



Tobacco use among 10th grade students in Istanbul and related variables



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ABSTRACT

Aim of this study was to determine prevalence of cigarette smoking and hookah use among 10th grade students in Istanbul, Turkey, and to compare sociodemographic, psychological and behavioral variables according to frequency of tobacco use. Cross-sectional online self-report survey conducted in 45 schools from the 15 districts in Istanbul/Turkey. The questionnaire included sections about demographic data, family characteristics, school life, psychological symptoms 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 the 4957 subjects. Trial at least once in life is observed as 45.4% for hookah use and as 24.4% for cigarette use. Risk of hookah and cigarette use was significantly higher in male students than in female students. Frequency of tobacco use is related with various sociodemographic, psychological and behavioral variables. Our data also shows that using tobacco and alcohol increases the risk of all the other substances use and these effects are interrelated. The data suggest that there is a link between tobacco use and substance use, psychological, behavioral and social factors. There is also a strong association between tobacco use and suicidal behavior as well as self-mutilative, impulsive, hyperactive, delinquent, aggressive and behavioral problems. The illumination of these relationships may be relevant in prevention and management of tobacco use as well as important problems, such as substance use, impulsivity, hyperactivity, delinquent, aggressive self-mutilative and suicidal behavior among 10th grade students in Istanbul.

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1. Introduction

Although cigarette smoking declined significantly during the past 50 years, at least in North America (Dube et al., 2013), smoking continues to be the single leading preventable cause of death and disease all around the world. Smoking is a leading cause of cancer, and most of the smokers begin smoking during adolescence. Thus, preventing youth from smoking cigarette and using tobacco is critical to reduce morbidity and mortality (Dube et al., 2013).

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

prevalence of smoking cigarette and hookah use and related factors in Turkey is important in terms of scientific literature. Three researches have been conducted through employment of similar sampling and questionnaire among 10th grade students in Istanbul. These studies include the research carried out in 15 cities including Istanbul in 1998 (Ogel et al., 2001), and the one conducted in 9 cities including Istanbul in 2001 (Ogel et al., 2004) as well as the research carried out only in Istanbul including the nine provinces in 2004 (Ogel et al., 2006). The prevalences of lifetime tobacco use were 64.9%, 15.6% and 37.0%, respectively, in these studies. Thus, although rate of alcohol and illegal substances use are rather lower in Turkey than in Western countries (Hibell et al., 2012; Conway et al., 2013; Gamkrelidze et al., 2010), tobacco use seems to be similar problem in Turkey with these Western countries (Hibell et al., 2004; The Information Centre for Health and Social Care, 2010; O'Cathail et al., 2011; Conway et al., 2013). When the researches carried out in 2001 and 2004 in Turkey were compared with each other, it was found that there was a reduction in the use of tobacco (Ogel et al., 2006). All these findings indicate

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the cultural differences and time intervals between studies. Thus, it is important to research the prevalence of tobacco use in each and every culture and to repeat these researches.

Youth smoking behaviors are a result of combination and interaction of individual or intrapersonal, social context, and broader societal influences. Intrapersonal factors that are known to be associated with current smoking include being older (Leatherdale and Burkhalter, 2012; Kaai et al., 2013), consuming alcohol or illicit drugs (Leatherdale and Burkhalter, 2012; Leatherdale et al., 2008; West et al., 2010; Kaai et al., 2013) and low school connectedness (Sabiston et al., 2009; Kaai et al., 2013). The social context influences mainly include siblings or close friends who smoke (Kaai et al., 2013).

For adolescents, middle or secondary/high school is a high-risk period for substance use and other high-risk behaviors (Witt, 2010). Substance use is a problem that exists in schools worldwide, including in developing countries such as Turkey. Substance use, including tobacco and alcohol have been found to significantly predict various delinquent-type (Carney et al., 2013) and often violent behaviors in a number of studies, including engagement in physical fights (Ferguson and Meehan, 2010; Kuntsche et al., 2007; Shawn and Donovan, 2005), bullying (Kuntsche et al., 2007) and carrying weapons (Ferguson and Meehan, 2010; Goebert et al., 2004). Drug use has also been found to precede truancy from school (Hallfors et al., 2006; Henry, 2007).

Frequent and early tobacco use in adolescence is strongly associated with harmful use in adulthood, morbidity and early mortality (Perra et al., 2012). Data related to prevalence of tobacco use and related variables are lacking in Turkey. Also evaluation of tobacco use and related variables in Turkish 10th grade students may help to understand regional differences when compared to other studies conducted in Western countries. We aimed to determine the prevalence and the associated substance use, psychological, behavioral and social factors of tobacco use in 10th grade students, which may represent city of Istanbul.

2. Methods

2.1. Settings and sample

In Turkey, elementary education starts at 7 years of age. The first 8 years of elementary education is 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 5000 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% \pm 5). Basing on the experience gained from previous studies, it was estimated that factors such as non-response, improper filling or less number of students than the expected amount would be around 15%, and the total sample size was computed as 5750.

Multi-stage sampling was performed to select subjects. Multi-stage sample initially stratified according to the 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. All students in selected classes were included into the study sample. Districts and schools were selected from the districts and schools included in the researches' conducted in 1998, 2001 and 2004 to be able to make comparison (Ogel et al., 2001, 2004, 2006).

2.2. Measures

The questionnaire administered in the study was adapted from questionnaires used formerly in Turkey in 1998, 2001 and 2004 (Ogel et al., 2001, 2004, 2006). The questionnaire included sections about demographic data, family characteristics, 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 questions about substance use were "did you use [substance] within 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".

The only difference of this study from the rest is that it was conducted through an online system. Studies show that similar results are obtained in online researches compared to paper-and-pencil applications (Butler et al., 2001). For these reasons, we believe that this study can be compared with the previous studies.

2.3. Procedure

The study was carried out between October 2012 and December 2012. The study was made online. A website has been prepared for this purpose. The Ethical Committee of the hospital approved the study. A research assistant has been assigned for each school included in the study. Research assistants from 45 schools were given an education for how to participate in the study. The study protocol was thoroughly explained to students by these research assistants. The sample students were asked to fill out the form within the web site. Questionnaires in the system were filled in anonymously. Informed consent was approved by students by clicking the link on the web site. In the online system it is not allowed to leave the questions blank however the student who wishes not to answer the questions were allowed not to answer and leave the program without filling the questionnaire.

The overall response rate was close to 96%. From those who responded ($n = 5383$) the ones who filled less than 90% of the survey (7.6%) were excluded from the analysis. From remaining ($n = 4973$) the ones who answered the control question "Would you declare that you used marijuana if you did in this survey?" negatively while reporting marijuana use (0.3%) were excluded from the analysis. Thus, the analysis was conducted based on the remaining 4957 subjects.

2.4. Statistical methods

The statistical package spss 11.5 (SPSS Inc., Chicago, IL, USA) for Windows was used for all the analyses. Categorical variables were compared by means of the χ^2 statistics. Multivariate analysis (two way ANCOVA) on substance use as dependent variables, and tobacco and alcohol use as main factors (Gender as covariate) was conducted. For all statistical analysis, P values were 2 tailed, and differences were considered significant at $p < 0.05$.

3. Results

The socio-demographic characteristics of the cohort were mentioned in more detailed elsewhere (Evren et al., 2013). 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 age (Ministry of National Education, Republic of Turkey, 2012).

Table 1 shows the frequency of smoking cigarette, hookah use and tobacco use in general (when smoking cigarette and hookah

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