(RESEARCH ARTICLE)

Risk factors for cardiovascular diseases among drug abusers at a selected government mental hospital in Bangladesh

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Abstract

Aims: This study aimed to assess the prevalence of cardiovascular disease-related risk factors among drug abusers at a government mental hospital in Bangladesh.

Methods: A cross-sectional study was conducted among 84 participants at the drug abuse section of Pabna Mental Hospital. Data were collected through face-to-face surveys using a pre-tested semi-structured questionnaire. The data were analyzed using SPSS-PC version 20.

Results: All respondents were smokers (100%), but none used smokeless tobacco (100%). All participants engaged in moderate physical activity (100%). None of the respondents had a personal or family history of non-communicable diseases (NCDs). A large proportion of participants had a normal BMI (71.4%). Ganja (Marijuana) was the most commonly used drug (65.5%). In addition to smoking, the major cardiovascular risk factors among respondents included not eating fruits (71.4%), not consuming vegetables (53.6%), and adding extra salt during meals (79.8%).

Conclusion: Males predominated in the drug abuse section of the mental hospital, with generally low education and income levels. Major risk factors included smoking addiction, poor dietary habits, and excessive salt intake. Integrating cardiovascular screening and risk assessment into drug treatment programs is crucial for the early detection and management of cardiovascular diseases (CVDs). Additionally, implementing policies that promote healthy lifestyles is essential.

Keywords: CVDs risk factors; Cardiovascular diseases; Drug abusers; Mental hospital; Ganja; Marijuana; Yaba; Methamphetamine; Phensedyl; Chlorpheniramine; Dextromethorphan; Heroin; Diamorphine; Unhealthy diet; Salt intake

1. Introduction

Cardiovascular diseases (CVDs) encompass a range of disorders affecting the heart and vascular systems (blood vessels). They are the leading cause of death globally, with an estimated 17.9 million deaths in 2019, representing 32% of all global deaths. Notably, over three-quarters of these deaths occur in low- and middle-income countries [1].

Among individuals with drug abuse disorders, cardiovascular disease-related risk factors are a significant concern due to the complex interplay between drug abuse, nutritional deficiencies, and metabolic syndrome. Studies have demonstrated that nutritional deficiencies combined with drug abuse can elevate the risk of developing metabolic

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syndrome by exacerbating cell damage, excitotoxicity, reducing energy production, and compromising cellular antioxidant potential [2],[3]. This combination can have severe repercussions for cardiovascular health, potentially leading to conditions such as pulmonary arterial hypertension [4].

Moreover, drug abuse has been linked to various adverse effects on cardiovascular health, including changes in electrocardiograms and an increased risk of heart rate irregularities, heart attacks, and other cardiovascular complications [5],[6]. Lifestyle choices commonly associated with substance abuse, such as smoking and poor dietary habits, further predispose individuals to cardiovascular diseases [7].

This study aimed to assess the prevalence of cardiovascular disease-related risk factors among drug abusers in a government mental hospital in Bangladesh. By highlighting the cardiovascular disease risk profile of this vulnerable population, the study seeks to contribute valuable insights to the existing body of knowledge. The findings are intended to support the development of targeted preventive and therapeutic strategies to enhance cardiovascular health outcomes within this demographic.

2. Materials and Methods

A cross-sectional study was conducted among 84 participants, who were patients attending the drug abuse section of both the outpatient and inpatient departments at Pabna Mental Hospital. A semi-structured questionnaire was developed and used for data collection. The questionnaire was pre-tested on 10 drug abusers who were not included in the final sample. The purpose of the study was explained to the selected respondents, and data was collected through face-to-face surveys. Informed consent was obtained from all participants. Data analysis was performed using SPSS-PC version 20. Ethical clearance was obtained from the Ethics Review Committee of Bangladesh University of Health Sciences, and ethical guidelines were strictly adhered to throughout the study.

3. Results

Among the 84 participants, 65.5% used Ganja (Marijuana), 7.1% used Alcohol, 9.5% used Yaba (Methamphetamine), 7.1% used Phensedyl (a combination of Chlorpheniramine and Dextromethorphan), 7.1% used Heroin (Diamorphine), and 3.6% used multiple drugs.
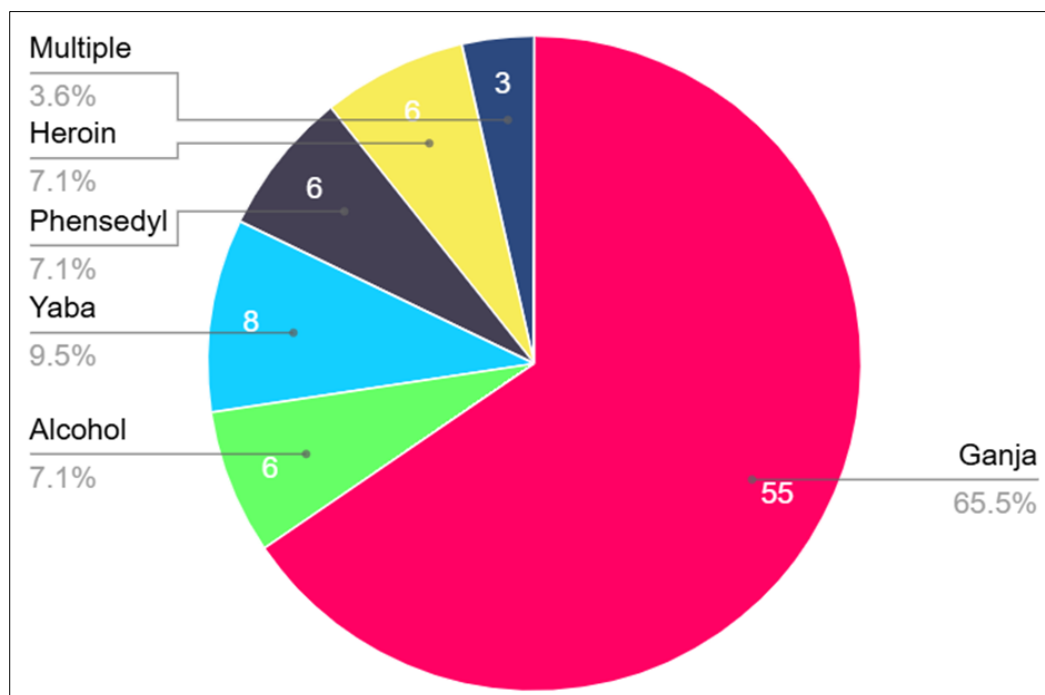

Figure 1 Distribution of the respondents according to types of drug use

Table 1 Distribution of respondents according to the socio demographic status

Variable	Frequency	Percentage	Mean±(SD)
Age			31.57±7.66
Gender			
Male	77	91.7	
Female	07	8.3	
Total	84	100.0	
Educational status			
Bachelor	12	14.3	
Master or above	11	13.1	
Others (SSC, HSC and Below)	61	72.6	
Total	84	100.0	
Professional status			
Service holder	09	10.7	
Labor	13	15.5	
Driver	11	13.1	
Student	01	1.2	
Others or prefer not to say	50	59.5	
Total	84	100.0	
Duration of the profession			
01 to 05 years	20	23.8	
06 to 10 years	22	26.2	
11 to 15 years	13	15.5	13.17±6.89
16 to 20 years	22	26.2	
21 to 25 years	07	8.3	
Total	84	100.0	
Monthly Income of the respondents			
10000 to 20000 BDT/ 85 to 170 USD	61	72.6	
21000 to 30000 BDT/ 178 to 255 USD	13	15.5	
31000 to 40000 BDT/ 263 to 340 USD	08	9.5	22,261.90±16,577.76
41000 to 50000 BDT/ 348 to 424 USD	02	2.4	
Total	84	100.0	

Table 1 shows that the majority of respondents were male (91.7%), with only 8.3% being female. The mean age of the respondents was 31.57±7.66 years. A very small proportion of the respondents were highly educated: 13.1% had a master's degree or higher, 14.3% had a bachelor's degree, and 72.6% had an education level of SSC, HSC, or below. Regarding occupation, 10.7% were service holders, 15.5% were laborers, 13.1% were drivers, and the largest proportion (59.5%) fell into the 'others' or 'prefer not to say' category. The mean duration of their professional

experience was 13.17±6.89 years. Additionally, 72.6% of the respondents were in the lowest income bracket, while only 2.4% were in the highest income bracket.

Table 2 Distribution of respondents according to the behavioral status

Variable	Number	Percentage
Smoking status of the respondent		
Yes	84	100
No	00	00
Total	84	100
Use of smokeless tobacco		
Yes	00	00
No	84	100
Total	84	100
Eat fruits regularly		
Yes	24	28.6
No	60	71.4
Total	84	100
Consume vegetables regularly		
Yes	39	46.4
No	45	53.6
Total	84	100
Consumption of extra salt during meals		
Yes	67	79.8
No	17	20.2
Total	84	100

Table 2 shows that all respondents were smokers (100%) and none used smokeless tobacco (0%). Most respondents did not eat fruits regularly (71.4%), and more than half did not consume vegetables regularly (53.6%). A significant proportion of respondents (79.8%) reported consuming extra salt during meals.

Table 3 Distribution of respondents according to the physical activity

Variable	Frequency	Percentage
Moderate physical activity status		
Yes	84	100
No	00	00
Total	84	100
Number of days per week with moderate physical activity		
One	00	00
Two	03	3.6
Three	23	27.4

Four	19	22.6
Five	22	26.2
Six	11	13.1
Seven	06	7.1
Total	84	100
Duration of moderate physical activity per day		
<30 minutes	13	15.5
30 to 60 minutes	57	67.8
>60 minutes	14	16.7
Total	84	100
Vigorous physical activity status		
Yes	54	64.3
No	30	35.7
Total	84	100
Number of days per week with vigorous physical activity		
One	21	25.0
Two	19	22.6
Three	14	16.7
Four	00	00
Five	00	00
Six	00	00
Seven	00	00
Total	54	64.3
Minutes spent for vigorous physical activity per day		
<30 minutes	23	27.4
30 to 60 minutes	30	35.7
>60 minutes	01	1.2
Total	54	64.3
Time spent in sitting or reclining on a typical day		
<60 minutes	64	76.2
> 60 minutes	20	23.8
Total	84	100

Table 3 shows that, all respondents (100%) engaged in moderate physical activity. However, the frequency of this activity varied: 27.4% of participants exercised three days per week, 22.6% did so four days per week, 26.2% five days per week, 13.1% six days per week, and 7.1% engaged in moderate physical activity every day. In terms of duration, 15.5% of respondents exercised for less than 30 minutes per day, 67.8% exercised for 30 to 60 minutes, and 16.7% for more than 60 minutes.

When it comes to vigorous physical activity, 64.3% of respondents participated, while 35.7% did not. Among those who engaged in vigorous activity, 25.0% did so one day per week, 22.6% two days per week, and 16.7% three days per week. In terms of duration, 27.4% of these respondents exercised vigorously for less than 30 minutes per day, 35.7% for 30 to 60 minutes, and only 1.2% for more than 60 minutes.

Regarding sedentary behavior, 76.2% of respondents reported spending less than 60 minutes sitting or reclining on a typical day, while 23.8% spent more than 60 minutes in these activities.

Table 4 Distribution of the respondents according to the personal and family history of NCDs

Variables	Frequency		Percentage	
	Personal History	Family History	Personal History	Family History
Hypertension				
Yes	00	00	00	00
No	84	84	100	100
Total	84	84	100	100
Diabetes Mellitus				
Yes	00	00	00	00
No	84	84	100	100
Total	84	84	100	100
Heart disease				
Yes	00	00	00	00
No	84	84	100	100
Total	84	84	100	100
Chronic Obstructive Pulmonary Disease				
Yes	00	00	00	00
No	84	84	100	100
Total	84	84	100	100
Cancer				
Yes	00	00	00	00
No	84	84	100	100
Total	84	84	100	100

Table 4 shows that, none of the respondents had a personal or family history of hypertension, diabetes mellitus, heart disease, chronic obstructive pulmonary disease, or cancer.

Nearly one-third (71.4%) of the respondents had a normal BMI, while 21.4% were overweight, 3.6% were obese, and another 3.6% were underweight. The mean BMI was 23.52 with a standard deviation of 3.43.
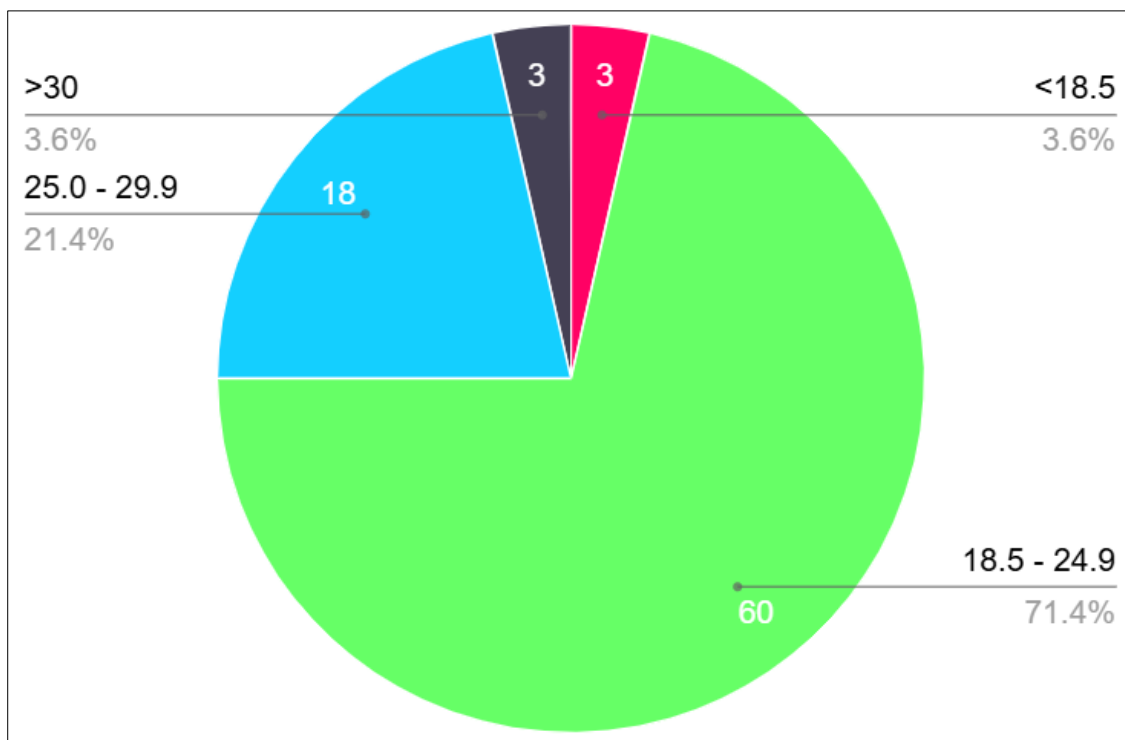
Figure 2 Distribution of the respondents according to BMI

4. Discussion

In this study, we have found that 91.7% of respondents were male and only 8.3% were female. These findings align with another study on drug abusers conducted in Bangladesh, where it was found that 85.0% of the drug users were male and 15.0% were female [8]. Higher male drug abuse rates in Bangladesh may be attributed to a combination of sociocultural factors, including traditional gender roles that place greater economic burdens on men, societal expectations of masculinity, and limited access to support systems. A study done in a similar setting in Ghana found that 90% of respondents were male and 10% were female [9]. The strikingly similar gender distribution of drug users in Bangladesh and Ghana suggests a common underlying factor, which is deeply ingrained societal gender roles and norms that may disproportionately impact men's vulnerability to substance abuse in both countries.

In this study, we have found that the mean age of the respondents was 31.57 years. A study conducted in a similar setting in Ghana found that the mean age of the participants was 29.24 years [9]. The similarity in the mean age of drug abusers between Bangladesh and Ghana may be attributed to comparable socioeconomic factors, such as levels of poverty, unemployment, and educational attainment, which influence the age of drug initiation in both countries. Additionally, similar cultural factors related to substance use might contribute to comparable age profiles of drug users. A study on Bangladeshi drug abusers conducted in 2015-2016 found that the mean age of the respondents was 36.09 years [8]. The observed decrease in the mean age of drug abusers in Bangladesh from 36.09 years in 2015-2016 to 31.57 years in this study may be attributed to factors such as earlier initiation of drug use among younger generations, increased accessibility of drugs, or changes in socioeconomic conditions that have influenced the age profile of drug users.

In this study, we have found that a very low proportion of the respondents was educated, which is similar to the findings of another study done in Sylhet, Bangladesh. Where it was found that the education level of most drug addicts was not satisfactory [10]. The low educational attainment among drug users in both studies might be linked to socioeconomic disparities prevalent in Bangladesh, where limited access to quality education, particularly in rural and impoverished areas, could increase vulnerability to drug abuse. Additionally, early school dropout due to economic pressures or personal challenges might contribute to this trend.

In this study, we have found that 72.6% of respondents had low income. This finding aligns with another study on drug abusers done in Chittagong, Bangladesh, where 70% of the respondents had low income [11]. The high prevalence of low income among drug users in both studies suggests a strong correlation between socioeconomic status and drug

abuse in Bangladesh. Limited financial resources may increase vulnerability to substance abuse as individuals may turn to drugs as a coping mechanism for poverty-related stress.

Among the 84 participants, 65.5% used Ganja (Marijuana), 7.1% used Alcohol, 9.5% used Yaba (Methamphetamine), 7.1% used Phensedyl (a combination of Chlorpheniramine and Dextromethorphan), 7.1% used Heroin (Diamorphine), and 3.6% used multiple drugs. These findings highlight the significant use of Ganja among the participants, with lower yet notable levels of other substances such as Yaba, Alcohol, Phensedyl, and Heroin. Multiple drugs use appears to be less common but still present in the population studied. A study on Bangladeshi drug abusers done in 2015-2016 found that 82% used Ganja, 23% used Yaba, 94% used Phensedyl and 52% used Heroin [8]. The observed discrepancies in drug use patterns between the 2015-2016 study and the current study may be attributed to changes in drug availability, socio-economic conditions, law enforcement strategies, and evolving drug trends within Bangladesh over the past decade.

In this study, we have found that all of the respondents were smokers (100%). A study done in Egypt found that 81.2% of the substance abusers were smokers and 7.2% were ex-smokers [4]. The high prevalence of smoking among drug abusers in both studies suggests a strong association between these two addictive behaviors. Shared risk factors, such as impulsivity, reward-seeking behavior, and exposure to similar social environments, may contribute to the co-occurrence of smoking and drug abuse.

In this study, we have found that none of the respondents used smokeless tobacco (0%). A review study found that in 2013 the prevalence of smokeless tobacco use among the general population (25 years or older) of Bangladesh was 28.7% [12]. The stark contrast between the zero prevalence of smokeless tobacco use among drug abusers in this study and the 28.7% prevalence among the general population in 2013 suggests that drug abuse might be associated with a lower likelihood of smokeless tobacco use. Factors such as the specific demographics of the study population (e.g., age, socioeconomic status), the nature of drug abuse, and potential interactions between substances could contribute to this disparity.

In this study, we have found that most respondents did not eat fruits regularly (71.4%), and more than half did not consume vegetables regularly (53.6%). A narrative review study found that the high levels of food insecurity among drug abusers are mainly due to the limited funds, which are usually allocated to the support of their habits rather than food; this leads to lower intakes of nutrient-dense foods [13]. The low fruit and vegetable consumption among drug abusers in this study is likely attributed to financial constraints, as suggested by the narrative review. Prioritizing drug use over essential food items leads to a nutrient-poor diet, potentially exacerbating the health risks associated with drug abuse. The low consumption of fruits and vegetables among drug abusers in this study could also result from altered dietary patterns and preferences resulting from the physiological effects of drug abuse.

In this study, we have found that a significant proportion of respondents reported consuming extra salt during meals (79.8%). According to a research paper published in 2006, for diagnosis of substance dependence (addiction), DSM-IV-TR has established seven criteria, and fulfilling at least three of them signifies addiction. When salt intake was studied according to these criteria, it was seen that most of them are fulfilled, showing that sodium chloride, which is not classified under the psychoactive drugs, is capable of producing addiction [14]. Individuals with a primary addiction to drugs may be predisposed to developing additional addictions, such as excessive salt consumption. Shared neurobiological vulnerabilities, including alterations in reward pathways and impulse control, could increase the likelihood of engaging in addictive behaviors across different substance classes. On the other hand, drug abusers may have a heightened preference for salty foods due to the physiological effects of substance abuse, such as electrolyte imbalances or altered taste perception. Additionally, excessive salt consumption might serve as a coping mechanism for stress, anxiety, or withdrawal symptoms associated with drug use.

5. Conclusion

Among the participants, major risk factors for cardiovascular diseases included smoking, insufficient consumption of fruits and vegetables, and excessive salt intake during meals. Given the high prevalence of these modifiable risk factors, comprehensive interventions are urgently needed for this population. Integrating cardiovascular screening and risk assessment into drug treatment programs is crucial for the early detection and management of cardiovascular diseases (CVDs). Additionally, policies promoting healthy lifestyles—such as improving access to affordable fruits, vegetables, and low-sodium foods—should be implemented to address the underlying social determinants of health among drug abusers.

Compliance with ethical standards

Disclosure of conflict of interest

The author declares that there is no conflict of interest.

Statement of ethical approval

Ethical clearance was taken from the Ethics Review Committee of Bangladesh University of Health Sciences and ethics was maintained strictly throughout the study.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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