

Prevalence, Pattern and Correlates of Substance Use among Adolescents in Slums of Burdwan Municipality, West Bengal: A Cross-sectional Study**Arnab Pramanik¹, Raston Mondal², Chinmay Nandi³, Pramit Goswami⁴**¹Block Medical Officers of Health, Amtala Block, South 24 Parganas, West Bengal, India²Associate Professor, Department of Community Medicine, Burdwan Medical College, West Bengal, India³Assistant Professor, Department of Community Medicine, Burdwan Medical College, West Bengal, India⁴Assistant Professor, Department of Community Medicine, Burdwan Medical College, West Bengal, India

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Corresponding author: Dr. Chinmay Nandi

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Abstract**Objective:** To determine the prevalence, pattern and factors associated with substance use among adolescents residing in the slums of Burdwan Municipality, West Bengal.**Methods:** A community-based, cross-sectional observational study was conducted from October 2020 to September 2022 in slums under Burdwan Municipality, Purba Bardhaman district, West Bengal. The WHO Alcohol, smoking and Substance Involvement Screening Test (ASSIST)92 version 3.1 was used to assess the prevalence and pattern of substance use by interviewing 570 study participants aged between 10-19 years chosen by multi stage sampling.**Results:** The prevalence of overall substance use was found to be 32.98%, substances used include tobacco products (97.9%), alcoholic beverages (43.1%), cannabis (38.8%) and inhalants (7.9%). The study showed that substance use was statistically significantly associated with age, gender, caste, marital status, educational status, occupational status, type of family, socio-economic status, social problems in the family and others family member consuming substance.**Conclusion:** Substance use among adolescents in Burdwan slums was found to be alarmingly high with tobacco, alcohol, and cannabis being the major contributors. Age, gender, family structure, and household social problems were observed as strong predictors. The findings call for multisectoral interventions involving health systems, schools, and communities to reduce initiation and progression of substance use among vulnerable adolescents.**Keywords:** Substance use, Adolescents, Slums of Burdwan Municipality, Tobacco, Alcohol.**DOI:** 10.25258/ijcpr.18.6.209

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Introduction

Substance use refers to the use of any psychoactive substance or drugs, including licit and illicit drugs, other than when medically indicated. [1,2] Psychoactive substance use poses a threat to the health, social and economic fabric of families, communities, and nations. Continued use of these substances may lead to impaired social life like failure to meet work, family problems, school dropout, interpersonal conflicts etc.

Adolescence is a crucial stage in the life event and it is the period of transition from childhood to adulthood. It is considered to begin with puberty, a process of physical, psychological and emotional development triggered by a cascade of endocrine changes that lead to psychological stability, sexual maturation and reproductive capability. According to World Health Organization [3] (WHO) an

adolescent is one who falls between the ages of 10 to 19 years. The use of substances among adolescents is a public health concern in all over world including India. As per National Family Health Survey (NFHS-5), tobacco is used by 48.1% boys and 10.8% girls, and alcohol by 18.1% boys and 1.1% girls in India. [4] Another study done in Tirupati [5], India reported that the mode of consumption of tobacco was mostly in the form of smoking (85.5%), and (61.5%) of subjects were smoking 6-10 cigarettes per day.

Different studies were done in different parts of India regarding pattern of substance use among adolescents but only a few studies were conducted in West Bengal regarding prevalence and pattern of substance use among adolescents in urban slum areas. In this context, the present study was

conducted with the objectives to find out the prevalence, pattern and factors associated with substance use among adolescents residing in the slums of Burdwan Municipality, West Bengal.

Methodology

Study Design and Setting: A community-based, cross-sectional observational study was conducted from October 2020 to September 2022 in slums under Burdwan Municipality, Purba Bardhaman district, West Bengal.

Study Population: Adolescents aged 10–19 years who had been residing in the study area for at least six months were included. Adolescents unwilling to participate, those not found after three visits, or those with acute psychiatric illness were excluded.

Sample Size: A study done by Dalui et al [6] in November 2017 found that there was prevalence of substance use among adolescents 31.25%. Taking this prevalence, the sample size is calculated using this formula: $n = (Z^2 \times P \times Q) / d^2$ where

D= Absolute precision

Z= Standard normal deviate,

Taking 95% confidence interval ($\alpha=0.05$), the value stands at 1.96 So,

$$n = 1.96 \times 1.96 \times 0.3125 \times 0.6875 / 0.05^2 = 330.1375 \sim 330$$

Considering design effect 1.5 for multistage sampling the sample size would be $330 \times 1.5 = 495$ some of the randomly selected individuals may refuse to give consent or may not be found in spite of repeated visits. Assuming the non-response to be 10%, required sample size would be $495 + (495 \times 10\%) = 544$

Sampling Technique: Multistage random sampling was followed to select the study subjects as follows - At first stage, out of 144 slums, 20% i.e. 30 slums were chosen by simple random sampling. At second stage, equal number of adolescent (544/30) = 18.13 ~ 19 was selected from each slum. Thus, a total of $19 \times 30 = 570$ adolescent was the final sample size. Sampling frame for selecting adolescents from each slum was prepared with the help of USHA workers and from there 19 adolescents were selected by simple random sampling method.

Study Tool: Data were collected using a pre-tested, semi-structured schedule covering socio-demographic characteristics, along with the WHO Alcohol, Smoking and Substance Involvement Screening Test (ASSIST v3.1), translated and validated in Bengali. [7]

Ethical Considerations: Ethical clearance was obtained from the Institutional Ethics Committee of Burdwan Medical College. Informed consent was taken from parents/guardians and assent from adolescents below 18 years; informed consent was obtained directly from those aged 18–19 years.

Study Tools: A semi-structured, pre-designed and pre-tested schedule with following components:

1. Socio demographic details.
2. Alcohol, smoking and Substance Involvement Screening Test (ASSIST)92 version 3.1 to assess the prevalence and pattern of substance use among study participants.

The Alcohol, smoking and Substance Involvement Screening Tool for World Health Organization (WHO) was developed by an international group of substance abuse researchers to detect and manage substance use and related problems in primary and general medical care settings.

It is a validated tool in Indian context. It is usable across the variety of cultures to screen for use of 10 categories of substances (tobacco products, alcohol, cannabis, cocaine, amphetamine-type stimulants (ATS), sedatives and sleeping pills (benzodiazepines), hallucinogens, inhalants, opioids, 'other' drugs) and for each category 7 question are there and one additional question for injectable drug are included (most of which are asked for each substance for which lifetime and past 3 month use is endorsed).

For each category of substances, item specific scores will be calculated based on the response of the 7 questions asked where increasing score indicates severity of risk of substance use. The maximum and minimum attainable score for each substance is 42 and 0. The individual substance specific total score is further divided into three categories like low (0-3), moderate (4-26) and high (27+). So before applying the ASSIST Questionnaire to the study area it was validated in local language i.e. translated into Bengali and then back translated to English.

Study Techniques: Face to face Interview with the study participants conducted in their community.

Operational definition and description of variables:

- Substance use: Persistent or sporadic drug use inconsistent with or unrelated to acceptable medical practice. The study subject who consumed substance once in a lifetime was considered as substance user.
- School dropout: A child above 7 years of age not attending school for last 3 consecutive months except for holidays and sickness.
- Socio-economic status: SES was assessed using Modified BG Prasad scale [January 2020; CPI(IW):330]
- Social problem: unemployment of father, school dropout, child labour, addiction/ substance use, handicapped/ chronically ill member, unmarried/divorced/ separated male or female.

Results

Table 1: Socio-demographic characteristics of study participants (n = 570)

Characteristics	Categories	Frequency (n)	Percentage (%)
Age (years)	10–14	370	64.9
	15–19	200	35.1
Gender	Male	382	67.0
	Female	188	33.0
Education	Primary (I–IV)	4	0.7
	Middle school (V–VIII)	329	57.7
	Secondary (IX–X)	157	27.5
	Higher secondary (XI–XII)	80	14.1
Socio-economic status*	Upper middle	7	1.2
	Middle	72	12.6
	Lower middle	367	64.4
	Lower	124	21.8
Occupation	Student	497	87.2
	Employed	73	12.8
Family type	Nuclear	336	58.9
	Joint	234	41.1

*As per Modified BG Prasad Scale, January 2020.

Table 2: Prevalence and pattern of substance use among adolescents (n = 570)

Variables	Frequency (n)	Percentage (%)
Any substance use (ever)	188	32.98
Types of substances used*		
- Tobacco	184	97.9
- Alcohol	81	43.1
- Cannabis	73	38.8
- Inhalants	15	7.9
Combination of substances		
- Tobacco + Alcohol	36	19.1
- Tobacco + Cannabis	31	16.5
- Tobacco + Inhalants	15	7.9
- Tobacco + Alcohol + Cannabis	41	21.8

*Percentages calculated among substance users (n = 188).

Table 3: Frequency of substance use in past 3 months

Frequency	Tobacco (n=184)	Alcohol (n=81)	Cannabis (n=73)	Inhalants (n=15)
Never	15 (8.2%)	24 (29.6%)	41 (56.2%)	–
Once/twice	25 (13.6%)	29 (35.8%)	29 (39.7%)	6 (40.0%)
Monthly	28 (15.2%)	28 (34.6%)	3 (4.1%)	1 (6.7%)
Weekly	70 (38.0%)	–	–	6 (40.0%)
Daily	46 (25.0%)	–	–	2 (13.3%)

Table 4: Multivariable logistic regression of socio-demographic factors associated with substance use (n = 570)

Factors	AOR	95% CI	p-value
Age (years)			
15–19	5.641	3.383–9.404	<0.001
10–14	Reference	–	–
Gender			
Male	4.857	2.615–9.023	<0.001
Female	Reference	–	–
Family type			
Joint	2.868	1.652–4.978	<0.001
Nuclear	Reference	–	–
Social problems in family			
Present	4.820	2.298–10.106	<0.001
Absent	Reference	–	–
Socio-economic status			
Lower class	0.495	0.241–1.017	0.056
Other than lower class	Reference	–	–

Nagelkerke $R^2 = 0.518$; Hosmer–Lemeshow test $p = 0.402$ (model adequate)

Discussion

Background Characteristics: A study done by A Dalui et al [6] among 144 adolescents in slums of Burdwan, West Bengal during 2017 showed that about 64.6% of the study subjects were male, 59.7% of the study subjects were from early adolescent age group which is similar (67%) to this study. In contrast, about 72.2% of the study subjects were from nuclear family which is not similar (58.9%) to present study.

Another cross-sectional study [8] among 390 male adolescents in Aligarh, Uttar Pradesh during 2002-03 showed that 42.3% of the study subjects belonged to early adolescent age group which is not similar (64.9%) to this study. About 56.4% of the study subjects were Hindus which is nearly similar (53.7%) to this study. About 92.6% of the adolescent's belonged lower and lower middle Socio-Economic Status according to Modified B G Prasad scale which is nearly similar (86.2%) to this study.

A study done by R P Kamate et al [9] among 600 adolescents in slums of Ram Nagar and Rukmini Nagar, Karnataka during 2015 showed that about 84.1% of the study subjects were male and 41.2% of the study subjects were from late adolescent age group which is nearly similar (35.1%) to present study. About 37% of the study subjects were from joint family which is nearly similar (41.1%) to this study. Contrary to findings of this study, about 14.8% of the adolescents belonged to class IV Socio-Economic Status according to Modified B G Prasad scale.

Prevalence and pattern of substance use: The prevalence of overall substance use was found to be 32.98%, substances used include tobacco products (97.9%), alcoholic beverages (43.1%), cannabis (38.8%) and inhalants (7.9%). Out of total 184 tobacco users 38% used it weekly, followed by 25% daily, 15.2% monthly and 13.6% once or twice. 8.2% tobacco user did not consume tobacco for last three months. Out of total 81 alcohol users 35.8% consumed it once or twice and 34.6% monthly and 29.6% did not consume it for last three months. Out of total 73 cannabis users 39.7% used it once or twice and 1.4% monthly and 58.9% did not consume it for last three months. Out of total 15 inhalant users 100% used it once or twice for last three months. Contrary to this study, L T Daniel [10] showed that among 110 male adolescents in suburban area of New Delhi during 2018, 55.6% of the male using any kind of substance. About 77.05% of the study subjects were using tobacco and 11.47% of the study subjects were consuming alcohol. About 26.23% of the study subjects were using inhalants which is not similar (7.9%) to present study.

Another study done by T Bardhan et al [11] among 414 adolescents living in slums of Guwahati city,

Assam during 2014 showed that prevalence of ever substance users was 37.68% which is nearly similar (32.98%) to our study. About 95.9% of the study subjects were using tobacco products. About 14.5% of the study subjects were consuming alcohol.

Socio-demographic factors associated with substance use: The study shows that substance use was statistically significantly associated with age, gender, caste, marital status, educational status, occupational status, type of family, socio-economic status, social problems in the family and others family member consuming substance. Compatible to such finding, a study done in Eldoret, Western Kenya by Lukoye Atwoli et al. [12] also showed that problems with parents, nuclear family, damage to property, unplanned unprotected sex and medical problems were associated with substance use. Another similar study done in North East India by H K Chaturvedi et al. [13] in 2009 showed that substance use was associated with religion and ethnic group of the study participants. Another compatible study done in 5 Asian countries regarding cannabis use among adolescents by Karl Peltzer et al. [14] in 2017 shows that substance use was influenced by male gender and parenteral smoking habit.

Contrary to this study, a study done by Dominic W So et al [15] showed that 78.6% students (Asian and American) used alcohol in the past 30 days and male students who were addicted to movies/ TV were associated with substance use. A study done in regional deaddiction centre in chronic conflict area of Kashmir, India by Yasir Hassan Rather et al. [16] in 2013 showed that 56% of the study participants belonged to lower middle socio-economic class and poly substance use was seen in 91.9% study participants but in current study 64.4% study participants belonged to lower middle class and substance use prevalence was much lower (32.98%) than this study which suggested that socio political instability may have contributed to substance use.

Conclusion

Substance use among adolescents in Burdwan slums was found to be alarmingly high, with tobacco, alcohol, and cannabis being the major substances. Age, gender, family structure, and household social problems were strong predictors. The findings call for multisectoral interventions involving health systems, schools, and communities to reduce initiation and progression of substance use among vulnerable adolescents. The current study was one of those rare studies in West Bengal which assessed the prevalence and pattern of substance use among adolescents in slum areas of a municipal corporation. Migration, unemployment, conflicts make the social situation much more complicated in urban areas than the rural counterpart. The study was community based, assessed substance use among

adolescents residing in slums, and used standard validated checklist for assessing their substance use.

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