Iranian senior dental students as future role models of good health behaviour – a ten year study

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Abstract

Background: Dentists according to professional knowledge of the prevention, have a key role in providing a positive model for oral health-promoting behaviours. We aimed to investigate health behaviour of Iranian senior dental students in terms of oral self-care and tobacco use during a ten-year period to assess their preparedness to act as role models for health-promoting behaviours.

Method: The study was performed in six dental schools selected through stratified cluster random sampling to have a representative sample of established (old) and new dental schools in Iran. Data were collected in four occasions in 2005, 2008, 2011, and 2015. Senior dental students (n=1185) were invited to voluntarily complete a self-administered anonymous questionnaire about their oral self-care and tobacco use. Recommended tooth-brushing habit (RTH) was defined as at least twice a day brushing with fluoridated toothpaste. Three separate questions about cigarette, pipe, and water-pipe use were applied to indicate the students' tobacco use.

Results: In 2005, 2008, 2011, and 2015, 22.5% (n=60), 26% (n=52), 28.5% (n=81), and 24.6% (n=51) of the students reported smoking, respectively. Women reported a better status in both tooth brushing twice daily and frequent use of fluoridate toothpaste than men did ($p<0.001$). Among male students, 42.2% (n=159) and among female students 14.9% (n=83) of the students reported current smoking. The trend of reported smoking had the least variation among female students. This was true also for male students regarding RTH.

Conclusion: The status and trend of oral self-care and tobacco use among Iranian dental students calls for more emphasis on adopting health-promoting behaviours during dental education.

Background

Today major oral diseases like other noncommunicable diseaseases are seen as behaviour related conditions and individuals are expected to play an active role to maintain and improve their own health. Recent scientific findings have also brought better understanding to the significant role of good oral health in treatment of major general diseases [1]. The oral diseases share the same risk factors with major general diseases according to the Common Risk approach [2]. These conditions are in many cases preventable.

Oral health professions should orient their services towards prevention and health promotion as one of WHO's priority action areas [3]. Dentists according to professional knowledge of the prevention, have a key role in providing a positive model for health-promoting behaviours [4].

Having undeniable oportunities in coaching smoking cessation, oral health care providers have the responsibility to educate the society, advocate anti-smoking policies, and support smoking bans at national and global levels [5]. Therefore, the success rate of oral health promotion depends on the knowledge and attitude of health care providers [6].

The undergraduate dental education could play an important role in shaping health behaviour of dental students and thus their future behaviour as role models for good health behaviour. The general aim of the present study was to investigate health behaviour of Iranian senior dental students in terms of oral self-care and tobacco use during a ten-year period to assess their preparedness to act as role models for health-promoting behaviours.

Methods

The present repeated cross-sectional survey was performed on senior dental students of Iran from 2005 to 2015. Stratified cluster random sampling method was applied to obtain a representative sample of established (old) and new state dental schools in Iran; three out of six established universities with more than 30 years of experience, i.e. Tehran, Shahid Beheshti, and Mashhad universities of Medical Sciences, and three out of nine dental schools with less than 30 years of experience at the time of the study protocol development, i.e. Hamedan, Kerman and Qazvin Universities of Medical Sciences, were randomly selected in 2005 [7, 8]. The data were collected in four occasions in 2005, 2008, 2011, and 2015. The target population was senior dental students (those in the last two semesters of a 6-year Doctor of Dental Surgery or DDS curriculum) of these six state dental schools (N = 1188).

Questionnaire and variables

All senior students in the selected dental schools were asked to voluntarily participate in the study by completing a self-administered anonymous questionnaire [7, 8] about oral self-care and tobacco use. For demographic characteristics, the questionnaire contained questions on gender, year of birth, and level of parents' education.

Oral self-care

The students were asked about the frequency of tooth brushing (five choices: irregular or never, once a week, 2–3 times a week, once a day, more than once a day) and use of fluoridated toothpastes (four choices: always or almost always, quiet often, seldom, not at all). Brushing more than once a day and using fluoridated toothpaste always or almost always were considered as Recommended Tooth-brushing Habit (RTH) [9].

Tobacco use

Three separate questions about cigarette, pipe, and water-pipe (hookah), each with six choices (no, never; no, I did but I quit; yes, once a month or less; yes, a few times (2–3) a month; yes, a few times (2–3) a week; yes, once a day or more), were used to assess the tobacco use of the students. Those Those with any present smoking habit were considered as current smokers.

Statistical analysis

The data were analyzed with SPSS for Windows, version 22. Chi-square was applied to assess significant differences in frequency between subgroups. Two binary logistic regression models, one for men and one for women were fitted to the data to measure the strength of the association of the outcome measure (RTH) with explanatory factors (age, smoking habit, father's education and mother's education) and to calculate the corresponding odds ratios (ORs) and 95% confidence intervals (CIs).

Results

Altogether 960 senior dental students (response rate: 81%) participated in our study in the four

occasions of data collection in 2005, 2008, 2011, and 2015 (Table 1). Of the students, 58.1% were female and about two-thirds of their fathers (68.2%) and half of the mothers (50.2%) had academic education.

Table 1
Senior dental students (N = 960) of six Iranian state medical universities in 2005, 2008, 2011, and 2015.Response rate in each occasion of data collection according to gender

Stage of data collection	N			Response rate
	Total	Male	Female	
2005	270	114	153	81%
2008	196	75	104	75%
2011	287	101	183	84%
2015	207	87	118	82.5%
Total	960	377	558	81%

Table 2 shows the reported oral self-care among dental students. Female students reported more frequent tooth brushing and use of fluoridate toothpaste than men ($p < 0.001$). Of all male students 42.2% (n = 159) and 14.9% (n = 83) of female students reported current smoking (Table 3).

Table 2
Reported oral self-care practices among Iranian senior dental students (n = 960) according to gender

Total	**Gender**	**% (n)**
Tooth brushing	Female	62.3 (346)
(At least twice a day)	Male	43.3 (160)
	Total	54 (510)
Fluoridated toothpaste	Female	81.9 (455)
(Almost or almost always)	Male	71.7 (264)
	Total	78.1 (728)

Table 3
Distribution of reported tobacco use among Iranian senior dental students (n = 960) according to gender and type of smoking.

		Various tobacco use			
		Cigarette	Pipe	Water pipe	any type
		N = 142	N = 34	N = 185	N = 244
		% (N)	% (N)	% (N)	% (N)
Gender	Male	30.8 (116)	7.4 (28)	30 (112)	42.2 (159)
	Female	5 (28)	0.9 (5)	13.1 (73)	14.9 (83)

Figure 1 shows changes in RTH and smoking in all data collections according to gender. The trend of reported smoking had the least variation among female students. This was true also for male students regarding RTH.

Non-smoking male and female students were more likely to report more favorable RTH compared to current smokers (19.4% vs. 13.0%, for men and 44.6 vs. 6.6%, for women), while these differences were statistically insignificant (Table 4.).

Table 4
Recommended tooth brushing habit (RTH)* and reported smoking habits among Iranian senior dental students (n = 960) according to gender

	Smoking	**habit**		
	Non-smoker	Smoker		Total
	RTH (Yes)	**RTH (Yes)**		**RTH (Yes)**
	% (N)	% (N)	P value	% (N)
male	34.7 (73)	31.2 (49)	0.5	32.3 (122)
female	53.2 (249)	47.5 (39)	0.4	51.6 (288)
* Combination of at least twice a day brushing and frequent use of fluoridated toothpaste				

Adherence to RTH showed no significant association with the factors included in the regression model (Table 5).

Table 5. Association of smoking habits and background characteristics with recommended tooth brushing habit (RTH)*among Iranian male (n=377) and female (n=558) senior dental students in adjusted & unadjusted logistic regression model

Gender: Male

	P value	**OR**	**95% C.I. for OR**		**P value**	****Adjusted OR**	**95% C.I. for OR**	
			Lower	Upper			Lower	Upper
Age	0.60	0.99	0.95	1.03	0.95	1.00	0.96	1.05
Smoking habit	0.47	0.851	0.55	1.32	0.25	0.77	0.49	1.21
Father education level	0.29	1.273	-0.813	1.2	0.85	1.1	0.56	2.00
Mother education level	0.08	1.473	0.95	2.28	0.21	1.45	0.81	2.6
				Constant	0.17	0.28		

Gender: Female								
Female:	P value	OR	95% C.I. for OR		P value	**Adjusted O.R	95% C.I. for OR	
			Lower	Upper			Lower	Upper
Age	0.16	0.9	0.08	1.04	0.15	0.9	0.79	1.04
Smoking habit	0.35	0.8	0.5	1.2	0.40	0.81	0.50	1.32
Father education level	0.24	1.26	0.86	1.85	0.80	1.06	0.7	1.65
Mother education level	0.07	1.36	0.97	1.9	0.11	1.37	0.93	2.02
				Constant	1.00	0.025		

* Combination of at least twice a day brushing and frequent use of fluoridated toothpaste

**The model consisted of age, smoking habit, father education, mother education.

Discussion

The trends of oral self-care and tobacco use among Iranian senior dental students during a decade were assessed to understand their conditions as future health-promoters. About one third of male students reported RTH and the rate of reported smoking among female students remained constant (15%) throughout the study period leaving plenty of room for improvement.

Dental professionals should first serve as role models for the public [10]. Role modeling can be seen as important educational method. Within health care education role modelling is used not only to convey knowledge as a means of effective learning, but also it is a means to embed the students with such qualities as behaviour, attitudes and values [11].

A sampling method with stratification to collect representative data from all Iranian dental schools was applied. Additionally, the high response rate in all occasions with an overall response rate of 81% speaks for the representativeness of our sample. Using a self-administered questionnaire as a data collection tool may cause social desirability bias resulting in underestimation rather than overestimation of the behaviours reported.

In agreement with previous studies on Iranian dentists, female senior dental students reported more favorable RTH than their male counterparts [12]. In the present study, the difference in RTH between male and female students unfortunaterly decreased from 2008 to 2015 as a result of decreased adherence of female students to RTH. The current study showed that adherence to RTH was more prevalent in non-

smokers, which is in concordance with other studies in China, United States and Greece. [13–15]. Ghasemi et al. (2015) also reported that adherence to recommended oral self-care in smoking dental professionals was less than their non-smoker counterparts in Iran [12].

The overall ten-year trend of smoking prevalence among students surveyed showed no significant variation. In contrast to the present results an increasing trend in the prevalence of smoking among Iranian adolescents from 2002 to 2013 has been reported[16]. In the present study the prevalence of smoking in dental students was 22.5%-28.5%, which is higher than that in Australia (13%) [17], Ireland (20%) [18] and Jordan (17%) [19], but lower than that in Romania (37.3%) [20] and Belgium (25%) [21].

As also reported in a previous study (22), the smoking rate among senior dental students was reported higher than that among the Iranian general population. In national surveys, the prevalence of smoking is reported to be 17.4% in Iranian students (23), 8.5% in 16 to 25-year-old young people [24], and 18.3% in males and 1.3% in females in the age group of 19–49 years [25]. Smoking rates reported were significantly more prevalent in males than females, which is similar to the findings of previous studies in Iranian senior dental students [22, 26], oral health professionals [6], and Iranian general population [25]. This can be a result of less social acceptance of women's smoking in Iran, or their better health consciousness.

Data of previous studies in Iran shows that only 5% of tobacco use among Iranian youth population is smokeless [22, 27]. The most common types are cigarette, water pipe and cigar. Therefore, the questions applied only to various types of tobacco smoking in the present study. In line with previous findings [22], Smoking water pipe was the most popular tobacco use, and its prevalence was high in comparison with cigarette and pipe, even among women. This can be due to a traditional belief that hookah is less harmful although there is scientific evidence that even smoking hookah (shisha) plays a significant role in the development of lung cancer, respiratory diseases, low birth weight, and periodontal problems [28]. Moreover, less social stigma is attached to hookah than other types of tobacco smoking.

During the 10-year study period the Tobacco Prevention and Control Research Center of Iran has organized national anti-smoking programs to decrease tobacco use among population. These projects are based on nation□s need, partnership and collaboration with NGOs in health field providing educational, treatment and counseling services of smoking cessation. The projects also include training workshops on methods of smoking cessation for health care workers. However, the smoking population has increased in the country [29] showing challenges of such health promotion programs. An important social change with a possible effect on successfulness of such programs, and also on the present findings, is the rapid and pervasive diffusion of social networks, especially among youths, during these ten years. These networks are used mainly as entertainment. Moreover, youths spend a lot of time in these networks, which may have some adverse effects on their lifestyle, including health behaviours.

The role of sosio-economic background of dental students in their health behaviour seems somewhat controversial as compared to earlier studies. In our study, in the regression models, RTH showed no significant association with parents' education level. Khami et al (2010) concluded that the prevalence of

smoking increased in dental students with an increase in the father's educational level [26]. This is in contrast with the results of an earlier study that showed a lower educational level of the father increased the odds of smoking in Iranian young people [25]. Our sample was selected from state universities of country, which accept students with varying socio-economic status (SES). It is reasonable to expect that professional training of students with any SES could eliminate the effect of some background factors putting students on the same line as health promotors.

There are several studies emphazising significance of teaching prevention in educational programs of health professionals to facilitate paradigma change and appreciation of prevention (30). The national curriculum of undergraduate dentists has been revised during the study period to emphasize prevention including smoking cessation activities (31). However, based on the findings of the present study, results of such educational activities still remains to be seen and further research is needed. Also, significance and potential of role modeling in dental education should be appreciated to avoid unprofessional behaviour among future dentists. This should particularly be targeted to those students with extra need of guidance [32]. These activities could help dental students as future dentists to develop professional characteristics that would facilitate them to serve as role models for the public in acquiring and maintaining health-promoting behaviours.

Conclusion

The status and trend of oral self-care and tobacco use among Iranian dental students calls for more emphasis on health promotimg behaviours in the dental education system. The dental education system should facilitate dental students to act as health-promoting role models for the public. With regard to relevance of these type of studies, further studies are needed to explore barriers and facilitators of the training dental students to act as health promoting role models.

Abbreviations

RTH
Recommended Tooth-brushing Habit
WHO
World Health Organization

Declarations

Ethics approval and consent to participate:

The study was approved by Tehran University of Medical Sciences Ethics Committee (IR TUMS. REC. 1394.1026).

Upon delivery of the questionnaire, it was explained to the students that participation in the study was voluntary. The students received information on the study objectives, its anonymity, and the researchers'

contact information in a separate page attached to the questionnaire. The participants returned that page. In addition to their filled questionnaire, serving as their consent.The ethics committee approved this procedure.

Consent for publication

Not applicable.

Availability of data and materials:

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interest:

The authors declare that they have no competing interests.

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Authors Contribution:

MK, HK and ZD contributed in data collection. MB, MK, SM, JV, and HM contributed in analyzing the data and they all contributed in writing the manuscript. All authors read and approved the final manuscript.

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Figures

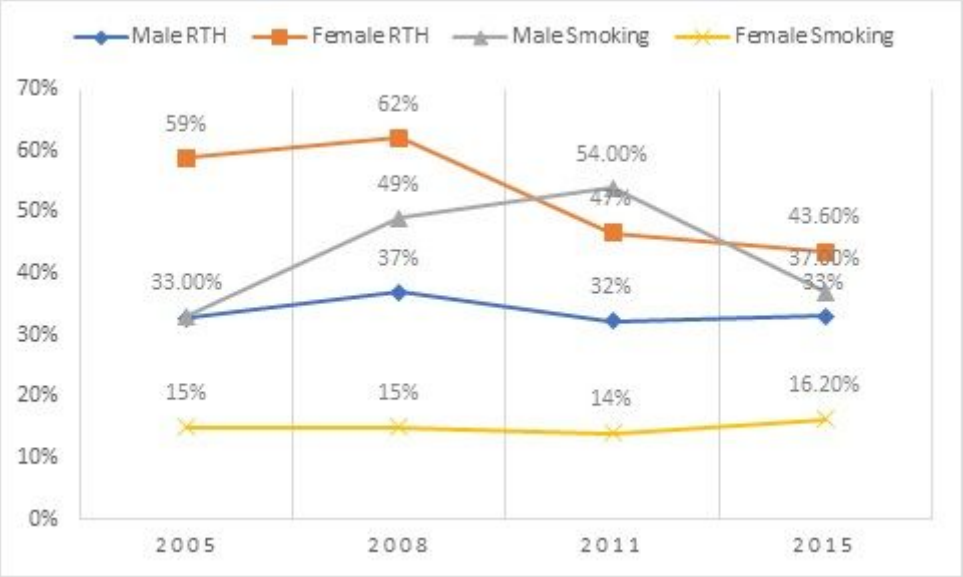

Figure 1

Changes in adherence to RTH and smoking according to gender among Iranian senior dental students(n=960) in four occasion of data collection

Supplementary Files

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