Substance abuse – An emerging problem among school-going adolescents of Jaipur, Rajasthan

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ABSTRACT

Background: Adolescents are a relatively healthy group, but their developmental stage makes them vulnerable to many risk-taking behaviors. One such major issue is substance abuse. **Aims and Objectives:** This study aims to determine substance abuse behavior among school-going adolescents of Jaipur city and factors associated with it. **Materials and Methods:** An observational, cross-sectional study was conducted from July 2015 to February 2016. A total of 900 school-going adolescents were enrolled from eight schools of Jaipur city and the Youth Risk Behavior Survey (YRBS) questionnaire was administered. **Results:** Most of the participants (67.56%) were in the age group of 13–16 years. Twelve adolescents out of 900 (1.34 %) in the given sample were taking drugs. Out of these, 66.67% took drugs 1 or 2 times in their life so far, while 33% took it 3–9 times. Majority 91.66% of the drug users were from government school (9 times more risk), 9/12 (75%) of the drug users were males. A total of 10% (90/900) of the study population were consuming tobacco. All of these adolescents smoke and 87.78% (79/90) chew tobacco. **Conclusion:** Although proportion seems less, yet the age at which these young students have been exposed to and indulged in substance abuse is a matter of concern.

Keywords: Adolescent; Substance abuse; Youth Risk Behavior Survey

INTRODUCTION

Tobacco use is a risk factor for six of the eight leading causes of deaths in the world. The six causes are cancers of respiratory tract, ischemic heart disease, cerebrovascular disease, chronic obstructive pulmonary disease, tuberculosis, and lower respiratory tract infections.[1] Tobacco can be used either as smoking form or chewing form. Smoking tobacco causes cancer of the lung, larynx, kidney, bladder, stomach, colon, oral cavity, and esophagus. It also causes leukemia, chronic bronchitis, chronic obstructive pulmonary disease, ischemic heart disease, stroke, miscarriage and premature birth, birth defects, and infertility among other diseases.[2] Tobacco use (smoked as well as non-smoked) was also found to be associated with migraine.[3] Tobacco use is the leading global cause of preventable death.

At present, about 5 million deaths per year are attributable to tobacco which is expected to rise to more than 8 million deaths a year by 2030. There is estimation that three-quarters of these deaths will be in low- and middle-income countries.[2] Most people begin using tobacco in their adolescent age.[4]

Cigarette smoking among adolescents is a major public health problem.[5,6] Most of the adults with nicotine use disorder start nicotine use in their adolescent years.[7] Different risks and factors related to smoking among adolescents

manifest themselves at different levels (e.g., personal, familial, and school level) introducing complexity when trying to understand the behavior of adolescents. The prevalence of smoking among adolescents rises with increasing age and male adolescents smoke in a higher proportion than females.[8] Factors that suggest that family can influence tobacco use are;[9,10] first, smoking within the family (parent or siblings) is associated with an increased risk of smoking among adolescents,[10] and second, familial features, such as good communication and positive relationships among family members, higher parental monitoring,[11] stronger family attachment,[9] higher parental support, and positive parenting style,[12] might be protective factors against adolescent smoking. Hence, this study was conducted with an objective to determine the proportion of school-going adolescents of Jaipur city engaging in substance abuse and its associated variables using the Indian version of the Youth Risk Behavior Survey (YRBS) questionnaire.

Aims and objectives

1. To study the proportion of school going adolescents of Jaipur city with risk behaviors using Indianised version of Youth Risk Behavior Survey (YRBS) questionnaire including tobacco consumption, alcohol consumption and drug abuse.
2. To determine the relationship between various health risk behaviours and their association with other socio-demographic factors.

MATERIALS AND METHODS

An observational, descriptive type of cross-sectional study was conducted from July 2015 to February 2016 in Jaipur city. Schools and students that met the following eligibility criteria were considered for the study.

Inclusion criteria for schools and students were as follows:
1. Schools having coeducation facility and having all the three streams, that is, science, commerce, and arts
2. School students studying in the 11th and 12th class
3. Students present on the day of study.

Exclusion criteria for schools and students:
1. School with a strength <100 in Class 11th and 12th was excluded to make study cost-effective
2. Students who did not give consent.

Sample size

The sample size required is 422 at 95% confidence and 15% relative error to verify the expected minimum 29.6% of prevalence of smoking among students.[13] This sample size had been rounded off to 900 and is adequate to cover other variables.

Sampling technique

A complete list of all government and private senior secondary schools was procured from the Department of Education, Jaipur. One government and one private school from each zone (east, west, north, and south) were selected by a simple random sampling technique. A list of students of the 11th and 12th class was procured from all the eight selected schools. Equal proportions of students were selected randomly from each of the three streams (science, commerce, and arts). All selected students were interviewed using the YRBS tool, after explaining to them the purpose of study, taking consent, and assuring for anonymity. The study variables included age, sex, height, weight, body mass index (BMI), religion, stream of study, family type, number of family members, family income, with whom children were living, parent's education, parent's occupation, tobacco use, alcohol use, and drugs abuse.

Study tool

The latest version of the YRBS questionnaire (2015) was used. It is a standard pro forma used in many studies in India and internationally and is modified every 2 years. The YRBS collects data about the basic information of the study subject and road safety behavior.

Parent's occupation and education score

Parental guidance is very important in constructing healthy behaviors in adolescents. Education and occupation of parents, especially of mothers, has a great impact; hence, it was decided, in consultation with three senior experts, to give more weight to mother's occupation and education and a score was developed as follows:

1. Occupation: A professional degree, including a doctor and engineer, and Ph.D. professor/lecturers, was scored at 6; teachers were scored 5; big businessmen were scored 4; petty businessmen and clerical staff were given 3; farmers were given 2; laborers were given 1; and unemployed were given 0 scores. Twice the value was assigned to mother as compared with the father in the same category. For example, if the father was a petty businessman (score 3) and mother was a Ph.D. (score 6) lecturer then the total score would be $3×1+6×2=15$. The minimum score was 0 and maximum score was 18. Hence, the composite score of parent's occupation was categorized as 0–6, 7–12, and 13–18, indicating low influence, moderate influence, and high influence in child rearing, respectively. The median score was calculated to divide the group into two categories having good or poor parental influence.
2. Education: A professional degree, including a doctor and engineer, and Ph.D. professor/lecturers, was scored at 3, undergraduates were scored 2, up to senior secondary education was scored 1, and illiterates were given 0 scores. Twice the value was assigned to mother

as compared with the father in the same category. For example, if the father was a professional (score 3) and mother had up to senior secondary education (score 1), then, the total score would be 3×1+1×2=5. The minimum score was 0 and maximum score was 9. Hence, the composite impact of parent's education was categorized as 0–3, 4–6, and 7–9, indicating low influence, moderate influence, and high influence in child rearing, respectively. The median score was calculated to divide the group into two categories having good or poor parental influence.

About tobacco use
Risk was present if tobacco was consumed.

In total, there are eight components to assess tobacco use. Overall tobacco use behavior was categorized as low risk and high risk using median value of the score. Overall score ranged from 0 to 20 and divided as low- and high-risk behavior using median value 8.

About alcohol use
Risk was present if alcohol was consumed.

In total, there are six components to assess alcohol use behavior. Overall score ranged from 0 to 15 and divided as low- and high-risk behavior using median value 5.

Using drugs
Risk was present if drug was used for pleasure and out of prescription.

Data analysis
All data collected were entered into a Microsoft Excel spreadsheet in the form of a master chart. These data were classified and analyzed as per the objectives. Categorical data were expressed in terms of either frequency or proportions. Continuous data were expressed in terms of mean with standard deviation (SD). Inferential statistics, such as Chi-square test and odds ratio (OR) with confidence interval (CI), was used to find out association. "Microsoft Excel" and "Primer" were used for data analysis.

Ethical clearance was taken from the Institutional Ethical Committee and assent or consent was taken from each participant (ethical approval was taken on November 19, 2016, from Ethical Committee of SMS Medical College, Jaipur).

Tobacco use	Yes, N (%)	No, N (%)	Total	P value
Table 1: Distribution of tobacco use according to sociodemographic characteristics of adolescents (N=90)				
Age group				
13–16	64 (10.60)	544 (89.47)	608	0.522
17–19	26 (8.90)	266 (91.09)	292	
School type				
Government	55 (11.11)	440 (88.88)	495	0.264
Private	35 (8.64)	370 (91.35)	405	
Sex				
Male	53 (10.49)	452 (89.50)	505	0.654
Female	37 (9.36)	358 (90.63)	395	
BMI				
Underweight (<18.5)	37 (11.01)	299 (88.98)	336	0.023
Normal weight (18.5–23)	36 (9.25)	353 (90.74)	389	
Overweight (23–27.5)	10 (7.40)	124 (92.53)	134	
Obese (>27.5)	9 (21.95)	32 (78.04)	41	
Stream				
Science	24 (7.07)	315 (92.92)	339	0.045
Commerce	44 (10.83)	362 (89.16)	406	
Arts	20 (12.90)	135 (87.09)	155	
Family type				
Nuclear	43 (9.49)	410 (90.50)	453	0.689
Joint	47 (10.51)	400 (89.48)	447	
Father's occupation				
Unemployed	1 (6.25)	15 (93.75)	16	1.000
Laborer	22 (10.83)	181 (89.16)	203	
Small business or small farmer	23 (10.64)	193 (89.35)	216	
Big business or big farmer	11 (8.14)	124 (91.85)	135	
Teacher	4 (12.50)	28 (87.50)	32	
Doctor, engineer, government officer	29 (9.73)	269 (90.26)	298	
Mother's education				
Illiterate	23 (11.21)	182 (88.78)	205	0.053
Secondary/senior sec.	32 (12.64)	221 (87.35)	253	
Undergraduate	5 (6.57)	71 (93.42)	76	
P.G./professional	30 (8.19)	336 (91.80)	366	
Total	90	810	900	

Privacy and confidentiality of data were ensured by asking not to write down the names of the students and collection of questionnaires was done in a sealed carton with a thin slit.

RESULTS

Table 1 depicts that age, sex, and family type of the adolescents were not significantly associated with tobacco use. Although not statistically significant (P= 0.264), proportion of adolescent using tobacco was more in government school (11.11% vs. 8.64%). Significantly lower proportion of science stream adolescents was indulged in tobacco use as compared to combined commerce and art stream adolescents (P=0.045). When obese adolescent was compared with other category of BMI, the difference in use of tobacco was significantly more in obese (P=0.023). Proportion of tobacco users was more where mothers were poorly educated (i.e., secondary or below) in comparison to graduate or above (P=0.053). Father's education had no role.

Table 2 depicts that 10% (90/900) of the study population was consuming tobacco, all of these adolescent smokes

and 87.78% (79/90) chew tobacco. Good thing is that 82% (74/90) of smokers tried to quit smoking. About 48% of the adolescent had started using tobacco in the age group of 10–15 years and another 43% in the age group of 16–18 years. Most (48.89%) of the smokers were from commerce stream, 52.23% were belonged to joint family, and 61.2% were from government school. Majority (61.12%) of the adolescent gets their cigarettes from shop while 4.4% are getting it from their family members. Parents occupation had a significant association with tobacco use risk (P=0.006), risk increased with decreasing position of parents.

Although not statistically significant, yet risk of tobacco use is increasing in adolescent of parents with low educational level (P=0.424). Although number of students is very few in extreme low and upper socioeconomic status (four each), still it was observed that the risk of indulging in tobacco use is highest in upper class and reduces 50% point from upper to lower class (P=0.318). Adolescent of art stream seems to be less indulging in tobacco (25%) while 40% of adolescents of science and commerce stream are at

| Table 2: Risk behavior for tobacco use in relation to sociodemographic characteristics (N=90)				
Tobacco use	High (N=34) 37.78%, N (%)	Low (N=56) 62.23%, N (%)	P value	Total
Age group				
13–16	25 (39.06)	39 (60.94)	0.877	64
17–19	9 (34.62)	17 (65.38)		26
Family type				
Nuclear	15 (34.88)	28 (65.12)	0.746	43
Joint	19 (40.43)	28 (59.57)		47
Sex				
Male	19 (35.85)	34 (64.15)	0.818	53
Female	15 (40.54)	22 (59.46)		37
Socioeconomic status				
Upper	3 (75)	1 (25)	0.318	4
Upper-middle	12 (48)	13 (52)		25
Lower-middle	12 (32.43)	25 (67.56		37
Upper-lower	6 (30)	14 (70)		20
Lower	1 (25)	3 (75)		4
Parent's occupation				
High position	12 (66.67)	6 (33.33)	0.006	18
Moderate position	15 (38.46)	24 (61.54)		39
Low position	7 (21.21)	26 (78.79)		33
Parent's education				
High position	10 (30.30)	23 (69.70)	P=0.424	33
Moderate position	6 (35.29)	11 (64.71)		17
Low position	18 (45.00)	22 (55.00)		40
Subject				
Science	11 (42.31)	15 (57.69)	0.407	26
Commerce	18 (40.91)	26 (59.09)		44
Arts	5 (25.00)	15 (75.00)		20
BMI				
Underweight (<18.5)	13 (35.14)	24 (64.86)	P=0.516	37
Normal weight (18.5–23)	17 (47.22)	19 (52.78)		36
Overweight (23-27.5)	2 (20.00)	8 (80.00)		10
Obese (>27.5)	2 (28.57)	5 (71.43)		7
School type				
Government	17 (30.90)	38 (69.09)	0.144	55
Private	17 (48.57)	18 (51.42)		35
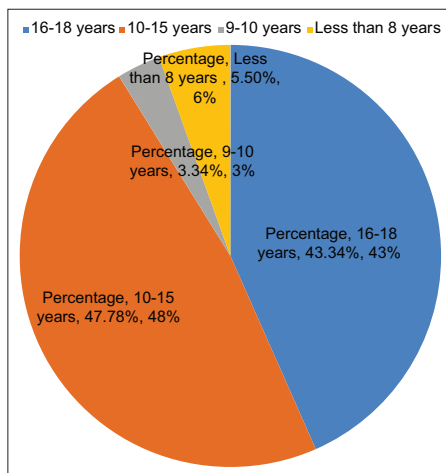
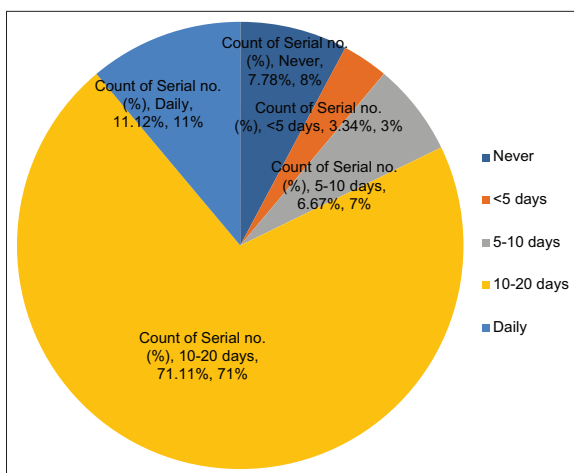**Figure 1:** Distribution of the study population as per age of starting tobacco
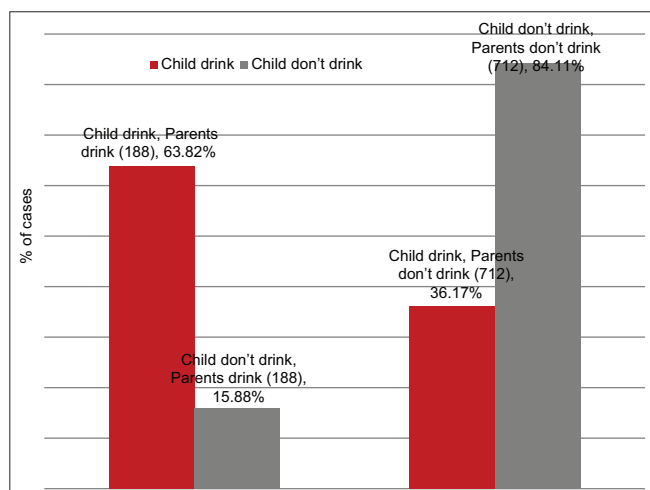

Figure 2: Frequency of smoking in 1 month

Figure 3: Association of adolescents drinking alcohol and having alcoholic parents

high risk of tobacco use. Adolescent of private school is comparatively more at high risk of tobacco use (48.5% vs. 30.90%) (Figures 1 and 2).

Table 3 depicts that the proportion of study population drinking alcohol is just 10.45% (94/900) out of which 24.46% had high risk of alcohol use although not statistically significant, proportion of high risk was more in females 30.95% versus 19.23% in males and in adolescents of joint family (27.45% vs. 20.93% in nuclear family), of government school (28.30% vs. 19.51% in private school, and of parents at low occupation (12% at high position vs. 36% at low position). Socioeconomic status and parent's education had no association with the level of risk and adolescent with normal BMI was more at high risk of alcohol consumption than underweight or overweight (P=0.037). Adolescents of 17–19 years were significantly more at high risk of alcohol use (P=0.040).

Figure 3 depicts that proportion of population whose parents drink alcohol was 188/900 (20.89%). The risk of drinking was 9 times more in students whose parents drink. One-fourth of the adolescent were offered drinks by the family members, 34% are buying liquor from the shop by themselves.

More than 50% (57.44%) of alcohol users had started drinking in the age group of 15–18 years another 25% (24.46%) started in the age group of 10–14 years while 7% (7.44) had started even before 8 years of age.

In Table 5, although proportion seems less yet 12 adolescent out of 900 (1.34 %) were taking drugs at such tender age is a matter of concern, 66.67% took drug 1 or 2 times in their life so far, while 33% took it 3–9 times. Majority 91.66% of the drug users were from government school (9 times more risk), 9/12 (75%) of the drug users were male, 50% were from commerce stream while 33% were from science stream.

About 25% started taking drugs between 9 and 10 years while 67% did so between 15 and 18 years. Almost 25% (3/12) got drug by illegal means in school. About 83% (10/12) of the drug users did take steroid pills or shots without a doctor's prescription; out of these 50% took it only once or twice and (33%) took it 3–19 times in their life time.

There is 9 times (C.I: 1.180–71.424) more risk in adolescents of government school in comparison to private school (P=0.023). There was a significant association present among drug user and their socioeconomic status (P=0.012), adolescents of lower most class were at more than 7 times at risk of indulging in drug use.

Although not significant, many sociodemographic characteristics showed higher proportion of drug use such as sex (1.8%:0.8%: Male: female), almost twice the

Table 3: Risk behavior for alcohol use in relation to sociodemographic characteristics (N=94)				
Alcohol Use	**High (N=23) 24.46%, N (%)**	**Low (N=71) 75.53%, N (%)**	**P value**	**Total**
Age group				
13–16	9 (16.07)	47 (83.93)	0.040	56
17–19	14 (36.86)	24 (63.16)		38
Family type				
Nuclear	9 (20.93)	34 (79.07)	0.623	43
Joint	14 (27.45)	37 (72.55)		51
Sex				
Male	10 (19.23)	42 (80.77)	0.283	52
Female	13 (30.95)	29 (69.05)		42
Socioeconomic status				
Upper	1 (33.34)	2 (66.67)	0.524	3
Upper-middle	5 (17.85)	28 (84.84)		33
Lower-middle	13 (32.50)	27 (67.50)		40
Upper-lower	3 (21.42)	11 (78.57)		14
Lower	1 (25.00)	3 (75.00)		4
Parent's occupation				
High position	3 (12.00)	22 (88.00)	0.142	25
Moderate position	11 (25.00)	33 (75.00)		44
Low position	9 (36.00)	16 (64.00)		25
Parent's education				
High position	9 (25.00)	27 (75.00)	0.836	36
Moderate position	6 (28.57)	15 (71.43)		21
Low position	8 (21.62)	29 (78.38)		37
Subject				
Science	8 (19.51)	33 (80.49)	0.365	41
Commerce	9 (24.32)	28 (75.68)		37
Arts	6 (37.50)	10 (62.50)		16
BMI				
Underweight (<18.5)	6 (16.67)	30 (83.33)	0.037	36
Normal weight (18.5–23)	15 (37.50)	25 (62.50)		40
Overweight (23–27.5)	2 (11.76)	15 (88.24)		17
Obese (>27.5)	0 (0.00)	1 (100.00)		1
School type				
Government	15 (28.30)	38 (71.69)	0.459	53
Private	8 (19.51)	33 (80.48)		41

Table 4 : Association of adolescents drinking alcohol and having alcoholic parents				
Alcohol Consumption	**Parents do not drink, N (%)**	**Parents drink, N (%)**	**P value**	**Total**
Child drink	34 (36.17)	60 (63.82)	0.000	94
Child do not drink	678 (84.11)	128 (15.88)		806
Total	712 (79.11)	188 (20.89)		900
Odds ratio=9.347 (95% confidence interval: 5.894–14.825); P=0.000				

proportion in obese than other BMI categories, family type (1.8%:0.9%: Joint family: nuclear family), and almost double the proportion of adolescent from small business/farmer family were consuming drugs. Surprisingly, mother's education and occupation had no bearing on adolescent use of drugs. About 41.67% of the drug users attempted suicide in the past 1 year.

DISCUSSION

This study was carried out among school-going adolescents of Class 11th and 12th in Jaipur city. Overall regular substance use was found to be 15.89% in the present study,

double the prevalence was present in the study done by Juyal et al., of Dehradun;[14] the reason could be that areca nut/pan masala were included, as the substances frequently taken by children and are more or less socially accepted for their age. Vartika Saxena et al.,[15] found the proportion to be 33.1% as only male students were included in the study, 19.9% by Park and Kim,[16] Jonas et al.,[17] and Malta et al.,[18] and Bagchi et al.,[13] 29.6% in Kolkata.

The prevalence of tobacco use among school students in different states of India has been reported to vary from 1.9% (Delhi) to 75.3% (Mizoram).[19,20] The prevalence of tobacco use in the present study is 10%, all were smokers and 8.7% chew tobacco.

Table 5: Association of various sociodemographic characteristics with drug use (N=12)				
Drugs use	Yes, N (%)	No, N (%)	Total	P value
Age group				
13–16	7 (1.15)	601 (98.84)	608	0.706
17–19	5 (1.71)	287 (98.28)	292	
School type				
Government	11 (2.23)	484 (97.78)	495	0.023
Private	1 (0.24)	404 (99.75)	405	Odds ratio=9.182 (95% C.I: 1.180–71.424)
Sex				
Male	9 (1.78)	496 (98.21)	505	0.301
Female	3 (0.75)	392 (99.24)	395	
BMI				
Underweight (<18.5)	3 (0.89)	333 (99.10)	336	1.000
Normal weight (18.5–23)	6 (1.54)	383 (98.45)	389	
Overweight (23–27.5)	2 (1.49)	132 (98.50)	134	
Obese (>27.5)	1 (2.43)	40 (97.56)	41	
Stream				
Science	4 (1.17)	335 (98.82)	339	0.938
Commerce	6 (1.47)	400 (98.52)	406	
Arts	2 (1.29)	153 (98.70)	155	
Family type				
Nuclear	4 (0.9%)	449 (99.11)	453	0.371
Joint	8 (1.8%)	439 (98.21)	447	
Father's occupation				
Unemployed	0 (0.00%)	16 (100.00)	16	0.623
Laborer	3 (1.47)	200 (98.52)	203	
Small business or small farmer	5 (2.31)	211 (97.68)	216	
Big business or big farmer	0 (0.00)	135 (100.00)	135	
Teacher	0 (0.00)	32 (100.00)	32	
Doctor, engineer, government officer	04 (1.34)	294 (98.65)	298	
Mother's education				
Illiterate	2 (0.97)	203 (99.02)	205	1.000
Secondary/Senior Sec.	3 (1.18)	250 (98.81)	253	
Undergraduate	1 (1.3)	75 (99.9)	76	
P.G./professional	6 (1.64)	360 (98.36)	366	
Mother's working status				
Working	7 (1.69)	407 (98.30)	414	0.568
Not working	5 (1.02)	481 (98.97)	486	
SES				
Upper	0 (0.00)	74 (100.00)	74	0.012
Upper-middle	3	269	272	Odds ratio=7.667 (95% C.I: 1.993–29.499)
Lower-middle	4	329	333	
Upper-lower	2	179	181	
Lower	3	37	40	
Total	12 (1.33%)	888 (98.67%)	900	

Overall 143/900 (15.89%) of the adolescents were using substances such as alcohol, tobacco, and drugs

Majority of adolescents had started smoking between the tender ages of 10–15 years, similar findings were presented by Bagchi et al.,[13] as these studies were done in different states of India. It clearly indicates that substance abuse and dependence have perpetuated the younger population to pose as another big challenge in the adolescent health.

Limitations of the study

Although we tried our level best to impress upon students that their responses are all going to be used purely for research purposes but still considering that our questionnaire elucidated self reported behavior hence there are chances of under reporting by the study participants.

CONCLUSION

About 10% (90/900) of the study population is at high risk of tobacco use. About 48% of the adolescents had started using tobacco in the age group of 10–15 years, 5.5% started it at the tender age of <8 years.

The proportion of the study population drinking alcohol is just 10.45% (94/900) out of which 25.56% had high risk of alcohol use. Parents of 36.17% (34/94) had drinking problem too. There is slightly high proportion of male than female drinker (55.31% vs. 44.68%). Most (43.61%) of the alcoholics were from science section.

In the present study, 12 adolescents out of 900 (1.34 %) were taking drugs at such tender age is a matter of concern.

ACKNOWLEDGMENTS

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Source of Funding: None, **Conflicts of Interest:** None.