Published in final edited form as:

Int J Tuberc Lung Dis. 2016 December ; 20(12): 1689–1694.

Perception, intention, and attempts to quit smoking among Jordanian adolescents from the Irbid longitudinal Study

Rana Jaber^a, Ziad Ben Taleb^a, Raed Bahelah^{a,b}, Purnima Madhivanan^{a,c}, and Wasim Maziak^{a,d}

Rana Jaber: rjabe001@fiu.edu; Ziad Ben Taleb: zbent002@fiu.edu; Raed Bahelah: rbahe002@fiu.edu; Purnima Madhivanan: pmadhiva@fiu.edu; Wasim Maziak: wmaziak@fiu.edu

^aDepartment of Epidemiology, Robert Stempel College of Public Health and Social Work, Florida International University, Miami, FL 33199

^bUniversity of Aden Faculty of Medicine and Health Sciences, Yemen

^cPublic Health Research Institute of India, Mysore, India

^dSyrian Center for Tobacco Studies, Aleppo, Syria

Abstract

Objective—To describe important tobacco cessation indicators among adolescent smokers from Irbid, Jordan.

Methods—Participants for this study were selected from the Irbid longitudinal Study of Smoking Behavior (2008–2011). A total of 1781 students were enrolled at baseline from 19 out of 60 randomly selected schools (participation rate 95%). Only students who reported current smoking at baseline were included in this study (n=605).

Results—Among the study participants, 74.3% wanted to quit smoking, 64.2% tried to quit, and 68% believed it was easy to quit at any time. Attempt to quit smoking were significantly more frequent among boys than girls for cigarettes (boys: 72% vs. girls: 45.2%) and waterpipes (boys: 71.7% vs. girls: 53.5%). More girls (55.2%) than boys (28.6%) wanted to quit waterpipe smoking because they believed that it was harmful to health ($P < 0.001$) and because smoking among children was unacceptable by their families ($P=0.003$).

Conclusions—Most of the students in this cohort wanted and tried to quit smoking. They believed it was easy to quit smoking whenever they wanted. Health concerns in boys and girls; and family opposition to smoking among girls were barriers for continued smoking.

Address correspondence to: Dr. Rana Jaber, Department of Epidemiology, Robert Stempel College of Public Health and Social Work, Florida International University, 11200 SW 8th St, Miami, FL, 33199. rjabe001@fiu.edu, Ph: 305-910-1366, Fax: 305-348-4901.

Contributor's statement

RJ conceptualized the study, and designed and conducted the study analysis and wrote the first draft of the study. WM designed the large cohort study and supervised all work on it. ZBTand RB, PM, and WM edited the manuscript and approved the final draft of the study.

Conflict of interest

The Authors have no conflicts of interest or financial relationships relevant to this article to disclose.

Keywords

Adolescents; Cigarettes; Jordan; Quit; Waterpipe

Introduction

Although, most tobacco control efforts worldwide are focused on prevention of smoking initiation, it is estimated that 80,000 to 100,000 adolescents start smoking each day.¹ It is also well documented that smoking during adolescence -a critical period for human development- is a risk factor for many chronic diseases such as cardiovascular diseases and hypertension. Moreover, the age of smoking initiation has implications for the age at which smoking-related diseases manifest.²

Thus, smoking cessation during adolescence is critical for the reduction of smoking-related health outcomes. However, results from a systematic review of national surveys conducted between 1980 and 2005 showed, approximately 70% of adolescent smokers globally are making multiple attempts to quit smoking each year.³ More than 90% are returning to smoking within a year of the last attempt to quit.³ Failure to quit may be attributed to the absence of effective cessation interventions that are based on deep understanding of the patterns of cessation among adolescents, particularly in developing world including countries of the Eastern Mediterranean (EMR).

In some societies, non-cigarette tobacco products are gaining popularity to a level that exceeds cigarette smoking among youth. For instance, findings from the GYTS that involved more than 90,000 Arab children (13–15 years old), indicated that waterpipe smoking surpassed cigarette smoking among youth.^{4, 5} Jordan for instance, is one of the EMR countries that has higher prevalence of waterpipe smoking compared to cigarettes. Recent findings among our study cohort showed 30% of students had ever smoked waterpipe while 14% were current waterpipe smokers, and 14.8% of students had ever smoked cigarettes while 5.7% were current cigarette smokers. Similar patterns were observed for both males and females.⁶ Compared to cigarettes, waterpipe is intermittently smoked and is perceived as less harmful and addictive smoking method.^{7–10} These unique use patterns, reduced harm perceptions, and attitudes towards waterpipe may influence adolescents' interest to quit or make actual attempts to quit waterpipe.^{11, 12, 8} For example, findings from few studies among adults in Syria showed that many cigarette smokers had ever tried to quit cigarettes, but very few waterpipe smokers had ever tried to quit and most were not interested in quitting.^{13, 14} To the best of our knowledge, data about waterpipe quitting patterns among adolescents in the EMR was reported from three studies only (Alzohairy 2012; Jawad et al, 2015; Amin et al, 2010).^{15–17} However, these studies did not compare quitting patterns or reasons for quitting among waterpipe and cigarette smokers. In addition, no studies investigated gender differences in desire or reasons to quit waterpipe and/or cigarette smoking among adolescents in the EMR.

This study is the first from the EMR to measure the overall, as well as, the gender-specific prevalence of the intention-to- quit, attempts to quit, perception to quit; and reason to quit smoking separately for waterpipe and cigarettes among a school-based sample of

adolescents from Irbid, Jordan. This study will provide baseline information regarding the quit-related attitudes and perceptions among adolescents in the EMR that will guide future cessation research in the region, as well as the planning and development of evidence-based, gender-specific cessation programs that maximize cessation rates among adolescent smokers and prevent continuation of smoking among youth who may continue to smoke as adult.

Methods

Study Participants

Participants for this study were selected from the Irbid Longitudinal Study of Smoking Behavior [ILSS] among school children in Irbid, Jordan conducted between 2008 and 2011. Details about the study methods have been published elsewhere.⁷ Briefly, all schools in Irbid city were listed by Ministry of Education (60 schools) and then stratified by gender (male, female, or mix) and type (public or private). A random sample of 19 schools was selected with probability proportional-to-size. All seventh graders (N = 1,877) in the selected schools were invited to participate in the study. A total of 1,781 students were enrolled at baseline (participation rate = 95%) and they turned in their assent along with their parental consent forms.

All students (n=605) who reported a current-smoking status of waterpipe and/or cigarettes during the prior 30 days that preceding the baseline survey were included in the analysis. A total of 1,176 (64.4%) students were excluded from this study, because they either reported having never smoked (n = 1,156), or may have smoked but were not current smokers at baseline (n = 20).

Procedures

A pilot-tested questionnaire was used to collect data about socio-demographic status, cigarette and waterpipe smoking, attitudes, beliefs, smoking patterns, and exposure to tobacco advertisement.^{7, 18, 19} The questionnaire was completed in the classroom and facilitated by trained study personnel. To ensure confidentiality and improve the validity of the students' responses; no parents or school personnel were allowed in the classroom during data collection. The study was approved by the Institutional Review Boards (IRBs) of Jordan University for Science and Technology, University of Memphis, Syrian Society against Cancer, and Florida International University.

Measures

To assess current smoking, students who reported ever smoking were asked to report how many times they had smoked waterpipe and/or cigarettes in the past 30 days. The responses were recorded separately for waterpipe and cigarettes as follows: 0 = not at all, 1 = once weekly, 2 = more than once weekly but not daily, and 3 = daily. Responses about waterpipe and cigarettes were combined by considering those who reported not smoking at all as not currently smoking and coded as 0 (excluded from the analysis), and those who reported a smoking status from 1–3 were considered current smokers and thus coded as 1. Current smokers were further classified into three categories: cigarettes only=1, waterpipe only=2, and both waterpipe and cigarettes=3.

To assess the students' desire to quit, students were asked whether they wanted to quit smoking. To assess the students' prior attempts to quit, they were asked whether they tried to quit smoking in the prior year of data collection. Additionally, students were asked whether they think it is easy to quit smoking at any time they want. Responses for all of these questions were binary in nature (yes = 1, no = 0). Moreover, students who reported that they wanted to quit were asked to state the main reason for quitting.

Statistical Analysis

Descriptive analysis was used to calculate proportions for categorical measures and means $\pm$ standard deviation for continuous measures. Because the study used a complex sampling design, all analyses were weighted by the inverse probability of chosen school in order to provide more accurate estimates of variance. School weight calculation method has been previously reported elsewhere.¹⁸ Pearson chi-square test, Fisher exact test, or independent sample t-test were used to compare groups where appropriate. Significance level for all the study analyses were set to $p < 0.05$. Analyses were conducted using Statistical Package for Social Sciences (SPSS) version 21.0.

Results

Descriptive Findings

A total of 605 students (35.6% of the original sample) reported current-smoking status at baseline. Most of the participants who reported current smoking were males (66.4%). The average ages (mean $\pm$ standard deviation) were 12.9 ± 0.60 for boys, and 12.7 ± 0.61 for girls. Waterpipe smoking was reported by 83.9% of the current smokers, while cigarette smoking was reported only by 38.2%. At year one, 156 (27.5%) students reported that they were not currently smoking any tobacco. The percentage of students not currently smoking had increased to 42.7% at the end of the three years of follow-up. Figure 1 details the changes in the "not currently smoking" category for the whole study sample stratified by gender.

Quit, Quitting Attempts and Perception of Easy to Quit

At baseline, 605 (68.9%) participants had reported smoking any tobacco at that time, of whom 74.3% wanted to quit, 64.2% tried to quit, and 68.0% thought that they could quit whenever they wanted. Table 1 compares measures to quit among current smokers by gender and tobacco use method. More than two-thirds of boys and girls had expressed their desire to quit smoking with no significant difference by gender for both smoking methods. The attempt to quit was significantly higher among boys compared to girls for both cigarettes (boys: 72%, girls: 45.2%) and waterpipe (boys: 71.7%, girls: 53.5%). More than two-thirds of boys and girls believed that it was easy to quit smoking at any time. For students who smoked waterpipe and cigarettes, 75.8% of boys and 74.6% of girls had expressed their desire to quit smoking, while 68.7% of boys and 70.0% of girls had reported that they indeed tried to quit smoking. An additional finding among those who smoked both methods was the high percentage of boys who believed that they could quit smoking anytime they wanted. Belief that it is easy to quit smoking was significantly higher in girls who smoked

both waterpipe and cigarettes compared to boys. However, this belief was highly prevalent in both genders (boys: 70.0%, girls: 80.8%).

Reported Reasons for Desire to Quit Smoking

The students' were asked about the reasons that may have driven them to quit smoking. A total of 581(96.8%) students provided responses to this question. More than 30% of the students have reported that they did not think about quitting. This percentage was slightly higher than that (25.7%) obtained from the direct question, "do you want to quit smoking?" Overall, health concern as a reason to quit smoking was reported by most students (40.5%), followed by family hates smoking (9.7%), religious reasons (8.7%), and financial constrains (7.5%). Analyses stratified by gender showed higher proportion of boys didn't want to quit tobacco compared to girls ($P<0.001$). On the other hand, higher proportion of girls reported health concerns and family oppositions as reasons for their desire to quit. Details about differences by gender among tobacco smokers can be found in Table 2.

Further analysis by smoking method in Table 3 showed that higher percentage of boys don't think to quit waterpipe (44.4%) compared to cigarettes (26.8%); and those percentages among boys were significantly higher than those in girls for both waterpipe (16.1%) and cigarettes (13.0%). Additionally, higher proportion of girls reported that they wanted to quit smoking because their families hated smoking compared to boys, and this difference was statistically significant ($p<0.001$ for cigarettes and $p=0.003$ for waterpipe). Moreover, compared with boys, higher proportions of girls wanted to quit smoking because they believed it was harmful to their health. However, this difference was significant only among waterpipe smokers ($p<0.001$).

Discussion

Among this sample of adolescents, the majority of smokers wanted to quit, or made attempts to do so, and perceived that they could quit smoking at any time. In term of gender differences, more boys than girls reported previous attempts to quit smoking. The main reason to quit smoking was to maintain good health followed by family's negative attitude toward smoking, particularly for girls. Our findings call for developing specific programs to help adolescents to discontinue tobacco smoking at this early stage of experimentation with tobacco before they progress to a difficult or irreversible stage of nicotine dependence.

Regardless of whether they are smoking waterpipe or cigarettes, most of the study participants wanted to quit smoking, or made previous attempts to quit, and perceived that it was easy to quit smoking at any time. These findings were similar to those previously reported among adolescent cigarette smokers in western countries.^{20–22} It seems that adolescents in this sample had similar quitting attitudes toward waterpipe and cigarette smoking. Hence, quitting services should be available for waterpipe and cigarette smokers to help them quit before they progress further in their smoking habits.

This study revealed gender differences in smoking. There were more attempts to quit made by boys than girls. Within the social context of EMR, where smoking is completely unacceptable for females,^{7,19} girls may conceal their smoking behavior from their families.

This “hide to smoke” behavior may place a barrier against excessive smoking among girls and force them to maintain low levels of nicotine demand. Research has shown that females are able to maintain lower levels of nicotine dependence for long period of time.²³ In this sense, they may not consider themselves addicted to nicotine that requires them to think to quit, and therefore they may not attempt to quit. This explanation also supports our finding that more girls than boys want to quit because of their families’ negative attitudes toward smoking.

It is noteworthy that the majority of students want to quit smoking for health reasons. This is consistent with the previous findings of cigarette cessation correlates among adolescents, where concerns regarding health status were the most cited reason for their desire and attempt to quit.^{24, 25} Not surprisingly, we found some differences in health concerns between waterpipe and cigarette smokers. This can be explained by the common myth that is associated with waterpipe use, such as perceiving waterpipe as less harmful than cigarettes because the smoke passes through water.¹⁸ Based on our previous research, adolescents who perceived waterpipe as harmful to health were less likely to progress in waterpipe smoking.¹⁸ Therefore, an educational intervention to raise the level of awareness about the harmful effects and addictive properties of waterpipe can be highly promising for discontinuation of waterpipe smoking among youth in the region.

This study is the first among adolescents to measure the prevalence of desire to quit, reason to quit, attempt to quit, and quitting belief by gender and tobacco use method. However, this study is not without limitations as all measures were self-reported, which could result in underreporting of smoking, or over reporting of cessation measures, especially among girls due to social undesirability of smoking.²⁶ However, self-reported smoking has been strongly correlated with biomarkers of smoking in cohort studies.²⁷ Additionally, adolescents have shown to share openly their smoking experiences if confidentiality and anonymity were assured.^{28, 29}

Conclusions

In conclusion, this study showed that among this sample of adolescents, the majority of students wanted to quit smoking and tried to do so with no difference by smoking method. Most of the students wanted to quit smoking because it was harmful to their health. Educational intervention to raise the level of awareness about the harmful effect of waterpipe could be highly promising for discontinuation of waterpipe smoking. Family opposition to smoking seems to play a significant role in promoting discontinuation of smoking among girls in the EMR. Hence, this social barrier should be strengthened against smoking among girls, and extended to include smoking among boys. Finally, cessation services should be available even at this early stage of tobacco experimentation.

Acknowledgments

Funding source

This work was supported by the National Institute on Drug Abuse (NIDA), (grants R01 DA024876 and R01 DA035160). Dr. Rana Jaber was a post-doctoral fellow with Dr. Purnima Madhivanan funded by a Merck & Co grant".

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Highlights

- Participants were selected from Irbid Longitudinal Study of Smoking Behavior.
- A total of 605 students smoke waterpipe and/or cigarette at baseline were included.
- Among all participants, 75% wanted to quit, 64 % tried to quit, and 68 % believed it is easy to quit.
- The students want to quit smoking because it is harmful to health and unacceptable by family.

Figure 1.

The overall and gender-specific percentages of participants who reported that they are not currently smoking during the follow-up from Irbid longitudinal study of smoking behavior, 2008–2011.

Table 1

Baseline gender differences in cessation measures by tobacco use method among a school sample of smokers from Irbid, Jordan in 2008.

Cessation Measure	Response	Smoke cigarette only			Smoke waterpipe only			Smoke both		
		Boys (N=78)	Girls (N=23)	P-value ^a	Boys (N=244)	Girls (N=120)	P-value ^a	Boys (N=99)	Girls (N=41)	P-value ^a
		n (%)	n (%)		n (%)	n (%)		n (%)	n (%)	
Do you want to quit smoking?	yes	56 (76.7)	15 (67.7)	0.159	157 (75.1)	77 (76.2)	0.830	65 (75.8)	25 (74.6)	0.802
	No (ref)	11 (23.3)	6 (32.3)		52 (24.9)	24 (23.8)		21 (24.2)	10 (25.4)	
Did you try to quit smoking during the last year?	yes	54 (72.0)	9 (45.2)	<0.001	152 (71.7)	54 (53.5)	0.001	56 (68.7)	25 (70.0)	0.804
	No (ref)	13 (28.0)	12 (54.8)		60 (28.3)	47 (46.5)		28 (31.3)	10 (30.0)	
Do you think you can quit smoking whenever you want?	yes	49 (65.4)	12 (63.5)	0.781	149 (70.3)	71 (70.3)	0.998	61 (70.0)	29 (80.8)	0.027
	No (ref)	18 (34.6)	9 (36.5)		63 (29.7)	30 (29.7)		24 (30.0)	6 (19.2)	

^aP-value was calculated using Pearson chi-square test.

Note: All percentages are weighted by school. The difference between N and the totals in the subcategories is due to missing observation. Only valid percentages were reported.

Table 2

Baseline gender differences in reason to quit tobacco among a school-based sample of adolescents from Irbid, Jordan 2008–2011.

What is the main reason that makes you want to quit smoking?	Boys (N=364) ^a n (%)	Girls (N=157) ^a n (%)	P-value
I don't think to quit	152 (41.3)	25 (16.9)	<0.001
To keep my health	117 (33.3)	76 (53.1)	<0.001
Economize cost	27 (7.8)	13 (6.6)	0.396
My family hates smoking	30 (8.0)	26 (14.4)	<0.001
My friends hate smoking	5 (1.1)	4 (2.2)	0.087
Religion cause	33 (8.5)	13 (6.8)	0.239

^aThe number of participants who answered the reason to quit question.

Note: All percentages are weighted by school

Baseline gender differences in reasons to quit by tobacco smoking method among a school-based sample of adolescents from Irbid, Jordan (2008–2011)

What is the main reason that makes you want to quit	Cigarettes			Waterpipe		
	Boys n=153 n (%) ^a	Girls n=56 n (%) ^a	P-value	Boys n=297 n (%) ^a	Girls n=136 n (%) ^a	P-value
I don't think to quit	48 (26.8)	6 (13.0)	<0.001	131 (44.4)	21 (16.1)	<0.001
To keep my health	68 (46.9)	28 (54.9)	0.058	86 (28.6)	69 (55.2)	<0.001
Economize cost	13 (11.2)	6 (8.8)	0.388	25 (8.9)	11 (6.9)	0.198
My family hates smoking	11 (6.2)	10 (14.5)	0.001	24 (8.1)	20 (13.1)	0.003
My friends hate smoking	2 (1.0)	1 (2.6)	0.133	4 (1.1)	3 (1.6)	0.398
Religious cause	11 (7.9)	5 (6.2)	0.466	27 (8.9)	12 (7.1)	0.250

^aThe percentages were weighted by school and only valid percentages were reported.

Note: The number of students who reported smoking both methods was added to both categories.