Research Article

Tobacco, Alcohol, Substance use Patterns and Associated Risk Factors in a Representative Sample of High School Students in Corum, Turkey

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Abstract

Background: Taking measures against addictive substance would be a correct public health policy in adolescent health. The aim of this study is to determine the frequency of addictive substances use and associated risk factors among adolescent in Corum / Turkey.

Methods: The target population of this cross-sectional study has been layered based on the place and type of high school in order to determine the respective numbers of students in the sample from these layers according to their ratios within the target population. A structured questionnaire was used to collect data. Chi-square test and multivariate logistic models was used for statistical analysis and significance level was deemed to be $p<0.05$ for tests.

Results: The lifetime prevalence of smoking, alcohol consumption and drug use were 32.3%, 18.7% and 5.1%, respectively. The frequency of drug use and alcohol use during lifetime were found to be statistically increased in regular smokers as compared to others ($p<0.001$). Male gender, starting to smoke before the age of 13 and lower level education of mother have been found as a risk factor for Turkish adolescents ($p<0.05$).

Conclusion: We are of the opinion that addressing the addictive substances as a whole in prevention programs targeting at mitigating risky behaviors would be the correct approach.

Keywords: Adolescent; Student; Smoking; Alcohol use; Drug use

Introduction

Adolescence is defined as the period of life between the ages of 10 and 19, starting from the end of childhood and accepted as the transitional stage to adulthood by World Health Organization. Despite the low probability of occurrence of serious health issues in adolescence, risky health behaviors with life-long influences are often acquired within this period. Inadequate and imbalanced nutrition, tobacco and alcohol use, predisposition to violence, attempted suicide and motor vehicle injuries are risky behaviors that are frequently observed within this period. These problems lead to dramatic increases in the adult disease, disability and mortality [1,2].

Studies have indicated that the frequency of adolescent substance dependence is on the increase and has become an important health issue. Even though most commonly used addictive substances among adolescents consist of tobacco and alcohol, drug use is fairly widespread as well [3-5]. In the Global School-based Student Health Survey (GSHS) on screening the frequency of addictive substance use in students at 92 countries, it has been determined that the respective frequencies of having used tobacco and alcohol within the last 30 days range between 5 to 25% while lifetime illegal drug use ranges between 3 to 79% at Southern American countries. These ranges are between 4-17%, 4-58% and 2-37% for tobacco, alcohol and drug use, respectively in African countries [6]. Among European countries [7], the frequency of having smoked tobacco within the last 30 days is between 10-43%, the same frequency for alcohol use is 17-79% and lifetime use of illegal drugs is between 4-42%.

Risky behaviors such as tobacco, alcohol and drug use are significant risk factors for existing and future mortality, disease and disabilities (e.g., cardiovascular disease, cancers, chronic pulmonary disease, depression, violence, substance dependence, injuries, HIV/AIDS, etc.) [8-9]. Furthermore, the earlier the age of starting these risky behaviors is, the higher the levels of adulthood dependence risk and difficulty in quitting become [10-11].

Addictive behaviors and their associated problems result in a high number of public health issues in respect to physical and mental health, from which protection is possible most of the time. Therefore, the most ideal time for healthcare professionals to invest in health promotion and preventive healthcare services is during adolescence [3,12].

Determination of risk factors on the development of risky behaviors within this period is of importance for the formulation of societal and political policies towards mitigation of these risky behaviors. The aim of this study is to determine the prevalence of addictive substance use and associated risk factors among high school students in Corum Province of Turkey.

Materials and Methods

Çorum, where the study was conducted, is a province located at the Central Black Sea Region with a population of 534,578. It ranks 50th among 81 provinces of Turkey with respect to socioeconomic development index. Its major means of livelihood are agriculture and food industry [13].

Target population of the study consists of 28,520 students attending to high school in Çorum province in 2014-2015 academic years. The study power has been calculated as 80% with a margin of error for a deviation of 4% and the prevalence of having used tobacco at least once during lifetime in a similar study [14] has been calculated as 66.5% through the use of Minitab program, and the sample size has been determined to be 2574 students accordingly.

The target population of the study was layered based on the place (urban and rural) and type of school (vocational and general) in order to determine the respective numbers of adolescents in the sample from these layers according to their ratios within the target population. Schools and classrooms targeted for study were selected from 84 schools in the city and districts through a simple random sampling method. All official permits required to carry out the study were obtained from the Corum Governorate and Provincial Directorate of National Education. This study was conducted according to the ethical guidelines of the Helsinki declaration. In addition, ethics committee approval was not required because no patients were involved.

A questionnaire form was developed and the pilot study was conducted on 30 high school students at a school excluded from the sample, upon which misunderstood or incomprehensible questions were revised. Prior to the survey, all students were informed of the contents of the research and the voluntary basis of participation by reading a standard directive. The questionnaire form was given to students, who volunteered to participate in the study, for self-completion in their classrooms under the supervision of their guidance teachers.

In addition to sociodemographic questions such as age, sex, type of school, parental educational status, location of residence and economic status of family based on the subjective question "In your opinion, how is the economic status of your family?" with either "good" or "not good" as the possible answers. Questions addressing at tobacco, alcohol and illegal drug use were asked. For the illegal substances they use, if any, options including inhalant (thinner, Bally® [Bally is a glue that is commonly sniffed by Turkish youth]), cannabis, heroin, marijuana, bonsai (a synthetic cannabinoid), LSD were given in addition to an open-end answer for other substances, if any. Abogus drug (Relaktin) was included as a quality control measure. An adolescent is categorized as being a nonsmoker if he/she reports never having tried even a puff or two of cigarettes), an intermittent smoker (those who reported smoking on at least one day but not daily during the past 30 days), or a regular smoker (those who reported smoking on a daily basis in the past month).

The questionnaire forms of 80 students (3.1% of the sample), were excluded from the analyses. These included 45 students with unreliable answers and 35 students with inadequate answers.

Data were analyzed using the Statistical Package for Social

Table 1: Socio-Demographics Features of the Students (Corum/Turkey, 2015).

Characteristics		n	%
Sex (n:2494)	Male	1233	49.4
	Female	1261	50.6
Age (year) (n:2494)	15	811	32.5
	16	766	30.7
	17	566	22.7
	18 and over	351	14.1
High school type (n:2494)	Vocational	804	32.2
	General	1690	67.8
Living place (n:2494)	Urban	1353	54.3
	Rural	1141	45.7
Duration of father's education (n:2473)	≤5year	1106	44.7
	>5year	1367	55.3
Duration of mother's education (n:2475)	≤5year	1489	60.2
	>5year	986	39.8
Family economic status (n:2479)	Good	1021	41.2
	Not good	1458	58.8
Parentalsmoking (n: 2462)	Neither	1289	52.4
	Both	200	8.1
	Father or male guardian	889	36.1
	Mother or female guardian	84	3.4
Lifetime smoking	Nonsmoker	1672	67.7
	Smoker	799	32.3
Smoked in the past 30 days (n:2441)	Nonsmoker	1964	80.5
	Intermittent smoker	218	8.9
	Regular smoker	259	10.6
Drank alcohol at least once in lifetime	Never use alcohol	1987	81.3
	Ever drank alcohol	457	18.7
Drank alcohol in the past 30 days (n:2429)	Never use alcohol	2198	90.5
	Current alcohol use	231	9.5
Lifetime drug use (n:2350)	Never use drug	2222	94.6
	Ever use drug	128	5.4

Sciences, Version 22.0 (SPSS for Windows, SPSS Inc., Chicago, IL, USA).The data were expressed as arithmetic means ± standard deviation, numbers and percentages. Chi-square tests were conducted on independent variables considered as risk factors. Variables found to be significantly associated with smoking, alcohol and drug use, were included as covariates in multivariate logistic models. Statistical significance level was deemed to be p<0.05 for all tests.

Results

A total of 2494 students completed the questionnaire. The average age of the respondents was 16.2 ± 1.1 years; 49.9% were male students. Selected socio demographic features of the respondents, 54.3% of whom attend to schools at the city center, are presented in (Table 1).

Smoking

The prevalence of ever-smoking was 44.7% in male students,

Table 2: Patterns of Smoking, Alcohol, Drug Use and Associated Risk Factors in the Students (Corum/Turkey, 2015).

Characteristics		Lifetime Smoking (n:799)		Regular Smoking(past-month) (n:259)		Past 30-day Alcohol Consumption(n:231)		Lifetime Drug Use (n:128)	
		%	AOR(95% CI)	%	AOR(95% CI)	%	AOR(95% CI)	%	AOR(95% CI)
Sex*	Male	44.7	2.9(2.4-3.6)	18.7	7.1(4.8-10.6)	16.2	5.2 (3.5-7.6)	8.2	2.3 (1.5-3.6)
	Female	20.4	1 (reference)	2.9	1	3.1	1	2.9	1
Age(year)*	15	22.7	1	4.2	1	5.6	1	3.6	1
	16	30.6	0.7 (0.5-0.9)	9.8	0.5 (0.3-0.7)	8.4	0.7 (0.5-1.2)	4.4	0.8(0.5-1.5)
	17	39.4	0.4 (0.3-0.6)	14.2	0.3 (0.2-0.7)	12.3	0.4 (0.3-0.7)	7.7	0.4(03-1.7)
	18	41.3	0.2 (0.1-0.4)	18.4	0.2(0.1-0.3)	12.6	0.4 (0.2-0.7)	5.6	0.6(0.3-1.1)
	18+	51	2.9 (2.4-3.6)	17.6	7.1(4.8-10.6)	11.8	0.5(0.2-1.5)	8.2	0.3(0.1-1.1)
Duration of Mother's education*	≤5year	38.3	1.4 (1.1-1.7)	13.4	1.6 (1.1-2.2)	7.1	1.8 (1.3-2.5)	4	1.8 (1.2-2.9)
	>5year	28.5	1	8.8	1	12.9	1	7.7	1
Living place	Urban	34.3	1.4 (1.1-1.7)	10.8	1.2(0.9-1.6)	11.2	1.8(1.3-2.5)	6.8	2.0 (1.3-3.3)
	Rural	30	1	10.4	1	7.5	1	3.8	1
High school type	Vocational	39.1	1.1(0.9-1.3)	17.7	1.7(1.2-2.3)	15.7	1.7(1.3-2.4)	9.1	1.8 (1.2-2.8)
	General	29.1	1	7.3	1	6.6	1	3.8	1
Parental smoking*	At least one	38	1.6 (1.3-1.9)	12.7	1.7 (1.3-2.3)	10.8	1.5(1.2-2.2)	5.8	1.2 (0.8-1.8)
	Neither	28.1	1	8.8	1	8.1	1	4.9	1

*p<0.05

20.4% in female students (X^2=16.4; p<0.001) and 32.3% overall.

The frequency of having smoked for the first time at and before the age of 13 was 13.8% of the total sample. The prevalence of smoking was approximately five times higher in male students (22.0%) compared to female students (4.1%). The risk for smoking tobacco for the first time at and before the age of 13 was found to be 2.5 times higher in male students (p<0.001-95% CI: 1.8-3.5)

It has been determined that 10.6% and 8.9% of the adolescents are regular smokers and intermittent smokers, respectively, based on the frequency of having smoked tobacco within the last 30 days. Just over half (51.0%) of the regular smokers began smoking at before

age13, compared with all smokers, which indicated a statistically significant ratio (X^2=11.3 p<0.01)

Alcohol

While the frequency of having used alcohol at least once was determined to be 18.7%, this ratio in males (26.6%) was found to be statistically higher as compared to that of female students (11.2%) (X^2=94.2; p<0.001). Furthermore, the frequency of using alcohol at least once during lifetime was found to be statistically meaningful in comparison of first-time smokers at and before the age of 13 (47.2%) with first-time smokers at and after the age of 14 (33.9%) (X^2= 13.2; p<0.001), and comparison of vocational high school students (25.9%) with general high school students (15.4%) (X2= 38.3; p<0.001) (Table 1).

The frequency of having consumed alcohol at least once within the last 30 days was 8.9%. Upon evaluation of number of days in which alcohol was used, alcohol use for 1 to 2 days and 3 to 5 days were determined to be 45.5% and 16.0%, respectively, while the ratio of drinking alcohol daily was determined as 11.3% (Table 2).

Drug use

The lifetime prevalence of drug use was 5.4% (Table 1). The most

frequently used types of drugs were, in decreasing order, cannabis (29.7%), the glue named Bally® (28.9%), bonsai (19.5%), thinner (14.0%), heroin (11.7%), Jamaica (4.6%) and other drugs (10.9%). One in five respondents (19.5%) reported using multiple drugs. Upon evaluation of frequency of use, it was determined that 51.2% had used 1 to 2 times while 25.6% had used for 10 times or more frequently.

No effect of educational status and economic status on adolescent's use of tobacco, alcohol and drugs was noted (p>0.05). The risk factors which have been determined to effect on using tobacco at least once during lifetime, becoming regular user, having used alcohol within the last 30 days and using drug at least once during lifetime are shown in (Table 2).

Upon comparison of respective frequencies of having smoked tobacco within the last 30 days with those of having used alcohol and drugs, it was determined that the number of days in which alcohol was used within the last 30 days in regular smokers was statistically increased in comparison to nonsmokers and intermittent smokers (X2= 543.0; p<0.001). In a similar fashion, the frequency of lifetime drug use was also found to be statistically increased in regular smokers as compared to others. (X^2= 275.0; p<0.001).

Discussion

The frequency of adolescent tobacco use is a global problem despite variation across countries. While the ratios of using tobacco at least once during lifetime were determined to be 41% and 54% in USA [15] and European countries [7], respectively, the ratio determined in our study, which is 32% is lower. Even though the point prevalence is higher in male students, the increasing prevalence in female students in recent is noteworthy and troubling [15]. Male gender is a known risk factor for adolescent lifetime and regular smoking [16-17].

As well as the frequency of lifetime smoking frequency, the frequency of beginning to smoke tobacco at an early age is also high

at a concerning level. The frequency of smoking at and before the age of 13 has been found to be 22%, 15%, 9% and 13.8% in European countries, China, USA and this study, respectively [7,18,19]. Even though it is expressed in certain studies that beginning at an early age does not affect becoming a regular smoker, there are studies available that report 70% of regular smokers had started smoking at and before the age of [20]. This ratio has been determined as 51% in this study. It is also known that starting smoking at an early age increases the probabilities of smoking for a longer time, becoming a heavier smoker and nicotine addiction [21]. As those who begin smoking at and before the age of 13 develop a stronger dependence, their probability of quitting is fairly low as compared to those who begin at an older age [20]. Due to the potential of continuous prevalence increase in the pool of regular tobacco smokers at adulthood, such high ratio in beginning smoking at an early age has been evaluated as an adverse finding in respect to public health. As a result of the activities carried out in this scope, it has been determined that the ratio of smoking tobacco in population older than 15 years of age has declined in our country [22]. However, no available data on adolescent age groups has been found in this respect. Attaching particular importance to this age group and ensuing that students quit smoking before becoming regular smokers are importance in activities against smoking. The most ideal behavior expected for adolescents should be having never tried smoking.

As it has been also determined in our study, while there is an inversely proportional relationship between the frequency of adolescent smoking and the educational status of parents, it has been determined that smoker parents and urban life are directly proportional to this frequency [16,23]. We are of the opinion that low educational level of mothers may cause children to acquire inadequate or inaccurate health behaviors and the use of parents, who are the role models at home, of addictive substances may constitute an important factor in the unwanted behaviors of adolescents. Furthermore, adolescents living in the urban area can access any addictive substance and enter into settings at which such substances are available, much more easily as compared to those living in the rural areas.

A different finding in this study that has not been come across in any other study is the fact that adolescents who attend to vocational high schools have a high potential risk in regard to all of the addictive substances. Due to the fact that these schools, which deliver education in the relevant fields with the purpose of having students acquire occupations within a short period of time, are preferred by students with low levels of school success, we are of the opinion that these places with higher risk groups should be the priority in addiction prevention programs addressed at adolescents.

The frequencies of using both alcohol and drug in regular smokers have been found to be significantly high in this study as it has been determined in other study as well [24]. The dependence of a particular substance generally paves the way for using other addictive substances as well. For instance, it is commonly seen in smokers to use alcohol along with tobacco and use other drugs along with alcohol [25]. Therefore, alcohol and tobacco use is considered as a gateway to drug addiction. The basic reason for this is the widespread availability of other substances in places where these substances are available [3].

Even though we have not been able to demonstrate this in this study, it has been indicated in other studies that high levels of economic status affect on use of tobacco, alcohol and drugs. These substances may be available at the homes of adolescents due to their user parents as well as access to these substances is possible owing to their capability to buy them with their own allowances despite legal preventions [26].

Alcohol use has a higher rate than other addictive substances in adolescents in several countries. While the frequency of lifetime alcohol use has been reported as 73% in USA, it has been reported to be above 90% in Northern Europe [27]. The frequency of using alcohol within the last 30 days has been found to be 16-46% at Southern American countries, 4-58% in African countries, 17-79% in European countries and 45% in USA [6,7,28]. Both lifetime use and use within the last 30 days were quite lower as compared to other studies. It has been found that while the lifetime alcohol use ratio varies between 4-65%, the frequency of use within the last 30 days is 2-28% in various regional studies within our country [29]. The fact that the data on alcohol use frequency vary among different countries or among different regions of the same country suggests that reasons may include, in addition to differences in regard to family, religion, economic status and environment; factors such as legal measures and easy access to alcohol.

The risk factors determined in alcohol use are in parallel to tobacco use. Even though male gender is perceived as a risk factor in several studies, there are studies available that report gender is not a risk factor [16,19,30]. Low levels of educational status of family, urban life and co-using tobacco and drugs with alcohol are among other important risk factors [29].

The obvious differences among countries in regard to adolescent drug use are also noteworthy. Frequency of lifetime drug use has been reported as 3-79% in South American countries, 2-37% in African countries and 4-42% in European countries [6,7]. The frequency of drug use has been determined to be 5.1% in this study. While it is pleasant news that drug use is not as common as alcohol and tobacco use, it should be remembered that it poses a dire potential hazard for adolescents and youngsters. Taking measures before it becomes widespread within the country would be a correct public health policy in respect to preventive health services.

Conclusion

It is noteworthy that the risk factors about adolescent use of addictive substances such as tobacco, alcohol and drugs are in parallel to each other. In response to this, we are of the opinion that addressing the addictive substances as a whole in prevention programs targeting at mitigating risky behaviors would be the correct approach. A contribution to solution would be societal instructive media campaigns targeting at the popular products among youngsters through prevention and control strategies with proven effect including accessibility, pricing and regulations for all addictive substances. Furthermore, it would prove useful for healthcare professionals to ask adolescents whether they use addictive substances at all opportunities and advising and encouraging on quitting if an adolescent is using such substances in respect to making use of opportunities.

Strengths and Limitations

The strengths of the study include that a relatively large sample has

been selected in a manner to represent all high school students in the province and high participation rate. As it is in several other studies, the fact that socioeconomic status and use of addictive substances of each student was determined based on only verbal statement is a limitation of this study.

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