

## RESEARCH ARTICLE

# Passive Smoking and Attitudes towards Tobacco Control Programs among Iranian Dental Students

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### Abstract

**Background:** Conclusive evidence exists about associations between several life-threatening diseases and passive smoking. The objective of our study was to investigate the prevalence of passive smoking among Iranian dental students, to assess their attitudes towards tobacco control programs, and to explore the association between these two and tobacco use. **Methods:** In eight randomly selected dental schools, all fourth-year students were surveyed by means of a self-administered anonymous questionnaire in December 2010. The Global Health Professions Student Survey (GHPSS) questionnaire served as the data collection instrument. Exposure to environmental tobacco smoke (ETS) was assessed during the previous week. Chi-square test, logistic regression, and linear regression served for statistical analyses. **Results:** The response rate was 84% (325 students, 66% female). Exposure to ETS was reported by 74% of the participants. Men were significantly more exposed to ETS at home, and in other places than were women. Most of the students agreed on queried tobacco control policies. The lowest agreement (72%) was for banning smoking in coffee shops and teahouses. A logistic regression model showed that adjusted for gender, passive smoking at home is significantly associated with current tobacco use. A linear regression model suggested that the total score of attitudes is significantly associated with passive smoking at home, passive smoking in other places, tobacco use experience, and current tobacco use. **Conclusions:** The study reports high exposure to ETS among dental students, and its association with current tobacco use and attitudes towards tobacco control.

**Keywords:** Passive smoking - attitudes - tobacco control - dental students - Iran

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### Introduction

Conclusive evidence exists about the association between passive smoking and several life-threatening diseases such as lung cancer, coronary heart disease, and sudden infant death syndrome (U.S. Department of Health and Human Services, 2006). Passive smoking, according to the recent first global assessment of the burden of environmental tobacco smoke (ETS), is still one of the most important threats to public health (Oberge et al., 2011). This is why one of the six effective policies proposed by the World Health Organization (WHO) to reduce the global burden of tobacco-related diseases is to protect people from tobacco smoke (WHO, 2008).

Between regions and countries, tobacco use and passive smoking rates differ (GTSS Collaborative Group, 2006). The higher the prevalence of passive smoking is the more efforts should be taken to control this problem. One of the most effective options accessible in all countries to reduce the burden of passive smoking is health professionals' involvement (WHO, 2003). Even

brief advice from health professionals can significantly increase the quit rate (Aveyard et al., 2012; Amemori et al., 2013). A study in the United Kingdom showed that most smokers thought that information about health risks of ETS to children, and advice from health professionals would be helpful to reduce children's rate of passive smoking in their homes (Alwan et al., 2010).

Smoking cessation interventions delivered by multiple types of health professionals are more effective than interventions delivered by a single type of health professional (The Tobacco Use and Dependence Clinical Practice Guideline Panel and Staff and Consortium Representatives, 2000). The various health professionals are, however, not involved in tobacco control at the same level; physicians undertake more cessation counseling than do the other health professionals (Tremblay et al., 2009; Tong et al., 2010). This does not mean that those health professionals who contribute to tobacco control less often than physicians are not in good positions; oral health professionals are not involved in tobacco control as much as physicians are, but they have a unique opportunity to

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do so (Ramseier et al., 2010).

Health professionals' involvement in tobacco control programs requires positive attitudes towards the subject. Their exposure to ETS may also affect their performance in this field. To assess passive smoking and attitudes towards tobacco control programs among health professionals, quite a few studies have been done in various countries (Smith and Umenai, 2000; Behbehani et al., 2004; Khan et al., 2005; Squier et al., 2006; Warren et al., 2009; 2011a; 2011b; Mehrotra et al., 2010; Cauchi and Mamo, 2012; La Torre et al., 2012). With regard to this subject, Iranian health professionals have not undergone thorough study.

Our objective was by investigation to determine the prevalence of passive smoking among Iranian dental students, to assess their attitudes towards tobacco control programs, and to explore the association between these two and tobacco use.

## Materials and Methods

### Study subjects and data collection:

A cross-sectional national survey was conducted among the students of eight randomly selected dental schools in December 2010 in Iran. All fourth-year students (n=385) of the selected schools (six state and two private) were invited to participate. One of the authors (H.K.) distributed a self-administered anonymous questionnaire among the participants in one of their ordinary classroom settings. A detailed description of the survey has been presented earlier (Keshavarz et al., In press).

### Questionnaire:

The data collection instrument in the present study was the Global Health Professions Student Survey (GHPSS) questionnaire (Centers for Disease Control and Prevention, 2007). The questionnaire was modified to be adjusted to Iranian conditions, and after translation into Persian, the modified questionnaire was tested in a pilot study (Keshavarz et al., In press).

In addition to age and gender, the questionnaire queried students on the following items: i) Experience of using tobacco products: This was asked in three separate yes/no questions on cigarette smoking, waterpipe smoking, and use of other tobacco products including pipes, chewing

tobacco, snuff, bidis, and cigars. Those students who had used one of these tobacco products at least once during their lifetimes were assigned to the ever-user group. ii) Tobacco use in the previous 30 days: The number of days on which use of tobacco products had occurred during the previous 30 days was asked in three other questions with seven alternatives (0 days, 1 or 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, all 30 days). For each tobacco product, those students who had used the product at least once during the previous 30 days were considered as current users. iii) Passive smoking: The number of days on which people had smoked at the respondent's home (where the respondent lives), or in places other than his/her home in his/her presence during the previous seven days was asked in two questions with five alternatives (0 days, 1 to 2 days, 3 to 4 days, 5 to 6 days, all 7 days). Those students choosing at least "1 to 2 days" as their answer to one of these questions were assigned to the group with exposure to ETS. iv) Attitudes towards tobacco control: The students were asked to answer five questions on attitudes towards banning tobacco sales to adolescents (age <18), adopting a complete ban on advertising of tobacco products, banning smoking in restaurants, in coffee shops and teahouses, and in all enclosed public places. To make the answers clearer, in contrast to the yes/no form of the original GHPSS questionnaire (Centers for Disease Control and Prevention, 2007), we used a five-point Likert scale from "completely agree" to "completely disagree" as the alternatives. The five Likert-type alternatives were scored from one for "completely disagree" to five for "completely agree". A total score for attitudes ranging from 5 to 25 resulted from summing the scores assigned to the answers to the five questions.

### Statistical methods

The data were analyzed with SPSS for Windows, version 16 (SPSS Inc., Chicago, IL, USA). The chi-square test made comparing subgroups possible. Binary logistic regressions served to evaluate the relationship between past and current tobacco use, and independent variables including gender, passive smoking at home, and passive smoking in other places. A linear regression model allowed us to determine the adjusted association of attitudes with independent variables including gender, type of school,

**Table 1. Distribution of Iranian Dental Students in State and Private Schools According to Exposure to Environmental Tobacco Smoke (ETS) During the Previous Seven Days, by Gender (n=325)**

		State schools			Private schools		
		Male n (%)	Female n (%)	All n (%)	Male n (%)	Female n (%)	All n (%)
Exposure to ETS at home*	0 days	33 (39.8)	78 (66.7)	111 (55.5)	8 (32.0)	71 (74.0)	79 (65.3)
	1 to 2 days	19 (22.9)	21 (17.9)	40 (20.0)	8 (32.0)	12 (12.5)	20 (16.5)
	3 to 4 days	14 (16.9)	9 (7.7)	23 (11.5)	2 (8.0)	7 (7.3)	9 (7.4)
	5 to 6 days	6 (7.2)	1 (0.9)	7 (3.5)	1 (4.0)	0 (0.0)	1 (0.8)
	All 7 days	11 (13.3)	8 (6.8)	19 (9.5)	6 (24.0)	6 (6.2)	12 (9.9)
Exposure to ETS in other places†	0 days	22 (26.2)	36 (31.3)	58 (29.1)	1 (3.8)	40 (41.7)	41 (33.6)
	1 to 2 days	27 (32.1)	43 (37.4)	70 (35.2)	10 (38.5)	33 (34.4)	43 (35.2)
	3 to 4 days	16 (19.0)	10 (8.7)	26 (13.1)	8 (30.8)	11 (11.5)	19 (15.6)
	5 to 6 days	6 (7.1)	19 (16.5)	25 (12.6)	2 (7.7)	3 (3.1)	5 (4.1)
	All 7 days	13 (15.5)	7 (6.1)	20 (10.1)	5 (19.2)	9 (9.4)	14 (11.5)

\*One woman and three men did not answer this question. †Three women and one man did not answer this question.

tobacco use experience, current tobacco use, passive smoking at home, and passive smoking in other places. The statistical significance was set at  $P < 0.05$ .

## Results

The response rate was 84% (325 students, 66% female). Most of the students (92%) were 19 to 24 years old. Of all participants, 38% were studying in private schools. About 74% of the students (68% of women, 87% of men) reported having been exposed to ETS during the previous week. About 41% had been exposed to ETS at home and 69% in other places (Table 1), with male students being exposed to ETS at home ( $P < 0.001$ ), and in other places ( $P = 0.005$ ) significantly more often.

Except for banning smoking in coffee shops and teahouses, a clear majority (more than 85%) completely or partially agreed with the proposed tobacco control programs (Table 2). In both genders, the highest agreement was on banning smoking in restaurants and the lowest was on banning smoking in coffee shops and teahouses.

Binary logistic regression models showed that having the experience of tobacco use was significantly associated with male gender only (OR=3.1, 95%CI=1.8-5.3), while current tobacco use was significantly associated with male gender (OR=4.0, 95%CI=2.2-7.4) and with passive

smoking at home (OR=3.3, 95%CI=1.7-6.4) (Table 3).

In the linear regression model, the total score for attitudes was associated with all independent variables except for gender, and type of school (Table 4).

## Discussion

This investigation of the prevalence of passive smoking, and attitudes towards tobacco control showed that exposure to ETS was high among Iranian dental students with a pronounced gender difference. Passive smoking was associated with the students' attitudes towards tobacco control, and their current tobacco use. A clear majority of the students were in favor of the tobacco control programs studied here.

To fight against tobacco epidemic, health professionals ought to work together as a team (The Tobacco Use and Dependence Clinical Practice Guideline Panel and Staff and Consortium Representatives, 2000), and oral health professionals as important members of this team should have required knowledge including information about the adverse effects of tobacco use and passive smoking on health, as well as about effective methods of tobacco use prevention and cessation counseling. To be able to fulfill this important responsibility they also need positive attitudes and required skills.

Regarding attitudes towards tobacco control policies, our results are in line with those of other studies of health professionals. La Torre et al. (2012) reported similarly that most medical students in selected schools in four

**Table 2. Iranian Dental Students' Attitudes Towards Tobacco Control Programs, by Gender (n=325)**

	Completely agree	Partially agree	No opinion	Partially disagree	Completely disagree
<b>Banning tobacco sales to adolescents (Age&lt;18)*</b>					
Male (%)	68 (61.3)	17 (15.3)	14 (12.6)	4 (3.6)	8 (7.2)
Female (%)	166 (77.9)	28 (13.1)	7 (3.3)	10 (4.7)	2 (0.9)
All (%)	234 (72.2)	45 (13.9)	21 (6.5)	14 (4.3)	10 (3.1)
<b>Banning tobacco products advertising completely†</b>					
Male (%)	68 (61.3)	18 (16.2)	14 (12.6)	3 (2.7)	8 (7.2)
Female (%)	147 (69.3)	43 (20.3)	15 (7.1)	5 (2.4)	2 (0.9)
All (%)	215 (66.6)	61 (18.9)	29 (9.0)	8 (2.5)	10 (3.1)
<b>Banning smoking in restaurants</b>					
Male (%)	81 (73.0)	15 (13.5)	6 (5.4)	3 (2.7)	6 (5.4)
Female (%)	184 (86.0)	18 (8.4)	4 (1.9)	6 (2.8)	2 (0.9)
All (%)	265 (81.5)	33 (10.2)	10 (3.1)	9 (2.8)	8 (2.5)
<b>Banning smoking in coffee shops and teahouses</b>					
Male (%)	41 (36.9)	20 (18.0)	13 (11.7)	19 (17.1)	18 (16.2)
Female (%)	134 (62.6)	40 (18.7)	13 (6.1)	17 (7.9)	10 (4.7)
All (%)	175 (53.8)	60 (18.5)	26 (8.0)	36 (11.1)	28 (8.6)
<b>Banning smoking in all enclosed public places‡</b>					
Male (%)	70 (63.6)	25 (22.7)	9 (8.2)	3 (2.7)	3 (2.7)
Female (%)	172 (80.8)	26 (12.2)	8 (3.8)	5 (2.3)	2 (0.9)
All (%)	242 (74.9)	51 (15.8)	17 (5.3)	8 (2.5)	5 (1.5)

\*One woman did not answer this question. †Two women did not answer this question. ‡One man and one woman did not answer this question

**Table 4. Association of Total Score for Attitudes with Independent Variables Including Gender, Type of School, Tobacco use Experience, Current Tobacco use, Passive Smoking at Home, and Passive Smoking in Other Places in a Linear Regression Model Among Iranian Dental Students (n=314)**

	Total score for attitudes*	
	Beta	P
Gender (0: Female, 1: Male)	-0.09	0.101
Type of school (0: State, 1: Private)	0.05	0.349
Tobacco use experience (0: No experience, 1: At least once during his/her lifetime)	-0.13	0.026
Current tobacco use (0: Non- user, 1: At least one day during the previous month)	-0.34	0.000
Passive smoking at home† (0: No exposure to ETS, 1: Exposed)	-0.14	0.014
Passive smoking in other places‡ (0: No exposure to ETS, 1: Exposed)	0.10	0.049

\*The total score for attitudes ranges from 5 to 25. †Passive smoking was assessed in the previous seven days. (ETS= Environmental Tobacco Smoke). Reference category is indicated by zero. F-test value=18.5 ( $P < 0.001$ ). R-square=0.27

**Table 3. Association of Tobacco use Experience and Current Tobacco use with Gender, Passive Smoking at Home, and Passive Smoking in Other Places in Binary Logistic Regression Models Among Iranian Dental Students (n=318)**

	Tobacco use experience*			Current tobacco use†		
	P	OR	95% CI for OR	P	OR	95% CI for OR
Gender (0: Female, 1: Male)	0.000	3.12	1.84-5.31	0.000	4.00	2.16-7.40
Passive smoking at home‡ (0: No exposure to ETS, 1: Exposed)	0.071	1.58	0.95-2.65	0.000	3.30	1.71-6.35
Passive smoking in other places§ (0: No exposure to ETS, 1: Exposed)	0.051	0.59	0.35-1.00	0.201	1.68	0.76-3.71

\*Outcome variable: 0= no experience of using tobacco products during his/her lifetime, 1= using tobacco products at least once during his/her lifetime. †Outcome variable: 0=no tobacco use during the previous 30 days, 1=using one of the tobacco products on at least one day during the previous 30 days. ‡Passive smoking was assessed in the previous seven days. (ETS= Environmental Tobacco Smoke). Reference category is indicated by zero

European countries agreed on proposed tobacco control policies. Regarding attitudes of medical students in Karachi, Pakistan (Khan et al., 2005), and in Allahabad, India (Mehrotra et al., 2010), results are similar as well. Smith and Umenai (2000) showed that most of the health sciences students in a university in Japan supported proposed tobacco control measures. Studies involving physicians also report that most participants agree on similar tobacco control policies (Behbehani et al., 2004; Squier et al., 2006). Since the agreement we found on banning smoking in coffee shops and teahouses differs markedly from Iranian students' agreement on the other tobacco control policies, it can be assumed that some favored having some locations in which they can feel free to smoke or to socialize with smokers. Unfortunately, this preference, which is opposed to the WHO recommendation for a complete ban on smoking in public places (WHO, 2008), can also be seen in other studies (Khan et al., 2005).

The logistic regression model shows that current tobacco use is significantly associated with passive smoking at home. This result parallels findings of an association between family members' smoking (especially parents' and older siblings' smoking) and children's smoking (Rajan et al., 2003; Bricker et al., 2006; Loke and Wong, 2010). In addition, significantly associated factors, with the exception of gender, are different in the models for tobacco use experience and current tobacco use. Some studies have proposed that factors associated with different stages of smoking (such as experimentation and regular smoking) differ (Kaplan et al., 2001). In larger sample sizes, however, the associations with borderline P-values may become significant.

The linear regression model suggests that tobacco use either previously or currently affects significantly the total score of attitudes towards tobacco control. This finding is in line with others' findings of a significant difference between ever-smokers' attitudes and never-smokers' attitudes among health professionals (Smith and Umenai, 2000; Behbehani et al., 2004; Squier et al., 2006). As another finding novel here, the model shows that the total score of attitudes towards tobacco control is significantly associated with passive smoking. People exposed to ETS at home probably grow accustomed to tobacco smoke over time. They have, therefore, fewer positive attitudes towards banning smoking in public places. In contrast, having the experience of being in public places unpleasantly polluted with ETS raises significantly the total score of attitudes. The linear regression model shows that when adjusted for tobacco use and passive smoking, the total attitude score is not significantly associated with gender. Although these results need to be confirmed in further studies, they can have important implications for educational programming to prepare dental students for their future role in tobacco control.

The prevalence of exposure to ETS among these Iranian dental students seems to be lower than in some southeastern European countries such as Albania, Macedonia, and Greece (Warren et al., 2011a). However, among the seven countries with available national data in the Eastern Mediterranean Region (EMR), only in Libya is

the prevalence of passive smoking at home among dental students lower than the prevalence in Iran (Warren et al., 2011a). Passive smoking in other places is, however, lower in two EMR countries (Libya and Tunisia). We found, in more than half the other countries with available national data, medical (Warren et al., 2011b) and nursing (Warren et al., 2009) students to be more often exposed to ETS at home than are Iranian dental students. A similar situation exists when we compare our results on the prevalence of exposure to ETS in other places with that among medical students of the other countries (Warren et al., 2011b). In contrast, comparing our results with the results of the other countries regarding nursing students shows that the number of countries with a higher prevalence of passive smoking in other places is 13 of 35 (Warren et al., 2009). Although smoking in public places has been legally forbidden in Iran for more than 15 years, it seems that the law is not well enforced, because otherwise a better rank could be expected at global level.

Our figures as to the prevalence of passive smoking among Iranian dental students are higher than the ones reported by Warren et al. (2011). This noticeable difference may be an indication of a change over time, or alternatively may reveal the different validity among studies. Comparing our results with the results for Iranian medical and nursing students shows that dental students' exposure to ETS at home (41%) is higher than their medical (31%) and nursing (37%) counterparts' exposure at home (Warren et al., 2011b; Warren et al., 2009). For prevalence of passive smoking in other places, our result among dental students is 69%, whereas the corresponding figures among Iranian medical and nursing students are 54% and 56% (Warren et al., 2009; 2011b).

A gender difference in tobacco use among Iranian dental students has been observed earlier (Keshavarz et al., In press). The present study showed a pronounced gender difference in passive smoking. The difference at home may lead to the assumption that family members smoke more freely in the presence of men, whose smoking is socially more acceptable in Iran (Sarraf-Zadegan et al., 2004). The gender difference in passive smoking in public places may be an indication of male students' higher tendency to go to public places not smoke-free (e.g. some teahouses and coffee shops) or to join smoking friends.

Compared to the only study investigating passive smoking among Iranian oral health professionals (Warren et al., 2011a), our response rate (84%), and number of participating students (n=325) were higher. Another advantage is that our study included both state and private schools. These advantages together give more validity to our findings. However, one should keep in mind the survey design of the study, and the social unacceptability of tobacco use in Iran especially among women (Sarraf-Zadegan et al., 2004) when interpreting the findings.

In conclusion, Our study reports high exposure to ETS among Iranian dental students, and its association with current tobacco use and attitudes towards tobacco control. When preparing dental students for their future role in tobacco control, the potential effects of passive smoking should be taken into account.

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