

Psychosocial Predictors of High CRAFFT Scores among Adolescents

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ABSTRACT

Background: Adolescence is a vulnerable developmental period characterized by emotional, behavioral, and social transitions that may increase susceptibility to substance use. The CRAFFT screening tool is widely used to identify adolescents at risk for alcohol- and substance-related problems. However, evidence regarding psychosocial predictors of high CRAFFT scores among adolescents in Bangladesh remains limited. Aim of the study: To determine the psychosocial predictors associated with high CRAFFT scores among adolescents. **Methods & Materials:** This cross-sectional analytical study was conducted from October 2020 to September 2022 among 140 adolescents aged 12–19 years in selected educational institutions and community settings in Bangladesh. Participants were enrolled using purposive sampling. Data were collected using a structured questionnaire assessing socio-demographic and psychosocial characteristics, including peer influence, parental supervision, parent–child relationship, stress level, and exposure to substance-using peers. Substance use risk was evaluated using the CRAFFT screening tool. Chi-square tests and multivariable logistic regression analyses were performed using SPSS version 26. Statistical significance was set at $p < 0.05$. **Result:** The mean age of participants was 17.42 ± 1.247 years, and most were male (93.6%). High CRAFFT scores (≥ 3) were observed in 18.6% of adolescents, while 37.1% screened positive for CRAFFT (≥ 2). Significant associations were found between high CRAFFT scores and socio-demographic variables including age, gender, education, residence, and family type ($p < 0.05$). Psychosocial factors significantly associated with high CRAFFT

scores included negative peer influence ($p < 0.001$), inadequate parental supervision ($p = 0.004$), poor parent–child relationship ($p = 0.006$), high stress level ($p = 0.011$), and substance-using peers ($p < 0.001$). Multivariable logistic regression identified older age (AOR=1.82, 95% CI: 1.11–2.98), male gender (AOR=2.45, 95% CI: 1.12–5.36), negative peer influence (AOR=2.96, 95% CI: 1.54–5.69), inadequate parental supervision (AOR=2.31, 95% CI: 1.18–4.52), poor parent–child relationship (AOR=2.58, 95% CI: 1.32–5.05), high stress level (AOR=2.12, 95% CI: 1.07–4.21), and substance-using peers (AOR=3.41, 95% CI: 1.71–6.80) as independent predictors of high CRAFFT scores. **Conclusion:** High CRAFFT scores among adolescents were significantly influenced by multiple psychosocial factors, particularly peer-related influences, inadequate family supervision, poor parent–child relationships, and stress. Early psychosocial screening and targeted preventive interventions are essential to reduce substance use risk among adolescents.

Keywords: Adolescents, CRAFFT screening tool, substance use, psychosocial predictors, peer influence, parental supervision, Bangladesh.

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INTRODUCTION

Adolescence is a transitional stage of human development between childhood and adulthood, marked by significant physical maturation, cognitive growth, emotional adjustment, and evolving social relationships, which may increase susceptibility to risky behaviors, including substance use. The CRAFFT screening tool is a brief, validated instrument designed to identify adolescents at risk for alcohol- and drug-related problems through six behavior-based questions. It is widely used in clinical and community settings for early detection of substance use disorders [1]. Globally, the prevalence rate is approximately 13% of adolescents aged 15–19 years have used alcohol or other psychoactive substances [2]. In Bangladesh, substance use among adolescents ranges from about 2% to 15%, with higher rates reported among urban and socially vulnerable populations. National surveys have reported substance use rates around 2.3% for alcohol/marijuana use and 9.6% for tobacco use among school-going adolescents [3]. The CRAFFT tool works by assessing behaviors associated with

substance use and related consequences rather than focusing solely on the quantity of substances consumed. Higher CRAFFT scores indicate a greater likelihood of problematic substance use and the need for further assessment or intervention [4]. Psychosocial factors such as depression, anxiety, family conflict, peer influence, low social support, and exposure to adverse childhood experiences significantly contribute to elevated CRAFFT scores among adolescents [5,6]. The impacts of substance use during adolescence are far-reaching. High-risk substance use has been associated with impaired academic performance, behavioral difficulties, mental health disorders, interpersonal problems, and increased risk of long-term addiction [7]. Furthermore, psychosocial stressors often interact with substance use in a bidirectional manner, creating a cycle that worsens both emotional well-being and social functioning [8]. The CRAFFT screening approach offers several advantages. It is brief, easy to administer, and cost-effective, making it a practical method for identifying substance use risk among adolescents. Its simplicity

allows it to be effectively used in schools, primary healthcare settings, and community-based programs [9]. However, the tool relies on self-reported information, which may be affected by recall bias, underreporting, or social desirability bias, particularly in cultures where substance use is stigmatized [10]. Psychosocial predictors of high CRAFFT scores are of significant importance, with many of these factors being amenable to modification through counseling, family interventions, school-based prevention programs, and mental health support services [11]. Although several psychosocial determinants of adolescent substance use have been identified, the findings remain inconsistent across different cultural and socioeconomic contexts [12]. Despite growing concern regarding adolescent substance use in Bangladesh, the psychosocial determinants of elevated CRAFFT scores are scarce. Existing research has largely emphasized prevalence estimates, with insufficient attention to the psychosocial and environmental factors that contribute to substance use risk among adolescents [3,13]. Therefore, the current

study is needed to explore psychosocial factors associated with high CRAFFT scores among adolescents within the local context. Identifying these predictors may support the development of targeted prevention strategies and early intervention programs. The objective of this study was to determine the psychosocial predictors associated with high CRAFFT scores among adolescents.

METHODS & MATERIALS

This cross-sectional analytical study was conducted among adolescents to identify psychosocial predictors of high CRAFFT scores. The study was carried out over a period of two years from October 2020 to September 2022 in selected educational institutions and community settings in Bangladesh. A total of 140 adolescents aged between 12 and 19 years were enrolled using a purposive sampling technique. Participants who fulfilled the eligibility criteria and provided informed consent/assent were included in the study. The study was approved by the Institutional Ethics Committee and the reference number was BSMMU/2022/2160. The participants were categorized based on their CRAFFT screening scores to assess substance use risk. Adolescents with CRAFFT scores ≥ 3 were considered to have a high CRAFFT score, while those with scores < 3 were categorized as low CRAFFT score participants.

Inclusion Criteria

- Adolescents aged 12–19 years.
- Participants willing to provide informed consent/assent.
- Adolescents able to understand and complete the study questionnaire.

Exclusion Criteria

- Adolescents with severe psychiatric illness or cognitive impairment affecting communication.
- Participants unwilling to participate in the study.
- Incomplete questionnaire responses or missing data.

Data Collection

Data were collected using a structured, pretested, and validated questionnaire administered through face-to-face interviews. Information regarding socio-demographic characteristics, including age, gender, education level, residence, and family type, was recorded. Psychosocial variables such as peer influence, parental supervision, parent–child relationship, stress level, and substance-using peer exposure were also assessed. Substance use risk behavior was evaluated using the CRAFFT screening tool, a validated instrument designed to identify high-risk alcohol and substance use behaviors among adolescents. CRAFFT scores were categorized into low risk (0–1), moderate risk (2), and high risk (≥ 3).

Participants with CRAFFT scores ≥ 2 were considered CRAFFT positive.

Statistical Analysis

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software (version 26). Continuous variables were presented as mean $\pm$ standard deviation (SD), while categorical variables were expressed as frequencies and percentages. The chi-square test was applied to determine associations between socio-demographic and psychosocial factors with high CRAFFT scores. Variables found significant in bivariate analysis were included in multivariable logistic regression analysis to identify independent psychosocial predictors of high CRAFFT scores. Adjusted odds ratios (AORs) with 95% confidence intervals (CI) were calculated. A p-value of < 0.05 was considered statistically significant.

RESULT

Among 140 adolescents, the mean age was 17.42 ± 1.247 years; 50.0% were aged 17–19 years, 37.1% were 15–16 years, and 12.9% were 12–14 years. Most participants were male (93.6%) and studying at the higher secondary level (68.6%). Slightly over half lived in urban areas (52.1%), while 47.9% were from rural settings. Most belonged to nuclear families (64.3%), whereas 35.7% were from joint families (Table I).

Table I
Socio-demographic characteristics of participants (n = 140).

Variables	Frequency (n)	Percentage (%)
Age (years)		
12–14	18	12.9
15–16	52	37.1
17–19	70	50.0
Mean $\pm$ SD	17.42 $\pm$ 1.247	
Gender		
Male	131	93.6
Female	9	6.4
Education level		
Primary	1	0.7
Secondary	43	30.7
Higher secondary	96	68.6
Residence		
Urban	73	52.1
Rural	67	47.9
Family type		
Nuclear	90	64.3
Joint	50	35.7

Assessment of CRAFFT screening scores showed that 62.9% of adolescents were at low risk (score 0–1), while 18.6% had

moderate risk (score 2) and 18.6% had high risk (score ≥ 3). Overall, 37.1% screened positive for CRAFFT (score ≥ 2), whereas

62.9% screened negative (score < 2) (Table II).

Table IIDistribution of CRAFFT screening scores among adolescents ($n = 140$).

CRAFFT Category	Score range	Frequency (n)	Percentage (%)
Low risk	0–1	88	62.9
Moderate risk	2	26	18.6
High risk	≥ 3	26	18.6
Positive CRAFFT	≥ 2	52	37.1
Negative CRAFFT	< 2	88	62.9

Regarding psychosocial characteristics, 58.6% reported positive peer influence, while 41.4% experienced negative peer influence. Adequate parental supervision was observed in 54.3% of participants,

whereas 45.7% reported inadequate supervision. A good parent–child relationship was reported by 56.4%, while 43.6% had a poor relationship. Nearly half (48.6%) experienced moderate stress,

followed by low (27.9%) and high stress (23.6%). Additionally, 35.0% reported having substance-using peers, while 65.0% did not (*Table III*).

Table IIIPsychosocial characteristics of participants ($n = 140$).

Variables	Frequency (n)	Percentage (%)
Peer influence		
Positive	82	58.6
Negative	58	41.4
Parental supervision		
Adequate	76	54.3
Inadequate	64	45.7
Parent–child relationship		
Good	79	56.4
Poor	61	43.6
Stress level		
Low	39	27.9
Moderate	68	48.6
High	33	23.6
Substance-using peers		
Yes	49	35.0
No	91	65.0

Older adolescents aged 17–19 years had a higher proportion of high CRAFFT scores (40.0%) than younger age groups, with a significant association ($p=0.041$). Male participants showed a significantly higher proportion of high CRAFFT scores than

females (38.2% vs. 22.2%, $p=0.032$). Educational status was significantly associated with CRAFFT score ($p=0.018$). Urban adolescents had a higher prevalence of high CRAFFT scores than rural participants (43.8% vs. 29.9%, $p=0.021$).

Similarly, adolescents from nuclear families had a significantly higher prevalence of high CRAFFT scores than those from joint families (42.2% vs. 28.0%, $p=0.014$) (*Table IV*).

Table IVAssociation between socio-demographic factors and high CRAFFT score ($n = 140$).

Variables	High CRAFFT n (%)	Low CRAFFT n (%)	p-value
Age			
12–14	6 (33.3)	12 (66.7)	0.041
15–16	18 (34.6)	34 (65.4)	
17–19	28 (40.0)	42 (60.0)	
Gender			
Male	50 (38.2)	81 (61.8)	0.032
Female	2 (22.2)	7 (77.8)	
Education			
Primary	1 (100.0)	0 (0.0)	0.018
Secondary	18 (41.9)	25 (58.1)	
Higher secondary	33 (34.4)	63 (65.6)	
Residence			
Urban	32 (43.8)	41 (56.2)	0.021
Rural	20 (29.9)	47 (70.1)	
Family type			
Nuclear	38 (42.2)	52 (57.8)	0.014
Joint	14 (28.0)	36 (72.0)	

Adolescents with negative peer influence had higher CRAFFT scores than those with positive peer influence (58.6% vs. 22.0%, $p<0.001$). High CRAFFT scores were also

more common among those with inadequate parental supervision (50.0% vs. 26.3%, $p=0.004$), poor parent–child relationships (50.8% vs. 26.6%, $p=0.006$), high stress

levels (72.7%, $p=0.011$), and substance-using peers (67.3% vs. 20.9%, $p<0.001$) (*Table V*).

Table V
Association between psychosocial factors and high CRAFFT score (*n* = 140).

Variables	High CRAFFT n (%)	Low CRAFFT n (%)	p-value
Peer influence			
Positive	18 (22.0)	64 (78.0)	<0.001
Negative	34 (58.6)	24 (41.4)	
Parental supervision			
Adequate	20 (26.3)	56 (73.7)	0.004
Inadequate	32 (50.0)	32 (50.0)	
Parent-child relationship			
Good	21 (26.6)	58 (73.4)	0.006
Poor	31 (50.8)	30 (49.2)	
Stress level			
Low	8 (20.5)	31 (79.5)	0.011
Moderate	20 (29.4)	48 (70.6)	
High	24 (72.7)	9 (27.3)	
Substance-using peers			
Yes	33 (67.3)	16 (32.7)	<0.001
No	19 (20.9)	72 (79.1)	

Older age (AOR=1.82, *p*=0.018), male gender (AOR=2.45, *p*=0.024), negative peer influence (AOR=2.96, *p*=0.001), inadequate parental supervision (AOR=2.31, *p*=0.015), poor parent-child relationship (AOR=2.58, *p*=0.006), high stress level (AOR=2.12, *p*=0.031), and having substance-using peers (AOR=3.41, *p*<0.001) were significant predictors of high CRAFFT scores among adolescents (Table VI).

Table VI
Multivariable logistic regression for high CRAFFT score predictors (*n* = 140).

Predictors	Adjusted OR	95% CI	p-value
Age (older adolescents)	1.82	1.11–2.98	0.018
Male gender	2.45	1.12–5.36	0.024
Negative peer influence	2.96	1.54–5.69	0.001
Inadequate parental supervision	2.31	1.18–4.52	0.015
Poor parent-child relationship	2.58	1.32–5.05	0.006
High stress level	2.12	1.07–4.21	0.031
Substance-using peers	3.41	1.71–6.80	<0.001

DISCUSSION

Substance use during adolescence is recognized as a significant public health concern, and CRAFFT screening provides an effective approach for identifying youths at increased risk, enabling the examination of psychosocial factors that contribute to problematic substance-use behaviors [1,4]. Half of the participants were aged 17-19 years (50.0%), with a mean age of 17.42±1.25 years. Similar age distributions have been reported by Subramaniam et al., who found that substance use was more prevalent among older adolescents due to increasing independence and social exposure [14]. Kelly et al observed that late adolescence represents a critical period for experimentation with substances and risky behaviors [15]. The predominance of male participants in the present study is consistent with findings from Islam et al, where males constituted the majority of adolescents reporting substance use [16]. The higher proportion of urban adolescents in the current study agrees with findings by Moonajilin et al, who reported greater substance exposure among urban youths because of easier access and peer interaction [17]. In the present study, 37.1% of adolescents screened positive on the CRAFFT instrument (score ≥2), while 18.6% were categorized as high risk (score

≥3). These findings are comparable to those reported by Knight et al., who found that approximately one-fourth of participants had a CRAFFT score of 2 or higher [18]. Comparable prevalence was also documented by Mitchell et al., who found that around 35% of adolescents attending primary care settings screened positive for risky substance use [19]. In contrast, Harris et al. reported lower rates of positive CRAFFT scores in community-based samples, suggesting that prevalence may vary depending on population characteristics and screening settings [20]. Our study revealed that 41.4% of participants experienced negative peer influence, 45.7% reported inadequate parental supervision, and 43.6% described poor parent-child relationships. Furthermore, 23.6% reported high stress levels, and 35.0% had substance-using peers. These findings are consistent with those of Resnick et al., who demonstrated that weak family connectedness and limited parental monitoring increase adolescent engagement in risky behaviors [21]. Similarly, Viner et al identified adverse psychosocial environments as major contributors to substance use among adolescents [22]. Ryan et al also found that supportive family relationships act as protective factors against substance use [23]. Regarding peer influence, the present

findings align with Simons-Morton and Farhat (2010), who reported that peer networks strongly shape adolescent substance-use behaviors [24]. Likewise, Maxwell (2002) found that peer acceptance and social modeling significantly contribute to substance initiation during adolescence [25]. The proportion of adolescents experiencing high stress is also comparable to findings by Sinha, who highlighted stress as a major risk factor for substance use and addiction [26]. The current study demonstrated significant associations between high CRAFFT scores and age, gender, education, residence, and family type. Older adolescents were more likely to exhibit high CRAFFT scores, a finding consistent with Johnston (2007), who reported increasing substance use prevalence with age among adolescents [27]. Male adolescents had significantly higher CRAFFT scores than females, which agrees with findings from UNODC and Mia et al. These studies suggested that social norms and risk-taking behaviors may contribute to higher substance use among males [28,29]. Urban adolescents demonstrated higher substance-use risk than rural adolescents. This finding is similar to those of Alam et al and Zenic et al, who reported greater substance accessibility and social exposure in urban settings [30,31]. However, Kabir et al

found no significant urban-rural difference after controlling for socioeconomic status [32]. The association between nuclear family structure and higher CRAFFT scores is also supported by Hemovich and Crano (2009), who emphasized the protective role of extended family support systems [33]. Adolescents experiencing negative peer influence were significantly more likely to report high CRAFFT scores (58.6%, $p < 0.001$). Inadequate parental supervision and poor parent-child relationships were also significantly associated with high CRAFFT scores. These findings agree with Dishion and McMahon, who demonstrated that effective parental monitoring reduces adolescent substance involvement [34]. Likewise, another study reported that strong family communication and supervision protect against risky behaviors [23,35]. The strong association between high stress and elevated CRAFFT scores is supported by Sinha (2008) and Hicks (2006), both of whom found that psychological stress contributes to substance use initiation and maintenance [26,36]. The relationship between substance-using peers and high CRAFFT scores is also consistent with studies by Ali and Dwyer (2009) and Mason (2010), which identified peer substance use as a powerful predictor of adolescent substance involvement [37,38]. Multivariable logistic regression identified older age, male gender, negative peer influence, inadequate parental supervision, poor parent-child relationship, high stress, and substance-using peers as independent predictors of high CRAFFT scores. The finding that substance-using peers emerged as the strongest predictor is consistent with Mason (2010), who reported peer substance use as one of the most influential determinants of adolescent substance involvement [38]. Similarly, Ali and Dwyer and Terrior et al found significantly elevated odds of substance use among adolescents whose friends used substances [37,39]. The associations involving parental supervision and parent-child relationships agree with Dishion and McMahon and Ryan et al, who identified family monitoring and communication as independent protective factors [23,34]. The significant effect of stress observed in this study is supported by Sinha and Khantzian, both of whom reported that stress-related coping deficits increase susceptibility to substance use [26,40].

LIMITATIONS

This study had several limitations. The cross-sectional design limited the ability to establish causal relationships between psychosocial factors and high CRAFFT scores. The purposive sampling technique and relatively small sample size may reduce the generalizability of findings to all adolescents in Bangladesh. Data were based on self-reported responses, which may be affected by recall bias, underreporting, and

social desirability bias, particularly regarding substance use behaviors. Additionally, some potentially relevant psychosocial and environmental variables were not explored.

CONCLUSION

This study identified several significant psychosocial predictors associated with high CRAFFT scores among adolescents. Older age, male gender, negative peer influence, inadequate parental supervision, poor parent-child relationships, high stress levels, and exposure to substance-using peers were independently associated with increased substance use risk. A considerable proportion of adolescents screened positive for problematic substance-related behaviors, emphasizing the need for early psychosocial assessment and targeted interventions. Strengthening family supervision, improving parent-adolescent communication, reducing harmful peer influence, and implementing school- and community-based mental health support programs may contribute to lowering substance use vulnerability among adolescents. Early identification through CRAFFT screening may facilitate timely prevention and intervention strategies.

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

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