Prevalence of Lifetime Tobacco, Alcohol and Drug Use Among 10th Grade Students in Istanbul

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ÖZET:

İstanbul'da 10. sınıf öğrencileri arasında yaşam boyu tütün, alkol ve madde kullanım yaygınlığı

Amaç: Bu çalışmanın amacı İstanbul/Türkiye'de 10. sınıf öğrencileri arasında yaşam boyu tütün, alkol ve madde kullanma yaygınlığını belirlemektir.

Yöntem: İstanbul'un 15 farklı ilçesinde 45 okulda kesitsel yapılan online kendi-bildirimli anket çalışmasıdır. Soru formu demografik verileri, ailede ya da çevrede madde kullanımı, okul yaşamı, sosyal iletişim ve tütün, nargile, alkol, esrar, uçucular, eroin, kokain, reçete edilmemiş yasal sakinleştiriciler (benzodiazepinler, alprazolam vs.) ve yasal olmayan sakinleştiricileri (flunitrazepam) de içeren madde kullanımı bölümlerini içermektedir. Analiz 4957 olguyu temel alarak yürütülmüştür.

Bulgular: Yaşam boyu en az bir kez deneme oranı en yüksek nargile kullanımındaydı (%45.4). Onu sırasıyla alkol (%34.2), sigara (%24.4), uçuşu maddeler (%4.9), benzodiazepin (%3.8), esrar (%2.9), kokain (%0.6) ve eroin (%0.4) takip etmekteydi. Eroin, ecstasy ve esrar kullanım riski erkek öğrencilerde daha yüksekti. Ayrıca verilerimiz tütün kullanımının diğer tüm maddelerin kullanım riskini arttırdığını göstermiştir.

Sonuç: Onbeş milyon nüfusu ve heterojen yapısı ile İstanbul'da halihazırdaki madde kullanım verilerini belirlemenin önemli olduğuna inanıyoruz. Bununla birlikte Türkiye'nin farklı coğrafi bölgelerini kapsayan bir çalışmanın gerekliliği de ortadadır.

Anahtar sözcükler: alkol, ergen, online anket, madde, tütün

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ABSTRACT:

Prevalence of lifetime tobacco, alcohol and drug use among 10th grade students in Istanbul

Objective: The aim of this study was to determine the prevalence of lifetime tobacco, alcohol and drug use among 10th grade students in Istanbul, Turkey.

Method: A cross-sectional online self-report survey was conducted in 45 schools from 15 districts in Istanbul. The questionnaire included sections about demographic data, substance use in family or in environment, school life, social contacts and use of substances including tobacco, hookah, alcohol, marijuana, volatiles, heroin, cocaine, non-prescribed legal tranquilizers (benzodiazepines, alprazolam etc.) and illegal tranquilizers (flunitrazepam). The analyses were conducted based on 4957 subjects.

Results: A trial at least once in life is observed mostly in hookah use (45.4%), followed by alcohol (34.2%), cigarettes (24.4%), volatile substances (4.9%), benzodiazepines (3.8%), marijuana (2.9%), cocaine (0.6%) and heroin (0.4%), respectively. The risk of heroin, ecstasy or marijuana use was significantly higher among male students. Our data also show that using tobacco or alcohol increases the risk of use of all other substances.

Conclusion: We believe that determining current substance use data in Istanbul, which has a heterogeneous structure and a population of 15 million, is very important. Nevertheless, it is obvious that a study covering different geographical regions of Turkey is also necessary.

Keywords: alcohol, adolescence, online survey, substance, tobacco

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INTRODUCTION

There are not a sufficient numbers of studies on the prevalence of smoking, alcohol, and drug use in Turkey. Since Turkey is a developing country and the vast majority of the Turkish people are Muslim, the prevalence of smoking,

alcohol consumption, and drug use in Turkey is an important addition to the scientific literature. Studies conducted up to now have included mostly research that was carried out at schools and have investigated the prevalence of alcohol and substance use¹. Nevertheless, substance use in adolescents is a risk for developing addiction²

Table 1: The prevalence of at least once in a lifetime tobacco, alcohol and drug use in surveys conducted in previous years in Istanbul

Lifetime use	Ogel et al. 2006 ^A n=3168 %	Ogel et al. 2004 ^B n=1686 %	Ogel et al. 2001 ^C n=7341 %
Tobacco	37.0	55.9	64.9
Alcohol	51.2	45.0	41.3
Benzodiazepine	3.7	4.1	3.2
Flunitrazepam	4.4	-	1.3
Marijuana	5.8	4.0	3.5
Ecstasy	3.1	2.5	-
Volatiles	5.9	5.1	8.6
Heroin	1.6	3.6	1.6
Cocaine or crack	1.1	2.7	1.2

A: Study conducted in 2004 in Istanbul. Analyses were made by removing the dummy drug from the data. Percentage of those who marked the dummy drug was 6.8% (6).

B: Istanbul data of the study conducted in 2001 in 9 provinces including Istanbul. Analyses were made by removing the dummy drug from the data. Percentage of those who marked the dummy drug was 1.9% (5).

C: Istanbul data of the study conducted in 1998 in 15 provinces including Istanbul (evaluation was made by removing the dummy drug from the data) (4)

C: Tobacco use was not separated as cigarette and hookah use in these studies

and is an important problem in terms of public health since substance use may be related to violence and crime³.

Three research studies have been conducted through employment of a similar sample and questionnaire among 10th grade students in Istanbul. These studies include the research carried out in 15 cities including Istanbul in 1998⁴, and the one conducted in 9 cities including Istanbul in 2001⁵, as well as the research carried out only in Istanbul including nine provinces in 2004⁶. The prevalence of substance use in these studies is shown in Table 1. When these values are compared to ones in Western countries, it can be observed that substance use is rather lower in Turkey than in Western countries⁷. When the research studies carried out in 2001 and 2004 were compared to each other, it was found that there was a reduction in the use of tobacco, alcohol and benzodiazepines while there was an increase in use of other substances⁶. If we consider the substance use prevalence of Ankara, which is the capital of Turkey, rates were found to be lower than Istanbul⁸.

Data related to prevalence of smoking, alcohol and drug use gain importance considering the lack of research for a long period of time and the changes that have taken in our country in recent years. Despite the presence of these studies since the early 1990's, the studies performed after 2000 are more accurate in terms of methodology. It is

also noteworthy to mention that no research in this area has been carried out since 2006. The ESPAD research (European School Survey Project on Alcohol and Other Drugs) conducted in Europe has not been carried out in Turkey since 1998. The aim of this study was to determine the prevalence of smoking, alcohol use, and substance use among 10th grade students in Istanbul Turkey, and to compare them with previous studies.

METHODS

Settings and Sample

In Turkey, elementary education begins at 7 years of age. The first 8 years of elementary education are obligatory (primary school) and students may then attend secondary school. The duration of secondary school education may vary between 3 and 5 years, due to extra years of foreign language education. Tenth-grade students in different geographical areas in Istanbul were enrolled into the study.

The sample size was determined as 5,000 taking into account earlier studies. Frequencies from 1% to 50% are within an acceptable range of accuracy with this sample size (90% power, the estimated accuracy limit of from 1% to 50%±5). Based on the experience gained from previous studies, it was estimated that factors such as non-

response, improper completion of the questionnaire or fewer students than expected would be around 15%, and the total sample size was computed to be 5750.

In the previous studies, multi-stage sampling was performed to select subjects⁴⁻⁶. Districts from both sides of the city were selected in order to provide an appropriate distribution. 15 representative districts at the time of the evaluation were elected (by choosing one from the two neighboring districts). Multi-stage sample was initially stratified according to Istanbul's 15 districts. The primary sampling units were schools, selected with a probability proportional to student enrollment numbers (45 schools from the 15 districts). Next, 1 or 2 classes within each participating school were selected systematically with equal probability sampling.

The total number of students, the total number of classes and the number of classes in each school were determined. The average class size was determined by dividing the total number of students by the number of classes. By dividing the number of questionnaires to be administered by the average class size, the cluster size according to weighted distribution (number of classes of the survey will be implemented) was determined. Sampling interval was determined by dividing the number of classes by the total number of classes where the survey would be implemented. All schools are listed alphabetically. The number of classes in the schools and the names of the schools were listed. To determine the classes to include in the study, the sampling interval was used. Other classes were skipped according to the selected sampling interval.

Districts and schools were selected from the districts and schools included in the research conducted in 1998, 2001 and 2004 to be able to make a comparison⁴⁻⁶. Cluster sampling from these districts has been done again for the present study. All students in selected classes were included in the study sample. The numbers of students in different classes were similar in different schools and districts.

Measures

The questionnaire administered in the study was adapted from questionnaires used formerly in Turkey in 1998, 2001 and 2004⁴⁻⁶. The questionnaire included sections about demographic data, substance use in family or in environment, school life, social contacts and use of substances including tobacco, hookah, alcohol, marijuana, volatiles, heroin, cocaine, non-prescribed legal tranquillizers (benzodiazepines, alprazolam etc.) and illegal tranquillizers (flunitrazepam). The questions about substance use were Did you use [substance] within the previous month and if yes, how many times?". However, questions about tobacco and alcohol were asked in more detail as "once-twice", "several times a month", "several times a week" and "every day". A drug named "relaktin" was added as a dummy drug to the survey. In socioeconomic categories, living with one or both of the parents was considered as one category and stated as "lives with mother and/or father", whereas other options were considered as one category and stated as "does not live with mother or father". School type was classified in three different categories and schools with a mixed education program were excluded from evaluation.

Procedure

The study was carried out between October 2012 and December 2012. The study was done online. A website was prepared for this purpose. The Ethical Committee of the hospital approved the study. A research assistant was assigned for each school included in the study. Research assistants from 45 schools were given training on how to participate in the study and they conducted the study independently from the school. The study protocol was thoroughly explained to students by these research assistants. The sampled students were asked to fill out the form within the web site wherever they felt comfortable doing so. Thus, it was optional to fill out the form at home or school. Questionnaires in

the system were completed anonymously. Informed consent was approved by students by clicking the link on the web site. A written consent of parents was required to approve their child's participation in the study. In the online system, it was not allowed to leave the questions blank; however students who wished not to answer the questions were allowed not to answer and leave the program without completing the questionnaire.

To prevent the possibility of filling out the questionnaire more than once by the same student, some measures were taken. Cases were only able to get a single ID and they were gave it to teachers. Teachers reported the number of students, who had participated in the study and stated that the work was finished in their school by e-mail. Thus, participating students could not create multiple identities.

The overall response rate was close to 96%. From those who responded (n=5383), the participants who completed less than 90% of the survey (7.6%) were excluded from the analysis. Out of the remainder (n=4973), the ones who answered the question "Would you declare that you used marijuana if you participated this survey?" negatively despite reporting marijuana use (0.3%) and the ones who reported dummy drug (relaktin) use (1.2%) were also excluded from the analysis. Thus, the analysis was conducted based on the remaining 4899 subjects and the response rate of the analytical sample was 91%.

Statistical Methods

When the risk of economic status on substance use was evaluated, those who defined their economic status as "medium" were removed from the evaluation and those who defined their economic status as "bad" and "good" were included for statistical analysis in order to sharpen the differences between categories.

Those who answered the question "How difficult is it to find the drug for you or your friends?" by marking the "I do not know" option (53%) were eliminated from the evaluation of

"accessibility of substances". The presence of one problem due to alcohol use was accepted as arising from problems due to alcohol use among parents and siblings. The presence of one user in the social circle was accepted as the "presence" of a user in the social circle.

The statistical package SPSS 11.5 (SPSS Inc., Chicago, IL, USA) for Windows was used for all the analyses. Odds ratios and 95% confidence intervals were calculated. The Chi-square test was used to compare the prevalence rates with respect to gender. For all statistical analyses, p values were 2 tailed, and differences were considered significant at $p < 0.05$.

RESULTS

Table 2 shows the socio-demographic characteristics of the cohort. The ratio in terms of genders in the sample was almost equal. The majority of students have three or fewer siblings, live with their parents and study in government schools. These findings are coherent with the population distribution for this age⁹.

The prevalences of tobacco, alcohol and other substance use in high school students are shown in Table 3. A trial use at least once in life is observed mostly in hookah use (45.4%). Hookah is

Table 2: Socio-demographic characteristics of the sample

	n=4899	%
Age (years; Mean±SD)	16.54±2.72	
Gender		
Female	2333	47.6
Male	2566	52.4
Number of siblings		
3 or less	4476	91.4
4 or more	423	8.6
Economic status*		
Poor	213	4.4
Medium	2658	54.3
Good	2028	41.3
Status of living with parents		
Lives with mother and/or father	4840	98.8
Does not live with mother or father	59	1.2
School type**		
State	4657	95.1
Private	139	2.8

SD: Standard deviation, *Economic status was self-assessed by the students, **Schools with mixed status was removed from the evaluation.

Table 3: Prevalence of use of tobacco, alcohol and substances

	At least 1-2 times use in lifetime						χ^2	P
	Female		Male		Total			
	n=2333	%	n=2566	%	n=4899	%		
Cigarette	499	21.4	698	27.2	1197	24.4	22.37	<0.001
Hookah	911	39.0	1314	51.2	2225	45.4	72.88	<0.001
Total tobacco	1052	45.1	1421	55.4	2473	50.5	51.72	<0.001
Alcohol	789	33.8	913	35.6	1702	34.2	1.67	0.20
Substance other than alcohol and tobacco	225	9.6	264	10.3	489	10.0	0.56	0.45
Legal tranquilizers	97	4.2	89	3.5	186	3.8	1.59	0.21
Illegal tranquilizers	22	0.9	48	1.9	70	1.4	7.47	0.006
Marijuana	31	1.3	112	4.4	143	2.9	39.75	<0.001
Ecstasy	13	0.6	46	1.8	59	1.2	15.68	<0.001
Volatile substance	122	5.2	120	4.7	242	4.9	0.80	0.37
Heroin	3	0.1	18	0.7	21	0.4	9.40	0.002
Cocaine or crack	8	0.3	22	0.9	30	0.6	5.31	0.02
Unknown substance, drug, pill	35	1.5	39	1.5	74	1.5	0.01	0.96

Table 4: Risk of lifetime use of tobacco and alcohol considering gender, economic status, school type and tobacco and alcohol use

	Male gender OR (95% CI)	Poor economic status* OR (95% CI)	Not living with parents OR (95% CI)	School Type OR (95% CI)	Tobacco OR (95% CI)	Alcohol OR (95% CI)
Cigarette	1.37 (1.20-1.57)	1.51 (1.13-2.03)	2.47 (1.47-4.15)	NS	-	5.15 (4.48-5.92)
Hookah	1.64 (1.46-1.84)	NS	NS	0.43 (0.29-0.62)	-	4.88 (4.29-5.54)
Total tobacco	1.51 (1.35-1.69)	1.39 (1.05-1.83)	1.93 (1.12-3.31)	0.51 (0.36-0.72)	-	5.53 (4.84-6.31)
Alcohol	NS	NS	1.96 (1.17-3.28)	1.44 (1.02-2.02)	5.53 (4.84-6.31)	-
Legal tranquilizers	NS	2.32 (1.38-3.90)	4.74 (2.30-9.80)	NS	4.00 (2.79-5.74)	2.65 (1.97-3.56)
Illegal tranquilizers	2.00 (1.21-3.33)	4.27 (2.21-8.25)	10.21 (4.46-23.35)	NS	10.72 (4.63-24.79)	8.49 (4.63-15.55)
Marijuana	3.39 (2.27-5.07)	2.08 (1.13-3.81)	4.66 (2.08-10.44)	NS	28.62 (11.7-69.97)	14.96 (8.98-24.9)
Ecstasy	3.26 (1.76-6.05)	3.55 (1.66-7.57)	8.21 (3.16-21.32)	NS	10.81 (4.32-27.07)	17.00 (7.33-39.85)
Volatile substance	NS	NS	NS	NS	3.90 (2.85-5.34)	3.45 (2.64-4.51)
Heroin	5.49 (1.61-8.65)	7.02 (2.55-9.34)	14.35 (4.11-50.11)	NS	19.77 (2.65-7.44)	8.05 (2.71-3.97)
Cocaine or crack	2.51 (1.12-5.66)	3.43 (1.19-9.92)	13.47 (4.55-39.88)	NS	6.43 (2.24-18.46)	4.43 (2.02-9.68)
Unknown agent, drug, pill	NS	3.14 (1.54-6.39)	6.40 (2.49-16.50)	NS	2.88 (1.71-4.87)	3.76 (2.32-6.11)

NS: Non-significant, OR (95% CI): Odds Ratio (95% confidence interval)

followed by alcohol (34.2%) and cigarettes (24.4%). Use of tobacco as hookah and cigarettes was found to be 50.6%. The prevalence of any substance use other than tobacco and alcohol was 10%. The use of volatile substances (4.9%) was the highest while the prevalence of benzodiazepine (3.8%) and marijuana (2.9%) use followed the use of volatile substances. Heroin (0.4%) and cocaine (0.6%) were the substances with the lowest prevalence of lifetime use. The prevalence of those who stated that they had used a drug, substance or pill that they did not know at least once in their lifetime was 1.5%.

The ratio of those who stated that they used cigarette "a few times a month" was 2.7%, whereas the prevalence of those who selected the answer "several times a week" was 1.8% and the prevalence of those who said "everyday" was

found to be 5.6%. These ratios were 15.8%, 2.3% and 0.9% for hookah, respectively and 12.7%, 1.7% and 0.9%, for alcohol, respectively.

The prevalence of those who stated that they had used substances more than 5 times in a lifetime was 0.8% for volatile substances, 0.6% for marijuana, 0.4% for benzodiazepines, 0.3% for flunitrazepam, 0.3% for ecstasy and 0.1% for heroin and cocaine.

Risk for lifetime use of alcohol, benzodiazepines, volatile substances and unknown substances did not differ significantly between the genders (Table 3). However, risk for lifetime use of all other substances was found to be higher in male students. Risk for lifetime use of heroin, ecstasy and marijuana were significantly higher in male students than in female students.

Our data shows that use of tobacco or alcohol

Table 5: The effect of substance accessibility and use of substance in the social circle risk on use of tobacco, alcohol and other substances

	Total sample n	%	Tobacco OR (95% CI)	Alcohol OR (95% CI)	Any substance** OR (95% CI)
Hard accessibility of substance ^a	1375	94.8	0.20 (0.16-0.24)*	0.18 (0.15-0.21)*	0.15 (0.11-0.20)*
Problems due to alcohol use of parents ^b	406	8.3	1.62 (1.31-1.99)*	1.57 (1.28-1.93)*	1.68 (1.26-2.24)*
Problems due to alcohol use of siblings ^b	326	6.7	1.54 (1.23-1.94)*	NS	1.94 (1.43-2.63)*
Use of substance in social circle ^c	580	11.8	5.99 (4.77-7.52)*	3.88 (3.24-4.65)*	6.63 (5.37-8.17)*

* Statistically significant, OR (95% CI): Odds Ratio (95% confidence interval), **other than tobacco or alcohol

a: Those who have answered the question "How difficult is it to find the drug for you or your friends?" by marking the "I do not know" option (53%) were eliminated from the evaluation

b: Presence of one problem due to alcohol use was accepted as the rising of problems due to alcohol use

c: Presence of one user in the social circle was accepted as the "presence" of a user in the social circle

increases the risk of use of all other substances (Table 4). The risk of marijuana use was 28.6 times higher while the risk of heroin use was 7.19 times higher and the risk of ecstasy and illegal tranquillizer use was about 10 times higher in those using tobacco compared to the students, who had not used tobacco. The risk of ecstasy use was 17 times higher while risk of marijuana use was 14.9 times higher and the risk of illegal tranquillizer use was about 8.5 times higher in students using alcohol than students, who stated that they had not used alcohol.

Students who defined their economic status as "bad" had significantly higher risk of using tobacco, drugs and other substances except volatile substances, alcohol and hookah compared to those who stated their economic status was "good". The risk of use of cigarettes, alcohol and other substances in those who defined their economic status as "bad" was higher than those who defined their economic status as "good". The only exception was for volatile substances, which showed no difference. Hookah use in private schools was lower than that in public schools, while the risk of alcohol use in private schools was higher compared to public schools. There were no differences between the types of schools for other substances (Table 4).

The percentage of those who stated that finding substances is easy for them was 5.2%. The risk of accessibility to substances was higher in those, who had been using tobacco or alcohol (Table 5). Access to a substance was 10 times

easier for students who stated that they had tried any substance.

The prevalence of students who stated that their parents used alcohol frequently was 8.3%; and the risk of cigarette, alcohol and substance use in those students was higher. This finding is similar in those who stated that their siblings used alcohol frequently. Around one-tenth of the students who participated in the survey stated that there was substance use in their social environment. The risk of use of cigarettes, alcohol and substances among those who stated that there was substance use in their social environment was high (Table 5).

DISCUSSION

The rate of those who stated that they used the dummy drug during the survey, nonparticipation and non-response was very low. Given this situation, it can be concluded that the survey had a satisfactory level of reliability.

Although the results were not compared through the same data set, since a similar sample and a similar questionnaire were used in the present study as in the previous ones carried out in Istanbul in the years of 1998, 2001 and 2004, discussing substance use trends over time can be considered more reliable. The only difference in this study from the others is that it was conducted through an online system. Studies have showed that similar results have been obtained in online research compared to paper-and-pencil

applications and mail responses¹⁰. For these reasons, we believe that this study can be compared with the previous studies. Finally, using data of 2010, a recent study conducted in Istanbul reported similar substance use rates as the present study among youth aged between 14 to 18¹¹.

The results suggest that hookah use is occasional (a few times a month, 15.8%) rather than being a daily behavior (everyday, 0.9%). This is in contrast with the use of cigarettes, where more students smoke cigarettes daily (5.6%) but not occasionally (2.7%). When the prevalence of tobacco use obtained in this study was compared to previous studies, it was observed that the prevalence of the use of tobacco in the form of cigarettes has decreased. However, when the use of a hookah was evaluated together with cigarettes, it was observed that tobacco use had a higher prevalence compared with the research conducted in 2004 and a lower prevalence when compared with the studies conducted in 1998 and 2001⁴⁻⁶. Unfortunately, tobacco use was not separated with respect to cigarette or hookah use in these studies, which makes comparison of the present results with the previous ones impossible. Hookah use, also known as a waterpipe or narghile, has been identified as an emerging threat to public health¹². In recent years, as a government policy, indoor cigarette smoking has been restricted in Turkey, whereas there is no restriction on hookah use. Thus, operators of hookah lounges may have seen this as an opportunity to enlarge their business. It can also be said that in recent years, efforts to prevent tobacco use among young people generally had an effect but rates in the tobacco trial did not change¹³.

It can be said that the prevalence of alcohol use at least once in a lifetime has decreased in the last decade. The prevalence of alcohol use has decreased to that of 1998. Although there is no scientific evidence to explain this situation, the presence of a conservative government in our country in the last 10 years can be considered as a factor.

The prevalence of use of all substances other than tobacco and alcohol is lower compared to the previous studies. Schools have had structural changes over the years⁹. Thus, although we considered the sample to be similar to those of previous studies, we also observed that there was a change in the type of the schools whereby some became “super” schools, which only accept successful students without behavioral problems. Research has revealed that the type of the school is an important factor in the prevalence of substance use¹. Currently, the most commonly used substances are volatile substances. Easy and affordable access¹⁴ compared to other substances can be said to increase the use of volatile substances. The estimates of use vary quite dramatically for some substances between the years and there is not a stable pattern. Changes of the population in the schools may be one reason for this problem because school types in Turkey have been changed frequently by the Ministry of Education, which may cause a bias in the results.

When compared to Europe and North America, the ratio for the use of alcohol and substances (other than alcohol) in Istanbul was much lower^{7,15,16}. The prevalence of alcohol and substance use is higher in neighboring countries of Turkey, such as Georgia and Greece, than in Istanbul¹⁵. When compared with Iran, the use of heroin and opium is lower in the present study while the use of marijuana and alcohol is higher¹⁷. The prevalence rates of substance use other than alcohol are similar to the results of some of the research carried out in African countries¹⁸⁻²¹. All these findings indicate the differences between cultures, reinforcing the importance of researching the prevalence of tobacco, alcohol and drug use in every culture.

It has been observed that tobacco, alcohol and drug use of students increased in cases where alcohol and drug can be easily accessed or if the family has been using alcohol and/or a drug. This finding is compatible with the literature²². It is well known that substance use of the parents is significantly related with substance use of an adolescent²³. Moreover, both peer pressure and

peer substance use are significantly related to adolescent substance use²⁴. Our data suggests the need for secondary prevention practices for the groups at risk. We believe that secondary prevention is an important method of prevention for a country like Turkey, which does not have the vast resources that are required for primary prevention.

The risk of drug use among men was higher than that of women in the previous studies, whereas the risk of use of alcohol, benzodiazepines, volatile substance and unknown agents were found to be similar²⁵ in this study. This finding can be considered to be an indication of the fact that women are entering environments where drugs are used and therefore the risk of drug use has become higher in this gender. So far, drug use characteristics, prevention and treatment programs have been designed for the male population^{26,27}. As a result of our findings, the necessity of having these programs available for both genders has emerged.

It has been indicated in many studies that socioeconomic status and the type of the school are important in terms of the prevalence of drug use²⁸. It is remarkable that in our study, drug use is more common in those who indicated their economic situation to be “bad”. In the study conducted in 2001⁴, drug use in high-income groups were found to be higher than that in low-income groups; however in the study carried out in 2004⁵, it was found that both income groups did not differ in terms of the prevalence of drug use. These findings reveal that the prevalence of drug use among young people at a low socioeconomic level has increased over the years. Similarly, although the prevalence of drug use was higher in private schools previously, no difference has been found between private and public schools after 2001 in terms of the prevalence of drug use. As such, it would be helpful if prevention programs focus on groups of low socio-economic level.

This is the first online survey study conducted in Turkey. Previous studies have suggested a

tendency for respondents to be more self-disclosing in a computer-mediated format over a face-to-face interview²⁹. Nevertheless, it is not clear whether this conclusion applies to disclosing the use of substances or to Turkish students. Thus, we think that studies to compare online survey methods with traditional survey methods and to investigate compliance within our culture are needed. Methodology is the strongest point of the present study, as it employs an adequate sample size and proper sampling method, whereas the main limitation was the cross-sectional nature of the study; hence, we were only able to report associations rather than definitive temporal or causal relationships. Another important limitation is that the analyses were based on self-reported data, which may lead to underestimation because of underreporting³⁰. In the previous studies⁴⁻⁶, 15 districts were chosen out of 31 districts of Istanbul. In 2008, 8 more districts were included and the number of districts reached 39 in Istanbul. Although we believe that the schools from 15 districts could still represent Istanbul, the results should be considered with caution in reference to this change. Finally, our sample was only representative for high schools in Istanbul, which limits the generalization of our results to Turkey. Similar studies need to be performed in different cities and diverse samples, including young adults and adolescents, who are not attending a college, to assess the generalization of the findings.

We believe that our research has provided important clues to the prevalence of tobacco, alcohol and drug use in Istanbul. We believe that determining current substance use data in Istanbul, which has a heterogeneous structure and a population of 15 million, is very important. Nevertheless, it is obvious that a study covering different geographical regions of Turkey is necessary. Conducting research covering adults will be beneficial to comprehend the data obtained from this research carried out with young people; therefore there is a need to conduct similar research in adults.

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