

## Article

# Factors associated with adolescents' smoking experience and staying tobacco free

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## ABSTRACT

**Introduction** It is not expected that those who did not smoke during their adolescent years will start to smoke later in life. This study was planned to learn the thoughts of Turkish adolescents about staying tobacco free.

**Methods** A descriptive study was conducted in 2007 with 866 adolescents aged 11 to 14 years. On a self-administered questionnaire, non-smoker students answered both multiple choice and open-ended questions about why they would not smoke in the future. The Chi-square test and logistic regression analysis was used for statistical assessment. For the answers to the open-ended questions, thematic analysis was applied.

**Results** The mean age of the participants was  $12.84 \pm 1.14$  years. The incidence of a smoking experience at least once in the participant's lifetime was 12% and the rate of current smoking was 3.6%. The most listed reasons for staying tobacco free were health problems directly related to smoking (64%), such as 'it can cause diseases' or 'it kills', negative effects of smoking other than health (51%), such as 'it smells bad' or 'it is toxic',

and some subjective judgements related only with their self perceptions, such as 'I am happy and healthy' or 'it affects growth negatively' (20%).

The most well-known problem related to tobacco use was lung cancer and the least well-known problems were bladder cancer and chronic bronchitis. Most of the smoking students (68%) were not aware that second-hand smoking was harmful ( $p=0.003$ ). There were significant correlations between smoking experience and male gender, having a smoker in the household and low educational level of the mother or the father ( $p=0.000$ ,  $p=0.018$ ,  $p=0.022$ ,  $p=0.044$  respectively).

**Conclusion** We suggest that the beliefs and perceptions of adolescents about smoking should be given as much consideration as the negative effects of cigarettes in planning smoking free messages.

**Keywords:** adolescent health, health education, perceptions, prevention

## Introduction

In Turkey, as in the rest of the world, most smokers start smoking during adolescence.<sup>1-7</sup> It is not expected that those who have not smoked during their adolescent years will start smoking later.<sup>8,9</sup>

Adolescence, with its inquisitive and adventurous nature, is a risky period for the first experience with tobacco products. It is well known that people who start smoking during adolescence and carry on

smoking regularly have 20 to 25 years less life expectancy than their non-smoker peers.<sup>10</sup> This period is very important because efforts to prevent or delay smoking initiation can be effective during this period.<sup>11,12</sup> Smokers not only damage their own health, but also interfere in the health of others by second-hand smoke exposure. In the Global Adult Tobacco Survey (GATS) Turkey report, which systematically monitored adult tobacco use, it was reported that 31.2% of adults (approximately 16 million) currently smoke tobacco, 47.9% of men, 15.2% of women. Of adults, 59.7% (approximately 30.5 million) live in homes where smoking is allowed, including 19.5 million non-smokers, and the average age of starting daily smoking is 16.9 years.<sup>13</sup> Smoking is therefore considered to be a public health issue in Turkey as it is for the rest of the world.

Reasons for smoking include a wide spectrum of relevant factors: the role of gender, personal traits and social influences all contribute to the development of the smoking habit.<sup>14</sup> For many years it was believed that health education would be enough to create a smoking-free environment. Even though the dangers of smoking are better known by smokers nowadays, the power of nicotine addiction prevents them from quitting with ease.

Use of tobacco fits the definition of an addiction, including continued use in spite of harmful consequences and repeated attempts to stop, so it is important to stay tobacco free or stop smoking before it becomes habitual. Since the perceptions of young people about smoking may influence their decision to start smoking, it is important to understand the feelings of early adolescents about smoking and to know about their sources of information, knowledge and attitudes regarding smoking. In this way it may be possible to establish effective educational programmes for adolescents before they become used to smoking.

It is important to learn about adolescents' reasons for smoking or staying tobacco free for planning interventions for smoking cessation. The purpose of this study was to describe the knowledge, behaviour and attitudes of adolescents about smoking and to learn their thoughts about staying tobacco free in order to define the points which should be emphasised in an anti-smoking educational programme.

## Methods

### Study population

A descriptive study was conducted of students aged between 11 and 14 years attending the sixth to

eighth grades of five schools in a semi-urban district of Istanbul in 2007. The local ethical committee of Marmara University Faculty of Medicine approved the study. All of the students who were present in the class at the time of the survey were included.

### Study design

In this study, all of the students were informed about the study and a self-report questionnaire, including the age, sex, parental education, existence of a smoker family member living with the student, self-smoking status, smoking habits, duration of smoking, number of cigarettes daily, smoking experience at least once in the lifetime, existence of a private room at home, exposure to second-hand smoke at home and knowledge about medical conditions that are caused by tobacco, was administered to all students who were present in the classrooms and agreed to take part in the study. The students were also asked to list three hazards of smoking that they knew of. Non-smokers were also asked in an open question to give the reasons why they did not try smoking (what was the reason that kept them tobacco free?). Students participated in the study voluntarily and no personal information was recorded.

The students' smoking status was categorised as: 1 – no smoking, 2 – occasional smoking, 3 – at least one cigarette every day. To determine their knowledge about tobacco use and related health problems, the students were requested to write 'yes' or 'no' in the space beside each item in a list including lung cancer, bladder cancer, cancer of the larynx, mouth and lip cancer, chronic bronchitis, cardiovascular disease, cerebrovascular disease, newborn death and health problems with second-hand smoking.

## Analysis

Descriptive statistics were applied to all data and consisted of means and 95% confidence intervals (CIs) for continuous variables, and frequency distributions for non-continuous variables. A statistical software package (SPSS 11.5; Chicago, IL: SPSS) was employed to perform the overall analysis. The Chi square test was used for statistical assessment and values of  $p < 0.05$  were assumed to be significant. The factors affecting the students' smoking experience at least once and being a continuous smoker were determined by logistic regression analysis.

A thematic analysis was applied by two researchers to the answers to the open-ended questions related to participants' future attitudes. All answers were

coded by theme and an agreement about similar statements was reached by discussion.

## Results

A total of 866 students who were present in classes during the study period participated in the study. The mean age of the participants was  $12.84 \pm 1.14$  years. Table 1 presents the general characteristics of the study population.

The incidence of a smoking experience at least once in the life time was 12% ( $n=103$ ). The mean age of the first smoking experience was  $9 \pm 2.34$  years (median age = 9.5). The youngest age for the first smoking experience was seven.

There was a significant relation between smoking experience and male gender, having a smoker in the household (99.2% of the students were living with their immediate family) and low education level of

the mother or the father ( $p=0.000$ ,  $p=0.018$ ,  $p=0.022$ ,  $p=0.044$  respectively). According to the logistic regression results, male sex, existence of a smoker in the household and the low education level of the mother were factors increasing the risk of smoking experience (Table 2).

Sixty students who had smoked at least once indicated the following reasons for this experience: 63.3% ( $n=38$ ) curiosity; 15% ( $n=9$ ) imitation; 10% ( $n=6$ ) friends' influence; 10% ( $n=6$ ) social environment influence; 6.67% ( $n=4$ ) influence of advertisements; 3.33% ( $n=2$ ) someone smoking at home; 3.33% ( $n=2$ ) influence of movies.

Twenty-seven (3.6%) of the 781 students who answered the question about their smoking status mentioned that they still smoke at least one cigarette daily. The mean age of these current smokers was higher than that of the non-smokers ( $14 \pm 2.54$  versus  $13 \pm 1.14$ ,  $p=0.001$ ). Most of the current smokers were male ( $n=23$ ,  $p=0.001$ ). Of the students, 74.1% mentioned that there was at least one smoking person in their household and 43.3% declared that they were exposed to second-hand smoking at home. There was a significant relation between the student being a smoker and having at least one smoker family member living with them ( $p=0.036$ ). The percentage of students who had their own bedroom was 60.4% – 78.6% for the smoking students ( $p=0.048$ ). A binary logistic regression (LR) analysis was performed for the factors affecting smoking. All factors associated in the univariate analysis were included (gender, age, having own bedroom, having a family member who smoked). The backward LR method was used for the regression and age was found to be the one risk factor to smoking experience ( $p=0.027$ , OR: 1.517, 95% CI: 01.049–2.194).

The answers to the 'three hazards of smoking' question are summarised in Table 3. The most known problem related to tobacco use was lung cancer and the least known were bladder cancer and chronic bronchitis (Table 4). Girls were more likely than boys to know that tobacco is related to bladder cancer and chronic bronchitis ( $p=0.001$ ,  $p=0.003$ ) but there was no difference between the girls and boys about the other issues related to smoking. Most of the smoker students (68%) didn't know that second-hand smoking was harmful ( $p=0.003$ ). Most of the 683 students (90%) who declared that lectures were given about smoking during school hours also mentioned that second-hand smoking was harmful, but those who were unaware of the anti-smoking education didn't know about the dangers of second-hand smoking ( $p=0.010$ ).

**Table 1** General characteristics of the study population ( $n=866$ )

Characteristics	%
Sex	
Boy	49.6
Girl	50.4
School grade	
6th	37.9
7th	29.5
8th	32.6
Educational status of mother	
Illiterate	12.9
Literate without school graduation	7.45
Primary school graduate	57.0
Secondary school graduate	13.6
High school graduate	8.2
University graduate	0.9
Educational status of father	
Illiterate	2.4
Literate without school graduation	5.5
Primary school	46.4
Secondary school	25.3
High school	15.2
University	5.3
Current smoker	3.6
Existence of a smoker in the household	74.1
Exposed to second-hand smoking	43.3

**Table 2** Smoking experience among students and associated factors (logistic regression analysis)

Characteristics	Who had experienced smoking	Who had never experienced smoking	<i>P</i> $\chi^2$ test	<i>P</i> *	OR	CI
Sex			<0.001	0.001	2.374	1.404–4.014
Boy	67.7%	47.9%				
Girl	32.3%	52.1%				
Currently having at least one smoking household member	84.7%	72.5%	0.018	0.037	2.044	1.043–4.008
Educational status of mother						
Illiterate or literate	29.6%	19.1%	0.022	0.016	1.956	1.135–3.371
Educational status of father						
Illiterate or literate	13.0%	7.0%	0.044	0.558	–	–
Smoking exposure in home	53.1%	41.8%	0.038	0.937	–	–

\* *p* after logistic regression

No significant difference was found between the educational state of the parents of the smoker and non-smoker students. Knowledge about the harmful effects of second-hand smoking and of the cerebrovascular effects of smoking were related to the mothers' educational level. Where the duration of the mother's education had been eight years or longer, student knowledge about these two topics was significantly better ( $p=0.031$ ,  $p=0.032$ ). As father education level got higher, students' smoking exposure became lower ( $p=0.013$ ), but there was no significant relation with the mother's educational level.

The open-ended question about the factors that discouraged them from starting to smoke was answered by 478 non-smoking students. The answers of the non-smoker students to the open-ended question 'What are your reasons for staying tobacco free?' are grouped and listed in Table 5. Health-related problems were listed as one reason for staying tobacco free by 64% of the participants, negative effects of smoking other than health problems were declared by 51% and some subjective perceptions/beliefs were declared by 20% (Table 5) and 14% declared reasons other than health.

## Discussion

The aim of this study was to describe the knowledge, behaviour and attitudes of adolescents about smoking and the beliefs and perceptions that encouraged them to remain non-smokers. The results have demonstrated the following: 1 – current cigarette smoking prevalence is low among the adolescent participants but the rate of smoking experience at least once and exposure in the home is high; 2 – smoking experience of at least once at any age is related to low educational status of the parents; 3 – age is related to smoking; 4 – reported expressions about the harmful effects of cigarette smoking were mainly about respiratory tract disease; 5 – in addition, the negative effects on health were the most common reasons that discouraged students from starting to smoke, although external pressure, self-perceptions and beliefs about a healthy lifestyle were presented as well.

In our study 12% of the participants had experienced smoking at least once and 3.6% were current smokers. These rates are lower than both the World Health Organization (WHO) Global Youth Tobacco Survey (GYTS) European report where the corresponding rates were 32% and 17.5% and Warren *et al's* study in which the rates were 19.7% and 8.9%

**Table 3** Most frequently mentioned hazards of smoking

Hazards of smoking	Non-smokers ( <i>n</i> = 819)	Smokers ( <i>n</i> = 27)	Examples from students' statements classified together
Respiratory tract diseases/problems	441 (53.85%)	11 (40.74%)	Can cause: lung cancer pulmonary disease bronchial asthma bronchitis dyspnoea cough respiratory tract infection it may be decaying on lungs
Cancer (without focusing on any organ or system)	376 (45.91%)	15 (55.56%)	Cancer or it may cause cancer
Effects on general health status	374 (45.67%)	11 (40.74%)	It is harmful to health May cause several diseases It effects the body with respect to ageing May cause fatigue, weakness
Cardiovascular system diseases/problems	247 (30.16%)	9 (33.33%)	It can lead to: obstruction of blood vessels heart disease lower limb amputation stroke
Death	237 (28.94%)	13 (48.15%)	It kills
Other organ/system problems	199 (28.94%)	4 (14.82%)	It can cause: cancer of the larynx dermatological disease yellow teeth hepatic cancer it decreases sexual activity
Social and environmental hazards	178 (21.73%)	2 (7.41%)	It is harmful for other people It may lower my school success It may cause economic loss It negatively affects my relation with the other family members It may damage friendships
Sin	7 (0.85%)	–	It is a sin
Reasons not related with smoking	17 (2.08%)	3 (11.11%)	It can cause: tuberculosis AIDS diabetes mellitus tetanus

respectively among the subjects at ages 13 to 15.<sup>15,16</sup> Ögel *et al* studied school children aged between ten and 12 in nine Turkish cities and reported that 16.1% of the students had experienced smoking at

least once.<sup>17</sup> In a representative study in Turkey, Ergüder *et al* reported that about one-third of students between 13 and 15 years had already experienced smoking and ten percent were current

**Table 4** Students' knowledge about tobacco related diseases

Tobacco related diseases	It does cause (%)	It does not cause (%)	No answer (%)
Lung cancer	88.5	1.7	9.8
Second-hand exposure	83.8	10.0	6.1
Cardiovascular disease	80.1	5.4	14.4
Newborn death	69.2	12.8	18.0
Cerebrovascular disease	64.4	14.4	21.1
Cancer of the larynx	63.2	15.4	21.5
Mouth-lip cancer	57.5	19.1	23.4
COPD	46.5	25.8	27.7
Bladder cancer	37.8	33.4	28.9

COPD: Chronic obstructive pulmonary disease

**Table 5** Non-smokers' reasons for staying tobacco free\*

Health problems directly related with smoking (64.44%)		
Harmful for health	151 (31.59%)	It is harmful for health
Death	52 (10.89%)	It can kill
Cause of some diseases	42 (8.79%)	May cause several diseases It can be hazard for other persons It can cause addiction It can lead several diseases It can lead to heart diseases It can cause stroke
Respiratory tract diseases/problems	38 (7.95%)	It can cause: Lung cancer Pulmonary disease Bronchial asthma Bronchitis Dyspnoea Respiratory tract infections Cough It may cause decay of the lung
Cancer	25 (5.23%)	It leads to cancer It leads to lung cancer, bladder cancer etc.
Negative effects of smoking other than health problems (50.84%)		
About tobacco	69 (14.44%)	It smells bad It is poisonous It is toxic
Influences on friendship	65 (13.59%)	If I did not communicate with bad friends I would not smoke

**Table 5** Continued

Family guidance/advice	63 (13.18%)	Family or parent (father) advises non-smoking My teacher/my father told me that smoking is very bad If my parents take care of me I don't smoke
Parental non-smoking status	21 (4.39%)	If there was no one smoking in my family . . .
Economic burden	9 (1.88%)	It costs too much for me It is a waste of money
Bad experience	5 (1.05%)	I observed a patient who has a smoking related disease I have a relative who died due to smoking
Impact on school performance	4 (0.84%)	It frustrates my educational success
Replacing activities	4 (0.84%)	If I chew gum I don't smoke If I listen to music/read books/eat sunflower seed or chocolate I don't smoke
Sin	3 (0.63%)	It is sin
<b>Self-perceptions and beliefs (20.08%)</b>		
Positive health perception (healthy lifestyle activities)	54 (11.29%)	I am happy, and healthy I love life I mustn't smoke because of my health status I cannot pay for a poison
Judgement	33 (6.90%)	I don't like it Nothing would make me smoke
Effect on appearance	9 (1.88%)	It can cause ageing It can destroy skin It affects growth negatively

\* 129 of the students reported two reasons, 22 of them three, and three of them four reasons

smokers.<sup>18</sup> The smoking frequency in our study is lower than these earlier reports.

In our study 23 of the 103 students who had tried smoking had become current smokers. It has been reported that experimental adolescent smokers are 29 times more likely than non-smokers to become daily smokers in the subsequent six months.<sup>19</sup>

Most of the current smokers and the ones who only experienced smoking once were males. Similar results were reported in a study of students between the ages of 13 and 15 by the WHO and one of students aged 14 to 15 by Hedman *et al.*<sup>16,20</sup>

Like the GYTS data, which indicated that nearly half of those who had never smoked (46.8%) had been exposed to smoking at home,<sup>16</sup> another Turkish study from Kahramanmaras found that 42.2% of families had at least one person smoking in the household.<sup>21</sup> Second-hand smoking is an important problem in adolescent health. Not only is the actual exposure a health risk, but having a smoker in the

household increases the probability that an adolescent will start smoking.<sup>22,23</sup> In our study, 84.7% of the children who had had a smoking experience reported at least one smoker household member ( $p < 0.05$ ). This indicates the magnitude of the risk of adolescents starting to smoke.

Although the knowledge that lung cancer, cardiovascular disease, and some second-hand hazards can be caused by smoking was high, it is interesting that knowledge about the links between chronic obstructive pulmonary disease (COPD), bladder cancer, cancer of the larynx and cerebrovascular diseases and smoking was much lower. In a 1997 study by Emri *et al* of students aged 7 to 13 years lung cancer was most commonly identified as a smoking related disease too but the ratio was lower than in our study (43% of their students); in this study the least identified disease was stroke, with a rate of 4.5% (which was lower than in our study).<sup>24</sup> In Emri *et al's* study 68.6% of the children stated that they had been

taught by their teachers about the adverse health effects of smoking; this rate was lower than in our study (79%).<sup>24</sup> Most of the participants (68%) in our study gave a wrong answer to the question about the hazards of second-hand smoking, a finding similar to that of the Turkish study in Manisa among high-school children.<sup>3</sup>

In the present study the most frequently mentioned hazards of smoking were related to respiratory tract diseases, cancer and general health status (Table 4). We used open-ended questions about the harmful effects of smoking. This approach provided us with the issues that were best remembered by the students. The students' answers suggest that the hazards of smoking mentioned in public/school education and the warnings on cigarette boxes had already been learnt. Besides other hazards that are rarely remembered, cancer of the larynx, health problems of second-hand smoking, sexual problems etc. should also be emphasised. Our study showed that most educational endeavours in the schools focus primarily on lung disease and not on other smoking related risks (e.g. premature death, disability).

Although the main reason to stay free of smoking was the negative effect of smoking on health, 20% of the students mentioned self-perceptions and beliefs. In a similar study undertaken in Gazi University in Turkey, 95.6% of the participants who stated their reasons for not smoking answered 'since I know it's harmful to health'.<sup>25</sup> In a qualitative descriptive study made in the USA, non-smoker college students reported the following as the top reasons for not beginning to smoke: health, disgusting and smell.<sup>26</sup> These results suggest that inclusion of these subjects in educational materials may prevent some students from starting to smoke or help others to quit. However, 31.59% of the reasons put forward by the students in our study about health consisted of a general statement such as 'harmful to health'. This answer can be more deeply analysed and the meaning of the words 'harmful to health' can be explored in qualitative research. In campaigns against smoking detailed information would be more likely to impress the students. In general, it has been found that mentioning health problems has been the most effective method.<sup>27</sup> In a study among students with a mean age of 16 Ünlü *et al* reported that 55.4% of them mentioned that they do not smoke because they dislike the taste or smell of cigarettes, 30.9% of them because their parents or their teachers had warned them about the harmful effects of smoking, 9.2% of them because their parents are heavy smokers and they dislike this and 7.8% of them were afraid to smoke because close relatives had died due to tobacco related diseases.<sup>6</sup> However, those were multiple choice answers.

In our study 13.18% of the non-smokers reported that if there were parental or teacher pressure against smoking or if their parents were concerned about it they would not start to smoke. Some authors reported that the quality of the parent-child relationship and parental knowledge about how they could advise their child about smoking was directly or indirectly associated with the adolescents' smoking behaviour, whereas parental smoking behaviour had a direct effect.<sup>28,29</sup>

There are some limitations to our study: the data apply only to students in grades six to eight and do not represent the children of this age who were not attending school. The sample was drawn predominantly from adolescents who have low socioeconomic status, so the results may not be generalisable to diverse populations. The findings are based on self reports of students about their own behaviour and beliefs about smoking. This may lead to under- or over-reporting of their habits and attitudes. Further, social norms may have discouraged the students from writing about their personal beliefs even though they did not provide any personal information.

## Conclusion

While psychosocial factors do generally represent valuable predictors of future behaviour, some reasons emphasised by adolescents may help them to stay tobacco free.<sup>30</sup> The perceptions of adolescents may be very different from those of adults. So we suggest that interventions should focus on the adolescents' self-reports in order to understand their rationale for risky behaviours and to be able to make plans together. This study provides important information about adolescents' thoughts about staying tobacco free. Learning their thoughts about not smoking is informative in producing and developing strategies for anti-smoking education.

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#### ETHICAL APPROVAL

The ethical committee of Marmara University Faculty of Medicine approved this study.

#### CONFLICTS OF INTEREST

None.

#### ADDRESS FOR CORRESPONDENCE

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