



## Substance Abuse in High School Students in Association with Socio-Demographic Variables in Northwest of Iran

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### Abstract

**Background:** Substance abuse in adolescents and its often tragic consequences, including addiction, is one of the preventable major public health problems. The aims of this paper were to estimate the prevalence of substance abuse and to evaluate its some associated factors in adolescents of Tabriz City (northwest of Iran).

**Methods:** A self-administered questionnaire was completed in 4903 randomly selected students with mean age of 15.7 years old. The aim of the questionnaire was obtaining information on substance abuse, socio-economical information, cigarette smoking behavior, general risk taking behavior, self-esteem, attitude towards smoking and self-injury as well as demographical characteristics.

**Results:** Prevalence of substance abuse was 1.4% (95% CI: 1.1–1.7) which was different statistically significant between boys (2.4%) and girls (0.6%) ( $P < 0.001$ ). Older age (OR=1.43), not living with parents (OR=2.34), having general risk taking behavior (OR=2.26), higher smoking stage (OR=2.39), lower self-esteem (OR=1.09) and positive attitude toward smoking (OR=1.08) were factors associated with student's ever use of substance.

**Conclusion:** The result has shown low prevalence of substance abuse in Iranian adolescents. Our findings showed some associated factors such as lower self-esteem with adolescent's substance abuse.

**Keywords:** Adolescents, Substance abuse, Smoking, Risk taking behavior, Iran

### Introduction

Substance abuse in adolescents and its often tragic consequences, including addiction, is one of the preventable major public health problems. Because of not yet fully development in parts of the adolescent's brain that responsible for judgment, decision making, emotion and impulse control, they are more likely than adults to take risks, including experimenting with addictive substances and engaging in dangerous behaviors while under

their influence, and highly susceptible to external social influences to engage in risky behaviors (1-3). The younger an individual is at the onset of the substance abuse, the more risk developing substance use disorders and continuing into adulthood. Over 90 percent of adults diagnosed with substance use disorders have experienced drug use before age 18 and half of them before age 15 (4-7).

Teenager's substance abuse linked to some of the barriers to health and productivity such as poor grades in school, drop out of high school, unsafe sexual activity, accidents, homicides, suicides, violence and self-injury (8-15).

The Center on Addiction and Substance Abuse (CASA) in United States (16) reported that at least three out of four high school students in America (75.6 percent) have used one or more addictive substances. Nearly three-quarters (72.5 percent) have drunk alcohol, nearly half (46.3 percent) have smoked cigarettes, more than a third (36.8 percent) have used marijuana and 6.4 percent have used cocaine.

Because of social, religious, cultural and economical reasons, consumption of addictive substances in Iran is different from other countries especially western countries and using opium is more prevalent. Totally, there is a limited amount of information available on adolescent's substance abuse in Iran. The results of one study which was conducted on 10th grade male students in Shiraz in 2003 showed that 32% of students had experienced alcohol consumption and 2.1% of them had lifetime drug abuse (17). Another study conducted on 10th grade male students in Tabriz in 2005 and 2006 longitudinally showed that 12.7% of students had ever used alcohol and 2.0% had used drugs. In addition, during one year follow-up, among students without experience of alcohol use, 10.1% reported using alcohol, and among students without experience of drug abuse, 2.2% reported using drugs (15).

Tabriz is the center of East Azerbaijan Province, which based on 2006 Census, the population of this city was about 1.4 million people and about 12% of them were in age group of 14-19 years old. The aims of this paper related to the first phase of a longitudinal study about smoking and substance abuse in a large random sample of adolescents are to estimate the prevalence of substance abuse in Tabriz and to evaluate its some associated factors.

## Materials and Methods

This cross-sectional school- based study is the first phase of a longitudinal study about smoking

and substance abuse in adolescents. A representative sample of 10th-grade students in Tabriz (Northwest of Iran) was studied during November and December 2010. The reason for limiting the subjects to 10th-grade students was the more potential to track individuals in the second phase of the study. Totally 5106 high school students on a clustered and stratified, multi-stage proportionally sample were selected from 57 randomly selected schools. Two hundred and three students were excluded from the study due to absent in the day of completion of questionnaire, refusal of responding and incomplete questionnaires. So the overall response rate was 96.02% with 4903 participants.

Participants completed a self-administered multiple choice anonym questionnaire. The questionnaire approved by Ethics Committee of Tabriz University of Medical Sciences and Research Committee of the East Azerbaijan Province Education Organization. The aim of the questionnaire was obtaining information on demographical characteristics, substance abuse, socio-economical information, cigarette smoking behavior, general risk taking behavior, self-esteem, attitude towards smoking and self-injury.

Substance abuse measured by combining respondent's lifetime use of illicit drugs such as cannabis, opium, ecstasy and methamphetamines. Any use of these substances was sufficient for that individual to be classified as having used drugs. No reported use was classified as never having used drugs.

Socioeconomic status was built by using the father education, mother education, the family assets and the family income. By using principal component analysis, this measure graded students into very high, high, middle, lower and much lower socioeconomic status levels.

According to the Kaplan et al. (18) study, cigarette smoking status was considered in three stages as:

1. Never smoker: adolescent who have never tried cigarettes, not even a few puffs.
2. Experimenter: adolescent who indicated having tried or experimented with cigarette smoking, even a few puffs, but have smoked less than 100 cigarettes.

3. Regular smoker: adolescent who indicated smoking 100 cigarettes or more in lifetime irrespective of current smoking status.

General risk taking behavior was assessed according Kaplan et al.(18) by following question: “Do you enjoy doing things that are a little dangerous or risky?” Respondents with answering “Yes” were classified as having a risky attitude (coded as 1).

We assessed self-esteem by using Persian version of the Rosenberg (19) self-esteem questionnaire that ranged from 10 to 40, with lower scores indicating higher self-esteem. In pilot study with 23 grade-10 students test–retest correlation, with 2-week interval, was 0.80 (Cronbach’s alpha 0.81).

According to Hill et al. (20), attitude toward cigarette smoking was assessed by 6-item questionnaire that produce a potential range of -12 to +12, which higher scores indicating positive attitude. Test–retest Pearson correlation of the Persian version of this test in 23 grade-10 students, with 2-week interval, was 0.78 (Cronbach’s alpha 0.89).

Because of cluster sampling method, survey analysis was used in all analyses. Ninety-five percent of the confidence interval was calculated for prevalence of substance abuse. The Chi-square tests, Fisher exact test, independent *t*-test and logistic regression model were used for evaluating factors associated with substance abuse.

## Results

The mean age of the students was  $15.7 \pm 0.7$  yr (min. 14, max. 19). Among 4903 students 67 (1.4%, 95% CI: 1.1–1.7) had ever substance abuse. This prevalence was statistically significant between boys and girls ( $P < 0.001$ ). Among 2091 boys 50 (2.4%, 95% CI: 1.8–3.1) and among 2799 girls 17 (0.6%, 95% CI: 0.4–1.0) had ever substance abuse. Among all substances which used 17 (25.4%), 28 (41.8%), 21 (31.3%), 10 (14.9) and 12 (17.9%) cannabis, opium, ecstasy, methamphetamines (called as Shisheh in Iran) and other drugs, respectively. In addition 16.4% and 4.2% of students were experimenter and regular smoker, respectively. Table 1 presents the demographic characteristics and risk variables of the total sam-

ple, as well as the conditional distribution of drug abuse at each level of the variables. Accordingly, all variables except socioeconomic status were related to substance abuse of students.

A logistic model was used to evaluate the association of all significant variables at level of 0.2 in bivariate analysis. The results of this analysis indicate that after adjusting for other factors, gender (male/female) (OR= 2.13), older age (OR=1.43), being in the Mathematics and Physics major (protective effect), not living with parents (OR=2.34), having general risk taking behavior (OR=2.26), higher smoking stage (OR=2.39), higher self-esteem score that shows lower level of self-esteem (OR=1.09) and positive attitude toward smoking (OR=1.08) were factors associated with student's ever use of substance (Table 2).

## Discussion

The prevalence of substance abuse was 1.4% (2.4% for boys and .6% for girls), which was consistent with a previous surveys of 10th grade male students conducted in Shiraz (17) and Tabriz (15). In comparison to the other countries (16, 21-23), the prevalence of substance abuse was considerably low in our study. Lower substance abuse rates among adolescents in Iran are mostly related to legal prohibition of illicit drugs, cultural values of Iranian families against substance abuse especially among adolescents; and strong parental disapproval of drug abuse by children.

Based on our results the prevalence of substance abuse in boys is much more than girls. The multi-variables logistic regression model showed that being a boy increased the odds of substance abuse experience by more than 2 times. In the United States, males and females high school students are equally likely to be current users of addictive substances (16). Generally in the world the rate of substance abuse and dependence is higher among men than it is among women (24). Women typically begin using substances later than do men, are strongly influenced by spouses or boyfriends to use (24). Moreover, due to social norms and cultural values in Iran, the rates of substance abuse in women are much less than men.

**Table 1:** Demographic characteristics and other risk variables of the adolescents by substance abuse

Characteristics	Substance abuse			P-value**
	No n (%)	Yes n (%)	Total* n (%)	
<b>Gender</b>				
Boy	2041 (97.6)	50 (2.4)	2091 (43.0)	P<0.001
Girl	2760 (99.4)	17 (0.6)	2777 (57.0)	
<b>Total</b>	4801 (98.6)	67 (1.4)	4868 (100)	
<b>Age</b>				
14&15 years	2089 (99.4)	13 (0.6)	2102 (43.4)	P<0.001
16 years	2217 (98.5)	33 (1.5)	2250 (46.5)	
17 years	366 (96.6)	13 (3.4)	379 (7.8)	
18&19 years	104 (92.9)	8 (7.1)	112 (2.3)	
<b>School type</b>				
Governmental	4264 (98.5)	65 (1.5)	4329 (88.9)	0.034
Non-governmental	537 (99.6)	2 (0.4)	539 (11.1)	
<b>Education major</b>				
Mathematics and physics	1125 (99.6)	5 (0.4)	1130 (23.2)	P<0.001
Empirical science	1244 (99.2)	10 (0.8)	1254 (25.8)	
Humanities	739 (98.8)	9 (1.2)	748 (15.4)	
Technical and Vocational & work and knowledge	1693 (97.5)	43 (2.5)	1736 (35.7)	
<b>Socioeconomic status</b>				
Very low	896 (98.2)	16 (1.8)	912 (20.2)	0.299
Low	901 (98.9)	10 (1.1)	911 (20.2)	
Middle	903 (99.1)	8 (0.9)	911 (20.2)	
High	886 (98.6)	13 (1.4)	899 (19.9)	
Very high	871 (98.1)	17 (1.9)	888 (19.6)	
<b>Living with parents</b>				
Yes	4530 (98.8)	55 (1.2)	4585 (94.4)	P<0.001
No	258 (95.6)	12 (4.4)	270 (5.6)	
<b>General risk taking behaviors</b>				
No	2010 (99.5)	11 (0.5)	2021 (41.7)	P<0.001
Yes	2769 (98.1)	55 (1.9)	2824 (58.3)	
<b>Smoking status</b>				
Never smoker	3825 (99.6)	16 (0.4)	3841 (79.3)	P<0.001
Experimenter	769 (96.7)	26 (3.3)	795 (16.4)	
Regular smoker	180 (87.8)	25 (12.2)	205 (4.2)	
<b>Self-injury</b>				
No	4174 (98.9)	45 (1.1)	4219 (87.5)	P<0.001
Yes	580 (96.3)	22 (3.7)	602 (12.5)	
	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	
<b>Self-esteem</b>	17.77±4.77	20.80±5.57	17.82±4.79	P<0.001
<b>Attitude toward smoking previous year average</b>	-10.24±3.11	-5.28±6.20	-10.17±3.24	P<0.001
<b>grades</b>	16.57±2.22	15.28±2.19	16.56±2.23	P<0.001

\* Total of subjects with no regard of substance abuse status.

\*\* According to the results of chi-square test and independent t-test.

**Table 2:** Survey logistic regression analysis of the relationship between substance abuse and risk variables in a sample of Iranian adolescents (2010)

Variables	OR	95 % CI	P-value
Gender (boy/girl)	2.13	1.07-4.26	0.032
Age (higher age)	1.43	1.02-2.0	0.039
Education major			
Mathematics and physics	1	-	-
Empirical science	5.97	1.28-27.76	0.023
Humanities	7.40	1.52-36.03	0.013
Technical and Vocational & work and knowledge	8.36	1.94-36.11	0.004
Living with parents (no)	2.34	1.10-4.96	0.027
Having general risk taking behaviors	2.26	1.09-4.70	0.029
Smoking stage (higher stage)	2.39	1.52-3.77	<0.001
Self-esteem (higher score)	1.09	1.03-1.15	0.002
Attitude toward smoking (positive)	1.08	1.02-1.15	0.008
Previous year average grades (higher score)	1.11	0.95-1.30	0.181

There is a strong association between the adolescent age and substance abuse (16, 25). In the present study the prevalence of substance abuse significantly increased by age of students and despite very low age variability and after controlling other variables, the risk of substance abuse increased 1.43 times by increasing one year age.

Substance abuse in adolescents is as a barrier to successful academic performance and academic achievement. Smoking, alcohol and other drug users – even those who have ever used these substances - tend to have worse scores and poorer school performances than other students (26-28). Our findings showed that the mean of previous year average grades of substance abused students was lower than other students. However, after adjusting to other variables, this variable was not associated with student's substance abuse. On the other hand, our results showed that substance

abuse was related to educational major which in Iran selection of educational major strongly is associated with students grades.

Living with single parent or in divorced families can make a teen more susceptible to drug abuse in a variety of ways. Substance use in adolescents who live with a stepmother or stepfather are more than adolescents who live with both of their biological parents (29). Our results showed that the risk of substance abuse in students who do not live with both of their biological parents increased by 2.34 times. However, there are a number of studies that did not find association between substance abuse and living with both parents (15, 30).

Adolescents are more likely than adults to take risks, including experimenting with addictive substances and engaging in dangerous behaviors. Similarly to other numerous studies (15, 18, 30), the results of our study showed that having general risk taking behaviors is related to adolescent's substance abuse. Kandel and Yamaguchi (31) have argued that smoking increases the risk of onset of drug abuse. Similarly, Mohammadpoorasl et al. (15) found that the incidence rate of alcohol use and drug abuse were higher in smoker teens. Results of the present study also indicated that student's substance abuse relates to their smoking status.

Adolescents with positive attitude toward smoking and substance use and adolescents with generally negative feelings about themselves which characterized as low self-esteem are more susceptible to substance abuse. In consistent to other studies (32-35), our results showed that positive attitude toward smoking and self-esteem score is related to substance abuse in students.

The strength of present study was large sample size and representativeness of sample to 10-grade students in Tabriz. It is; however, better to note the limitations of the present study too. First, limitation of the sample to 10th grade students limits the generalizability of the results to the whole adolescents. Second, the study relied on self-report data. Although we went to great lengths to ensure confidentiality and anonymity, we had no way of assessing underreporting of substance use. In addition, our study does not include students who drop out of school which numerous studies have been showed

that the prevalence of substance abuse in these persons is more than other students (9, 36). Therefore, the estimated prevalence of substance abuse reported above may thus represent lower estimates of the actual prevalence. Finally, the cross-sectional nature of study limits the conclusions about associations between the correlates and substance abuse.

## Conclusion

Our results has shown low prevalence of substance abuse in Iranian adolescents and determined some of its associated factors. With considering the high prevalence of addiction in the Iranian adult population, longitudinal studies in adolescent's samples are suggested to determine the incidence rate of substance abuse and its related factors.

## Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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