include cannabis in (42.7%), alcohol in 27.5%, amphetamine (yaba) in 15.2%, opioid in 5.3% and sleeping pills in 3.4% users. Among professions of substance users 6.7% were labors, 5.7% unemployed, 4.3% business men, 3.8% farmers and 3.5% service holders. Extremes of social classes were found as increased users of substances such as people with low income 3.2% and people with high income 3.8% using as against 2.6% in middle income group. The data of this community survey will be used for planning of mental health services in Bangladesh.

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Introduction

Though the history of substance use is very old in human narrative, it has become a serious national and global problem in recent times and is affected by psychosocial, economic, individual, familial and family factors.^{1,2} Substance abuse usually applies to the using of any psychoactive substance, illicit or medically prescribed drugs but smoking and alcohol intake are also related with the abusing phenomenon.³ Behavior with substance intake is also a major medical, psychological and social problems specially in view of the increasing incidence and availability of drugs. Substance abuse affects multiple areas of functioning and comorbid diagnoses occur frequently inpatients with substance use disorders.²

Detection, prevention and treatment of substance abuse are important not only to relieve current distress but also to improve adult functioning and prevent the perpetuation of disadvantage

into the next generation. Drug abuse is a multidimensional phenomenon in which physicians, sociologists, psychologists, legalists and other experts deal with different aspects of the problem.⁴

No previous nation-wide study with large and representative samples of the population in whole of Bangladesh was so far conducted in Bangladesh. Survey with representative samples addressing all types of drug use including profiles of associated factors is needed to provide empirical data upon which policy response to drug problems can be based. Proper strategies and planning can be developed to address the issues by understanding the magnitude and pattern of substance use among population in the country. So, taking into consideration all relevant findings, this survey attempted to determine the prevalence of substance use as well as to find out the socio-demographic correlates of substance use and identify the types of substance use in Bangladesh.

Materials and methods

This two-stage nationwide multicentric community-based survey was conducted by National Institute of Mental Health (NIMH), Dhaka, a government institute during the period of September 2017 to July 2018. Departments of psychiatry of Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Sylhet and Rangpur Medical College locally coordinated the respective parts of the study. The study was descriptive cross sectional in nature and sampling technique was cluster sampling technique. In the first stage 19800 respondents in 140 clusters aged between 7 years and above were approached by the trained data collectors with semi-structured questionnaires to collect information. The cluster sites were selected randomly with probability proportionate to size (PPS) of population in all seven divisions. Cluster is a group of people living in a specific area under study. As population of the study was not taken from all mauzas of the rural area and all mahallas of urban area, some mauzas and mahallas were selected randomly as clusters. In each division the whole population was stratified in rural and urban areas. In urban areas mahallas and in rural areas mauzas were selected randomly as primary sampling unit (PSU). Each PSU was considered as a cluster which is again synonymous with a selected mahalla or mauza. Thus, numbers of PSUs selected in each division were equal to the allotted number of clusters. The allotted numbers of clusters in each division with PPS are given below.

Table 1: Allotted number of clusters in each division⁵

Division	Population size	Allotted cluster
Rajshahi	1,84,84,858	18
Khulna	1,56,87,759	15
Barisal	83,25,666	8
Dhaka	4,74,24,418	46
Sylhet	99,10,219	10
Chittagong	2,84,23,019	28
Rangpur	1,57,87,758	15
Total	14,40,43,697	140

Then each randomly chosen mahalla or mauza (cluster or PSU) was divided arbitrarily into segments. One forty two (142) samples in one segment were calculated by dividing the total sample size 19800 by 140 clusters. The number of segments for each mahalla or mauza (cluster or PSU) was determined by dividing the total population of the mahalla or mauza by 142. Then one segment containing 142 populations from each chosen

mahalla or mauza (cluster or PSU) was selected randomly for interview. It might be mentioned that, no chosen segment had population less than 142. The total numbers of segments considered for interview of samples were equal to total number of clusters or PSUs. Among them 19692 respondents (response rate 99.5%) were finally interviewed. Diagnoses of substance use were made in the second stage of interview by research psychiatrists following DSM5 diagnostic criteria of mental disorders.⁶ All males and females aged 7 years and above living in the selected segments of mahalla or mauza (cluster or PSU) during study period were included in the study population. Those, who or whose guardian refused to be included in research and those were suffering from severe physical illnesses were excluded. People living in residential structures like hostels or dormitories were not included in the survey. Data collectors and research psychiatrists were distributed in their working area depending on the total number of samples to be interviewed by all of them. Each data collector collected data from total 990 samples (19800,20=990) during data collection period by face-to-face interviewing and sometimes by observation during house-to-house survey in each cluster. Data were collected in two stages. In the first stage, all of 142 respondents from a randomly selected segment of a cluster were interviewed through household to household visit. The final sampling unit was household in the study area. Information on children and people not able to give information were collected from both sample and one of their parents or guardians as required. Household or participants refusing to participate in the survey or people not available for interview during at least 2 visits were excluded. In each of these cases replacement was made from next household. If next one was missed then the household or case/s was/were considered as dropped out. Self Reporting Questionnaire (SRQ)⁷ and Reporting Questionnaire for Children (RQC)⁸ questionnaires were pretested, adapted and used in national survey on mental health⁹ and community survey on child mental disorders including substance abuse respectively.¹⁰ These questionnaires were applied among study population. Other questionnaires like the alcohol, smoking and substance involvement screening test (ASSIST)¹¹ and sociodemographic questionnaire used in the survey were pretested and necessary modifications were done before applying on final samples. A total of 19800 respondents were approached for interview in first stage in order to identify 'probable cases' and 'probable no cases' along with factors associated with substance use and sociodemographic correlates. In the second stage of study systemic random sampling technique was adopted to screen out negative cases. The sampling interval was 4 for screen negative cases. When search for 'true cases' was made, all screen positive and every fourth screen negative respondents were interviewed by research psychiatrists to find out the true

cases of substance use. If 4th respondent of screen negative cases were not found the 3rd or 5th respondent was included for interview. If any of the screen positive cases or 3rd or 5th respondent in the screen negative cases were not available for interview even after recall for twice then the case was assumed as dropped out. Research psychiatrists remained blind about the results of screening instruments to reduce the risk of bias. Data collectors guided them to interview the cases. Diagnoses of substance use were confirmed following DSM5 criteria for the purpose. A biostatistician employed for the study was involved with data analysis. Data were checked for consistencies well as for completeness. After proper editing data were coded; subsequently data were entered in the computer for summarization. Descriptive and inferential statistics of the collected data was done using standard statistical parameters. SPSS programme (Version 23) was used to summarize and to analyze the data. Associations between variables were tested as required and statistical tests were applied to examine the significance of differences in distributions of substance use in the background of different socio-demographic factors. Ethical clearance was taken from Bangladesh medical research council (BMRC). Informed written consents were obtained from all individuals/ parents/ informants in the study area before interview as required. In order to document the consent, Bengali version of consent form was read out in presence of witness, who along with the respondent later signed the consent form. Illiterate respondents, however, were asked to put their thumb impression in front of the witnesses. All respondents had the liberty to leave the study at any stage. They were also free to refuse to answer any question. Confidentiality was maintained at every stage of data collection for every individual. The final report did not contain the names. Findings of the study were sent to the NCDC wing of DGHS under Ministry of Health and Family Welfare in the form of a report. The results of the study were presented in a workshop organized in NIMH, Dhaka in presence of participants from all the related sectors including NGOs and policy makers.

Results

The result showed that, among 19692 sample, 16661 (84.6%) were above 18 years and 3031 (15.4%) were 7 years to 17 years of age. Female (52.8%) outnumbered male (47.2%) among the respondents. Majority of the respondents were Muslim (83.9%) followed by Hindu (14.4%), Buddhist (1.5%) and Christian (0.1%). Among respondents 23.9% were illiterate. Majority of the study population were housewives (31.7%) and unemployed (31.7%). Married people included 75.2% of the samples (Table 2).

Table 2: Sociodemographic characteristics of the respondents (n=19692)

Socio demographic characteristics	Frequency	Percentage
Age group (in years)		
< 18 Years	3031	15.4%
18 Years and Above	16661	84.6%
Sex		
Male	9295	47.2%
Female	10397	52.8%
Religion		
Islam	16521	83.9%
Hindu	2842	14.4%
Christian	29	0.1%
Buddhist	300	1.5%
Education		
Illiterate	4705	23.9%
Institutional education	14058	71.4%
Non-institutional education	908	4.6%
Others	21	0.1%
Occupation		
Unemployed	1099	31.7%
Businessman	2792	14.2%
Farmer	2274	11.5%
Services	1575	8.0%
Housewife	6246	31.7%
Domestic worker	125	0.6%
Labor	1859	9.4%
Student	3394	17.2%
Others	328	1.7%
Marital Status		
Married	14810	75.2%
Not married	4882	24.8%

Nuclear type of family was 57.6% where 58.3% had good relation with the family members (Table 3).

Table 3: Family characteristics of the respondents (n=19692)

Family characteristics	Frequency	Percentage
Types of family		
Extended family	8352	42.4%
Nuclear family	11340	57.6%
Parents alive or not		
Both alive	11690	59.4%
Father died	3482	17.7%
Mother died	495	2.5%
Both died	4025	20.4%
Relation with family members		
Good	11482	58.3%
Very good	5903	30.0%
Average	2213	11.2%
Bad	77	0.4%
Very bad	17	0.1%

Prevalence of substance use was found 3.3% among adult population (aged 18 years and above) of the country (Figure 1).

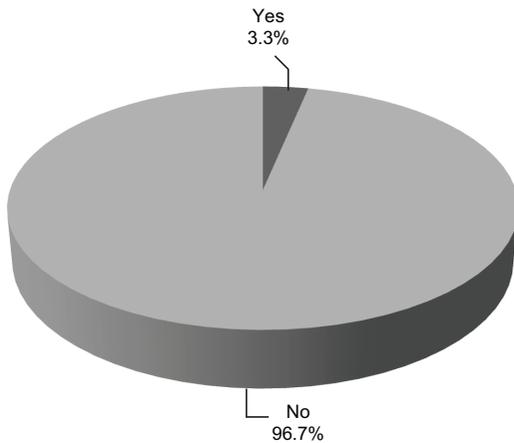


Figure 1: Prevalence of substance use among adult respondents (n=16661)

Respondents aged between 18 years to 30 years (3.3%), 51 years and above (3.3%) and 31 years to 50 years (3.2%) were the most frequent users of substances (Table 4).

Table 4: Prevalence of substance use in different age groups of respondents (n=19692)

Age groups (in years)	Substance use	
	Yes	No
7-12	0.2%	99.8%
13-17	1.5%	98.5%
18-30	3.3%	96.7%
31-50	3.2%	96.8%
51 and above	3.3%	96.7%

Khulna, Rajshahi and Sylhet divisions had 1.6%, 1.7% and 2.6% prevalence of substance use respectively which were lower than that of other divisions whereas Rangpur (3.7%), Chittagong (3.6%) and Dhaka (3.2%) divisions had the higher prevalence of substance use (Table 5).

Table 5: Prevalence of substance use among adult population 18 years and above in different divisions (n=19692)

Division	Prevalence (%)
Dhaka	3.2%
Chittagong	3.6%
Sylhet	2.6%
Khulna	1.6%
Rajshahi	1.7%
Rangpur	3.7%
Barisal	2.0%

Among the using substances cannabis (42.7%) was most frequently used by the people followed by alcohol (27.5%), amphetamine (yaba) (15.2%), opioid (5.4%) and sedatives (3.4%) (Figure 2).

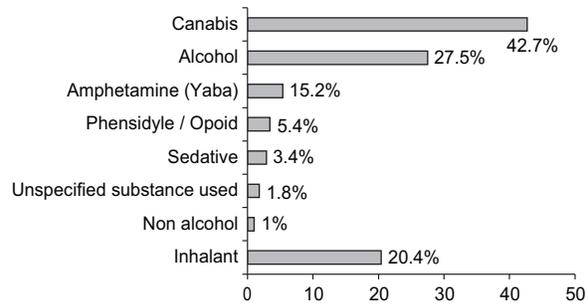


Figure 2: Proportion of respondents used different types of substances (n=562)

Among the respondents, 45.3% were smokers or using ghul and other related substances (Figure 3).

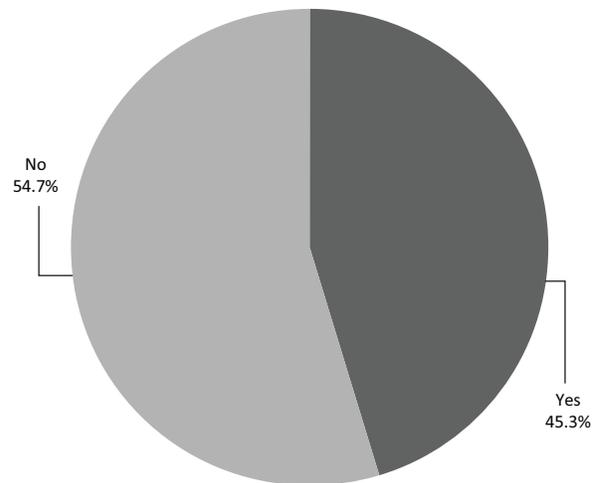


Figure 3: Prevalence of smoking, intake of gul or other related substances (n=19692)

Urban people (3.4%) were using substances more frequently than rural people (2.7%) (Table 6).

Table 6: Prevalence of substance use depending on living background (n=19692)

Urban-Rural	Prevalence (%)
Urban	3.4%
Rural	2.7%

Prevalence of substance use was more among male (4.6%) than female (0.6%), more among illiterate (3.3%), more in nuclear family (3.3%) than extended family (2.7%) and more among unemployed (5.7%) people than other professionals (Table 7).

Table 7: Distribution of respondents according to substance use and sociodemographic criteria (n=19692)

Socio demographic characteristics	Substance use		Statistic	Socio demographic characteristics	Substance use		Statistic
	Yes	No			Yes	No	
Sex							
Male	4.8%	95.2%	$\chi^2=308.550$, p=.000, df=1	Service	3.5%	96.5%	
Female	0.6%	99.4%		Housewife	0.7%	99.3%	
Religion				Domestic worker	2.4%	97.6%	
Islam	15.0%	85.0%	$\chi^2=187.993$, p=.000, df=3	Labor	6.7%	93.3%	
Hindu	2.4%	97.6%		Student	1.0%	99.0%	
Christian	4.1%	95.9%		Others	11.3%	88.7%	
Buddhist	0.0%	100.0%		Type of family			
Education				Extended family	2.7%	97.3%	Fisher's Exact Test=0.260
Illiterate	3.3%	96.7%	$\chi^2=7.315$, p=.063, df=3	Nuclear family	3.0%	97.0%	
Institutional education	2.7%	97.3%		Monthly Expenditure			
Non-institutional education	2.0%	98.0%		Up to Tk.7500	3.2%	96.8%	$\chi^2=14.745$, p=.001, df=2
Others	4.8%	95.2%		Tk. 7501-Tk15000	2.6%	97.4%	
Occupation				Tk. 15000+	3.8%	96.2%	
Unemployed	5.7%	94.3%	$\chi^2=398.851$, p=.000, df=8	Division wise use of specific substance showed cannabis was most frequently used in Barisal (91.3%) followed by Rangpur (73.1%), Khulna (68.6%), Rajshahi (55%) and Dhaka (53.1%). Alcohol was mostly used in Chittagong division (60.0%) followed by Rajshahi division (45.0%). Use of amphetamine was 23.7% and opioid was 15.9% in Dhaka division (Table 8).			
Businessman	4.3%	95.7%					
Farmer	3.8%	96.2%					

Table 8: Distribution of respondents using specific substance in different divisions (n=562)

Specific substance	Dhaka	Chittagong	Sylhet	Khulna	Rajshahi	Rangpur	Barisal
Canabis	53.1%	40.7%	33.3%	68.6%	55.0%	73.1%	91.3%
Alcohol	25.6%	60.0%	25.6%	25.7%	45.0%	28.2%	0.0%
Amphetamine	23.7%	15.0%	23.1%	5.7%	20.0%	19.2%	13.0%
Opioid	15.9%	0.7%	7.7%	0.0%	2.5%	0.0%	0.0%
Sedatives	3.9%	2.9%	7.7%	0.0%	0.0%	11.5%	0.0%
Inhalant	1.9%	0.0%	5.1%	0.0%	2.5%	0.0%	0.0%
Non Alcohol	5.8%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%
Unspecified Substance	9.7%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%
Phensidyle	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%

Discussion

It was widely accepted sociodemographic criteria were contextually related to the prevalence of substance use. The survey was conducted among population of whole of Bangladesh. Multistage probability sampling technique was used to ensure less chance of bias in selection of sample. Thus, it could be concluded that, national representation of population was ensured in the study and generalization of study findings was valid and acceptable. In the first stage, 19800 respondents in 140 clusters aged 7 years and above were approached by the trained data collectors for collecting information. Finally, 19692 individuals (99.45%) were interviewed. Majority of the missed respondents in the first stage stage of interview was mainly because of refusal of guardians and respondents to take part in the study, absence of samples in the house and houses found under lock. Recalls for three consecutive times were made as required to reduce non response. There were 4970 screen positive cases (25.24%) and 14722 screen negative cases (74.76%). All screen positive cases and every fourth screen negative cases were approached by research psychiatrists for diagnosis. But among screen positive cases 4667 and screen negative cases 3250 individuals could be interviewed in the second stage of interview. So, total numbers of samples interviewed in the second stage by research psychiatrists were 7917. Drop out in the second stage of interview was mainly due to absence of respondents in the house who were initially interviewed, denial to be interviewed, fleeing out of home because of shyness, fear of being exposed and caught in legal system. It was well realized that data in relation to substance use was either not available or difficult to capture. Recalls for three times were also made in the second stage also. Psychiatric interview in the second stage of interview was conducted within two weeks of the completion of first screening stage of interview.

Psychoactive substance use had detrimental effects on individuals and society and was of important public health concern in Bangladesh. Varieties of illegal drugs were available in Bangladesh. Major causes of easy availability of abusing substances in the country might be due to its geographical proximity to opium producing regions of South East and South West Asia (Golden Triangle and Golden Crescent respectively), long border with India facilitating trafficking of drugs, illicit internal cultivation of poppy and cannabis, emerging threat of synthetic and semisynthetic drugs and availability of prescription drugs without prescription. A frequent drug seizure by the Narcotics Control Department and department of Police and Border Guard Bangladesh was just tip of the iceberg. The current pattern and trends of substance use demonstrated in this survey provides an understanding of the severity and importance of the issue in the community.

Individuals aged 18 years and above (84.6%) formed the predominant age group in the study which was in consistent with the survey findings of Bangladesh Bureau of Statistics where major bulk of the population in the country was above 18 years.⁵ In the survey, majority (52.8%) of the respondents were females. Usually community survey recorded a higher representation of females because of their increased availability at homes during interview. Earning members of the family in Bangladesh were usually male and they remained outside of home at day time which was the usual time of collection of data.

Diagnoses of substance use were made in the second stage of interview by research psychiatrists following diagnostic criteria of DSM 5⁶ DSM5 was a globally accepted valid instrument for diagnosis of substance use specially when it was applied by expert clinicians. Research psychiatrists employed for this survey were experienced and they were intensively trained specially on application of DSM5 in the field survey. DSM was used in different studies in Bangladesh including national survey on mental health in 2005 and child mental health survey in 2009.^{9,10}

The ASSIST designed by WHO used in this survey included questions for screening of alcohol and smoking also.¹¹ Prevalence of smoking in population was calculated separately but information on alcohol was included within substance use. Substance use disorders in this survey included alcohol, stimulants such as amphetamine and cocaine, cannabinoids, opioids, solvents, hallucinogens, sedatives and hypnotics.

Prevalence of substance abuse among adults in 2005⁹ and among children in 2009¹⁰ was 0.6% and 0.78% respectively. The findings of this survey showed current prevalence of substance use as 3.3% and 2.9% among population 18 years and above and 7 years and above respectively which indicated increasing trend of substance use in the country. Changing societal values added by urbanization, industrialization and unemployment might be driving people to use abusing substances. The problem was more common in younger male population. Adults and older group of people were not also immune to substance abuse. Substance abuse, though a male phenomenon, was also observed among females. Prevalence of substance use among females had been consistently found less around the globe¹² and this study also showed lower prevalence among female (0.6%) as opposed to 4.8% in male. Sex might affect the attitude of the people in general which might also influence the attitude of male in taking substance. Moreover, attitude to substance abuse was influenced by sex differences because of male vulnerability to multiple environmental risk factors of substance abuse.¹³ Males were also more exposed to the availability of substances in the community,

Most frequently used substances include cannabis (42.70%) followed by alcohol (27.5%), amphetamine (yaba) 15.20%, opioid (5.4%) and sleeping pills (3.4%). Cocaine and hallucinogens were not found among abusers. Alcohol intakes among Muslims were very limited possibly because of strict religious restriction. This survey had sample cases from Chittagong hill tracts and from special groups of population like fisher's village where alcohol intake was a part of religious and cultural practice. This might explain the prevalence of alcohol in second position in a country where majority of the population were Muslims. However, possibility of increasing use of alcohol among general Muslim population in Bangladesh should be taken carefully. Recent evidences showed that, prevalences of alcohol consumption and substance use specially new drugs such as ecstasies increasing in university students of Iran,^{14,15} a country officially declared an Islamic Republic and where religious rules/ laws were practiced strictly. Amphetamine was widely prevalent in Myanmar and Thailand. Common border of Bangladesh with Myanmar and recent influx of Rohingya refugees in Cox's Bazar had created increased threat of availability of amphetamine in the name of Yaba in the country.

Smoking including use of ghul and other related substances was reported by 45.3% of respondents which was consistent with findings of the Global Adult Tobacco Survey (GATTS) conducted by WHO in 2009 where prevalence of smoking in Bangladesh was 43.3% but differed from the finding of GATTS in 2017 where prevalence of smoking in Bangladesh was 35.3%.¹⁶

Division wise use of specific substance showed cannabis was most frequently used in Barisal (91.3%) whereas alcohol was mostly used in Chittagong division (60.0%). Use of amphetamine and opioid were more frequent in Dhaka division. Variation in the use of different types of substances in different divisions was difficult to be explained. Availability of substances in different areas of the country might play as dominant factor in the variation of types of substance being used. Amphetamine was also used by the young and adult male for enhancement of sexual function and increase of general drive and motivation. Withdrawal of amphetamine intake causes low drive, lethargy, dysthymia and somnolence.

Labourer (6.7%), unemployed (5.7%) and business man (4.3%) group of people were more frequent users of substances than farmer and service holders ($p=0.001$). Extremes of social classes were found as increased users of substances such as people with low income (3.2%) and people with high income (3.8%) using as against 2.6% in middle income group. People with illiteracy and nuclear family had higher frequency of substance use. Lower education levels and low socioeconomic status may give rise to tendency to substance intake and its perpetuation also.^{17,18}

There were some limitations of the survey. Drug abuse was highly stigmatized in the society of Bangladesh with possible link with moral issues, crime and legal system. Collecting information with self reporting questionnaire always carried the risk of underreporting of the problems. There had been no study in Bangladesh to assess the extent of underreporting in the study of substance use. Moreover, avoidance of the data enumerators and refusal to give information by the possible users of substance (respondents) were not unlikely. Drug abuse was a problem that was more common among male. As data collection time was principally in day time data enumerators were likely to have missed some male respondents with history of substance use. Telling a lie was also a common behavior of the individuals using drugs. Tabular and graphical presentation of data and Chi Square analysis of the data showed association of factors with substance use in the country. Nevertheless, this was a largest survey of its kind ever conducted on substance use among nationally representative samples in Bangladesh. We were therefore confident that, within the possible margins of error, profile of substance use we had reported reflects the exact profile of substance users in Bangladesh. Measures taken by the government to address the issue of substance use should be supported by the evidences generated from this research.

Conclusion

In this first large-scale survey on substance use in Bangladesh a significant proportion of people were found to use Bangladesh. Measures found to be the most commonly used drug in the country followed by alcohol, amphetamine, opioid and sleeping pills. Males were most likely to use substance than female. Laborer, illiterate, unemployed, business men, individuals in extremes of social class were using substance more frequently. Findings of the survey could serve as empirical basis for the re-evaluation of the drug prevention programs of the government.

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