



Factors associated with intent to quit tobacco use in Cyprus adolescents



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ABSTRACT

Objectives. To identify factors associated with adolescent smokers' desire to quit based on the 2006 Cyprus Global Youth Tobacco Survey.

Methods. A cluster sample design was used to select a representative sample of students from all registered middle and high schools in Cyprus with >40 students in academic year 2005–2006. Multivariable logistic regression was used taking into account the weight associated with each of the respondents.

Results. Out of the total sample with available information ($N = 12,629$), 1591 students were current smokers (weighted frequency = 14%) and were included in the analysis, with 734 (46.1%) of them reporting that they want to quit smoking. In both males and females, strong predictors of intention to quit smoking include past quit attempts and physical activity. Intention to quit is also associated with the belief that smoking is harmful to them and inversely associated with having peers who smoke, in boys, and the belief that smoking is harmful to others and perceiving smokers as less attractive, and inversely associated with pocket money, in girls.

Conclusions. The present study has identified factors that appear to influence youth's intention to quit tobacco, which is of major importance in developing successful tobacco cessation programs targeting adolescents.

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Introduction

Considering global tobacco consumption among youth, prevention policies alone are not sufficient and, as suggested by Article 14 of the WHO Framework Convention on Tobacco Control, a successful tobacco control policy should include a strategy to treat tobacco dependence through cessation efforts and medication (WHO Tobacco Free Initiative). Targeting youth for cessation has many advantages as these efforts could reach a large number of potential smokers and people are more likely to quit successfully if they have not yet developed a severe tobacco dependence and/or nicotine addiction (US Department of Health and Human Services, 1994). Also, reducing the lifetime exposure

to tobacco use lowers the risk for tobacco-induced morbidity and mortality (CDC, 1998; Doll et al., 2004).

Different factors determine cessation in adolescents compared to adult smokers, hence, specialized cessation programs are needed that will take into account predictors of tobacco use and motivators to quit. While several risk factors for youth tobacco use experimentation and initiation have been identified in the MPOWER package (WHO, 2008), including tobacco use by peers and family (Feighery et al., 1998), easy access to tobacco products, unsupportive family environment (Miller, 1997), poor academic achievement (Morin et al., 2011), and lack of self-confidence skills (US Department of Health and Human Services, 1994), less is known about youth's intentions, motivation, and abilities to quit tobacco.

In Cyprus, the Global Youth Tobacco Survey (GYTS) was conducted in 2006 and reported a weighted prevalence of current smoking of 12.7% among middle-school boys, 35.7% among high-school boys, 7.0% among middle-school girls, and 23.2% among high-school girls (Christophi et al., 2008). It was further reported that smoking peers was the strongest predictor of adolescent smoking; other predictors of cigarette smoking included having parents and grandparents that smoke, concerns about weight, access to pocket money, ease of buying cigarettes, owing an item with a cigarette logo on it, and false consensus,

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defined as thinking that half or more of the students in their class smoke (Christophi et al., 2009).

There have been attempts for implementing smoking prevention and cessation programs targeting adolescents at schools in Cyprus, such as Fred Goes to School (personal communication with the Cyprus Ministry of Education). However, these have not been developed based on actual data from Cyprus and lack both process and outcome evaluation. In order to effectively structure cessation programs, it is necessary to understand a variety of factors, such as the level of tobacco use, environmental and social aspects, and characteristics that distinguish adolescent smokers with intent to quit from those without.

Therefore, it is of paramount importance to look into how youth can be aided in their personal process to cessation and how programs can be developed that will correctly target personal, social, and environmental factors. Models exist, such as the transtheoretical model, which describe the different stages of change (Prochaska and DiClemente, 1983). The data collected through the 2006 Cyprus GYTS provide the tools and opportunity to look at this issue closely in a large sample of adolescents aged 12–17. The objectives of the present study are to identify factors that influence adolescent smokers' desire to quit and identify motivators for smoking cessation that could assist in developing effective tobacco cessation programs targeting youth and ensure sustainability of participation and increase the success rate of such programs.

Material and methods

Description of the sample

In Cyprus, the GYTS was conducted in 2006 by the Cyprus International Institute for the Environment and Public Health (CII), in collaboration with the Harvard School of Public Health and the Ministries of Health and Education of Cyprus. Details of the study can be found elsewhere (Christophi et al., 2008). Standardized methodology was followed in selecting the sample, administering the questionnaire, and processing the data (Global Tobacco Surveillance System Collaborating Group, 2005, 2006; Global Youth Tobacco Survey Collaborating Group, 2003). Briefly, a two-stage cluster sample design was used to select a representative sample of students from all registered middle and high schools in Cyprus, with 40 or more students, in the academic year 2005–2006. In the first stage, all middle schools with 1st, 2nd, and 3rd grades and high schools with 4th, 5th, and 6th grades were sampled, with the probability of selection being equal to the school's enrollment size; in the second stage, classes within chosen schools were selected using a systematic equal-probability sampling with a random start. Participation was voluntary and the self-administered questionnaires were completed anonymously.

Demographics, explanatory, and outcome variables

The main outcome of interest is intention to quit smoking, defined as replying affirmative to the question 'Do you want to stop smoking now?'. Demographic variables included sex and age. Consumption was defined as the product of the number of days having smoked within the last month and the number of cigarettes smoked on those days, grouped in categories of <30, 30–150, 150–300, and >300 cigarettes smoked last month. Other smoking behavior variables included having one or more past quit attempts, being a daily smoker, age of initiation, and an indicator of nicotine dependence (having smoked or felt like smoking first thing in the morning). Variables targeting self-efficacy, knowledge and beliefs were also evaluated. Self-efficacy was defined by the perceived ability to stop smoking; knowledge and beliefs included knowledge of health risks associated with smoking, knowledge of the harmful effects of secondhand smoking, the belief that smoking affects appearance, and the belief that smoking affects weight. Finally, the social and familial circle influence was evaluated by whether peers, parents, or grandparents were smokers. Physical activity, defined as the number of days per week exercising or participating in sports activities of high intensity for at least 30 min, and the availability of pocket money were also assessed.

Statistical analysis

A weight that reflects the likelihood of sampling a specific student and compensates for different patterns of non-response was assigned to each of the respondents, based on the original overall national two-stage sampling process.

All analyses accounted for the sampling frame of the study and the weight associated with each questionnaire thus reducing bias. Characteristics of interest were described as frequencies and percentages and compared using the chi-square test. Logistic regression analysis was used to assess the effects of different variables on the likelihood of intending to quit smoking both in univariate models and multivariable models, which included all variables with p -values less than 0.20 in the univariate analyses; odds ratios (OR) are reported with the corresponding 95% confidence intervals. A goodness of fit test was also performed. A p -value <0.05 was considered to be statistically significant and all tests presented are two-sided. The Statistical Analysis Software (SAS) version 9.2 (SAS Cary Inc., NC, USA) was used for all analyses.

Results

Out of the total sample of 12,629 students with available information, there were 1591 (weighted frequency = 14%) who reported that they are current smokers and provided valid information as to whether they want to quit smoking or not, with 46.1% of them reporting they want to quit smoking now. The distributions of current smokers with and without intention to quit are similar with respect to age, school, and sex; similarly, for social and familial circle characteristics, but not for self efficacy or physical activity (Table 1).

Table 1 also presents characteristics of smoking behavior, beliefs, and other characteristics, such as availability of pocket money; current smokers with and without intention to quit are similar with respect to cigarette consumption, age of initiation, and the belief that smoking affects weight. However, current smokers with the intention to quit reported the need to smoke first thing in the morning less often and having less pocket money available. In addition, a higher percentage of them believed that smoking is harmful for them, that smoking is harmful for others, and that smokers are less attractive. Finally, the two groups were different in terms of daily smoking and past quit attempts, with a higher proportion of current smokers with the intent to quit being daily smokers and having tried to quit at least once before.

The results of the univariate logistic regression analyses are presented in Table 2. The strongest predictor of intention to quit smoking is past quit attempts. Physical activity is also a strong predictor of adolescents' intention to quit smoking and factors related to personal beliefs, namely believing smoking is harmful to them, believing that secondhand smoke is harmful to others, and believing that smoking affects negatively a smoker's physical appearance, have been found to be strongly associated with intention to quit too. Craving to smoke first thing in the morning, being a daily smoker, availability of pocket money, reporting that it would be difficult to quit smoking now, and cigarette consumption were found to be negatively associated with intention to quit. On the contrary, the belief that smoking helps lose weight, age of initiation, and smoking habits of peers, parents, and grandparents were not associated in a statistically significant way with intention to quit in current smokers in our data (data not shown). Similar results were observed in a stratified analysis by sex.

Interactions between several characteristics of interest with sex were found to be statistically significant, including the interaction of gender and the belief that smoking is harmful and the belief that smoking is harmful for others. Hence, multivariable logistic regression models were computed separately for males and females adjusting for age group, peers smoking, parents smoking, self-efficacy, physical activity, consumption, daily smoking, wanting to smoke first thing in the morning, past quit attempts, the belief that smoking is harmful to them and/or others, physical appearance, availability of pocket money, and the belief that smoking affects weight; Table 3 presents these results. Both models were significant and their fit was adequate.

In both males and females, after adjusting for the effect of all other covariates in the model, a highly important characteristic is past quit attempts. Physical activity is also significant in both sexes but more so in girls. The belief that smoking affects physical appearance with smokers perceived to be less attractive than non-smokers is significant

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