RESEARCH ARTICLE

Use of Smokeless Tobacco among Male Students of Zahedan Universities in Iran: a Cross Sectional Study

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Abstract

Background: Smokeless tobacco consumption is one of the causes of oral cancer. The aim of this study was to determine the prevalence of smokeless tobacco consumption among male students of Zahedan universities and associated factors in 2012. Materials and Methods: In this cross-sectional study, 431 students were selected from the universities of Zahedan using multi-stage random cluster sampling. The data collection tool was a questionnaire including questions about demographic information, history of smokeless tobacco consumption, and awareness of smokeless tobacco hazards. Data were analyzed by SPSS19 using Chi-square test and multinomial logistic regression, with p<0.05 considered significant. Results: At the time of conducting this study, 102 students (23.7%) had already consumed smokeless tobacco and 49 students (11.4%) were current users (consuming at least once in 30 days before the study). There was a significant relationship between history of smokeless tobacco consumption, university/college, place of living, mean GPA, and mother's education level (p<0.05). Also there was a significant association between knowledge and prevalence of smokeless tobacco use (p<0.001). Conclusions: There is a relatively high prevalence of smokeless tobacco consumption among the male students of universities of Zahedan, which shows the need to emphasize the provision and implementation of prevention programs in universities.

Keywords: Smokeless tobacco - male students - Zahedan university - prevalence

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Introduction

According to the World Health Organization estimates, 10% of all deaths in the world until 2015 will be associated with the tobacco consumption – which is higher than AIDS-induced mortality rate (Mathers et al., 2006). Although people believe that smokeless tobacco consumption is harmless, scientific evidence shows that it is as harmful and addictive as cigarette (Rozi et al., 2007). It has even been proved that smokeless tobacco consumption is one of the most common causes of oral cancer (Gupta et al., 2005).

Some of the oral changes associated with the smokeless tobacco consumption include smokeless tobacco keratosis (STK), gingivitis, periodontitis, bone resorption, dental caries, dental erosion, dysplasia, and squamous cell carcinoma (SCC) (Greenberg et al., 2003; Delnevo et al., 2011).

In a study on smokeless tobacco and hookah consumption among South African medical students in 2012, show that 3.1% of participants had a history of smokeless tobacco consumption in past 30 days (Senkubuge et al., 2012). In the study conducted the history of smokeless tobacco consumption in male students was reported to be 15.7% (Bhojani et al., 2009).

Given the difficulties and hardships that the students endure to achieve their goals and the material and spiritual costs spent for their education, identification, prevention, and treatment of any factor with adverse impact on their physical and mental health and efficiency seem necessary. Meanwhile, during their education, students are considered as the appropriate model for the people in society, smokeless tobacco consumption by them could definitely lead to incorrect training of other people in society. On the other hand, the vicinity Sistan and Baluchestan province with Afghanistan, Pakistan, and India, illegal import of these products in deluxe packages and their distribution on the market and grocery stores, and the unawareness of many students about the nature and complications of these materials could lead to the increase in the consumption of these materials. Therefore, the present study was conducted to determine the prevalence of smokeless tobacco consumption and its relevant factors among the male students of the universities of Zahedan.

Materials and Methods

This cross-sectional study was conducted on 431 male students from the universities of Zahedan in 2012 (May-June). The sample size was determined based on the results of the previous studies (Senkubuge et al., 2012) using this formula $n=[Z^2_{1}\text{-}(\alpha/2)p(1-p)]/d^2$. The required

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samples included 210 (48.7%) students from Sistan and Baluchestan University, 140 (32.5%) students from Azad University, 45 (10.4%) students from the University of Medical Sciences, and 36 (8.4%) students from Payam Noor University, selected based on the population of each above-mentioned universities. After making necessary coordination with the relevant authorities, we referred to each mentioned universities. Multi-stage random cluster sampling method was used. In this method, we first referred to the intended university and a few faculties were randomly selected. After attending the faculties, a few classes were randomly selected (based on random numbers table) and based on the registration list, then participants (subjects) were randomly selected from among these classes based on random numbers table. In case of absent students, the next student in the list was replaced with the absent one until reaching the sample size. As most of the students did not seem to be properly aware of the nature of the drugs known as smokeless tobacco, a leaflet was provided. Then, following describing the aim of the study briefly and ensuring the students about the confidentiality of the information in the questionnaires and receiving their informed consents, they were asked to complete the questionnaires anonymously, without mentioning their names and family names. The questionnaires' information was designed based on a part of GATS (Global Adult Tobacco Survey) questionnaire, version 2008. Content validity method was used to determine the scientific validity of the questionnaire. To do this, the questionnaire was given to 10 professors of the University of Medical Sciences in Zahedan for getting required feedback. The final questionnaire was prepared after making corrections based on received suggestions. The reliability of the questionnaire was calculated on 20 students using test-retest method, and the reliability coefficient (Cronbach's alpha) was equal to 91%. The questionnaire included questions about demographic information (university/college, degree, parents' education level, GPA), 11 questions were on the history of smokeless tobacco use, and 8 questions were on the awareness of smokeless tobacco. In order to review the questions designed around knowledge and attitude, each question was marked "1" for correct answer, and "0" for incorrect answer. The scores in different groups were then ranked from poor to good as follows (0-4 poor, 5-6 moderate, 7-8 good). The data were analyzed using SPSS19. Chi-square test was used to identify demographic factors related with the use of smokeless tobacco. Multinomial logistic regression was applied to identify the association demographic factor and knowledge of smokeless tobacco with use of smokeless tobacco. The $p<0.05$ was considered significant.

Results

The present study was conducted to study the prevalence of smokeless tobacco consumption among the male students of Zahedan universities in 2012. By the time of conducting this study, 102 students (23.7%) had already consumed smokeless tobacco and 49 students (11.4%) were current users (consuming at least once in 30 days before the study). Mean and standard deviation of subjects' age was 24.3±4.06. Among those with history of tobacco consumption, 31.7% were married and 22.3% were single (CI=0.344-1.106, OR=0.616, p=0.073). Students' demographic information and its relationship with tobacco consumption are shown in Table 1.

Table 1. Demographic Characteristic of Male Students by Use Smokeless Tobacco

		Current user			Life time user			Total
		Yes	No	p value*	Yes	No	p value*	
		N (%)	N(%)		N(%)	N(%)		
University	Medical science	0	45 (11.8)	0.036**	3 (2.9)	42 (12.8)	0.008**	45 (10.4)
	Sistan&blouchestan	22 (44.9)	186 (48.7)		46 (45.1)	162 (49.2)		208 (48.3)
	Payam noor	6 (12.2)	30 (7.9)		9 (8.8)	27 (8.2)		36 (8.4)
	Islamic azad	21 (42.9)	121 (31.6)		44 (43.2)	98 (29.8)		142 (32.9)
Education	Bachelor	32 (65.3)	189 (49.7)	0.081	60 (58.8)	161 (49.2)	0.082	222 (51.5)
	Masters	14 (28.6)	135 (35.3)		34 (33.4)	115 (35)		149 (34.6)
	Phd	3 (6.1)	57 (15)		8 (7.8)	52 (15.8)		60 (13.9)
Father's educational level	Illiterate	10 (20.4)	55 (14.4)	0.004**	20 (19.6)	45 (13.6)	0.083	65 (15.1)
	Primery	6 (12.2)	73 (19.1)		15 (14.7)	64 (19.5)		79 (18.3)
	Diploma	14 (28.6)	78 (20.4)		23 (22.5)	69 (21)		92 (21.3)
	College degree	10 (20.4)	64 (16.8)		20 (19.6)	54 (16.4)		74 (17.2)
	Bachelor	5 (10.2)	88 (23)		16 (15.7)	77 (23.4)		93 (21.6)
	Masters	0	19 (5)		3 (2.9)	16 (4.9)		19 (4.4)
	Phd	4 (8.2)	5 (1.3)		5 (4.9)	4 (1.2)		9 (2.1)
Mother's educational level	Illiterate	13 (26.5)	80 (20.9)	0.006**	25 (24.5)	68 (20.7)	0.013**	93 (21.6)
	Primery	11 (22.4)	109 (28.5)		33 (32.4)	87 (26.4)		120 (27.8)
	Diploma	14 (28.6)	107 (28.1)		25 (24.5)	96 (29.3)		121 (28.1)
	College degree	5 (10.2)	42 (11)		10 (9.8)	37 (11.2)		47 (10.9)
	Bachelor	2 (4.1)	34 (8.9)		3 (2.9)	33 (10)		36 (8.4)
	Masters	0	7 (1.8)		1 (1)	6 (1.8)		7 (1.6)
	Phd	4 (8.2)	3 (0.8)		5 (4.9)	2 (0.6)		7 (1.6)
GPA	<11	13 (26.5)	11 (2.9)	<0.001**	18 (17.6)	6 (1.8)	<0.001**	24 (5.6)
	11-13.99	23 (46.9)	134 (35.1)		38 (37.3)	119 (36.2)		157 (36.4)
	14-16.99	12 (24.5)	178 (46.6)		38 (37.3)	152 (46.2)		190 (44.1)
	>17	1 (2.1)	59 (15.4)		8 (7.8)	52 (15.8)		60 (13.9)
Total		49 (11.4)	382 (88.6)		102 (23.7)	329 (76.3)		

*chi-squar test; **p<0.05

Table 2. Knowledge and Attitudes toward Smokeless Tobacco among Male Students by Smokeless Tobacco Use

	Poor N (%)	Moderate N (%)	good N (%)	*p value
Smokeless tobacco use				
Yes	31(53.4)	12(10.2)	6 (2.4)	<0.001**
No	27(46.6)	106(89.8)	249(97.6)	
Total	58(13.5)	118(27.4)	255(59.2)	

*chi-squar test; **p<0.05

The results indicated that students of Sistan & Baluchestan University were the largest consumer of smokeless tobacco in their lifetime. Most smokeless tobacco users were bachelor students. Chi-square test indicates that there is a significant relationship between smokeless tobacco consumption during life and university/ college, mother's education level, and GPA. There was also a significant relationship between smokeless tobacco consumption in past 30 days and university/ college, parents' education level, and GPA. On the other hand, multinomial logistic regression showed that with increasing GPA and education level, smokeless tobacco consumption decreased. Also according to multinomial logistic regression, Smokeless tobacco consumption decreased among students as parents' education level increased (until masters). But Smokeless tobacco consumption increased among students as parents' education level Phd.

Of those with history of smokeless tobacco consumption, 57 (36.8%) had also a history of cigarette consumption, among whom 29 (18.7%) consumed cigarette and smokeless tobacco simultaneously during the study (CI=1.477-2.383, OR=1.876, p<0.001).

The people who lived in rental houses had higher prevalence of smokeless tobacco consumption (47.2%), and lower prevalence was observed among those who lived with their families (18.1%) (p=0.0001).

Chi-square test showed that there was a significant relationship between smokeless tobacco consumption during life and history of tobacco consumption in the family (CI=4.323-18.57, OR=8.69, p<0.001), so that there is a high prevalence of smokeless tobacco consumption during life among students with history of tobacco consumption in family.

Subjects' knowledge and attitude concerning smokeless tobacco was evaluated at three levels (0-4 poor, 5-6 moderate, 7-8 good). In total, 59.2% of the students were a good level of knowledge and attitude. (Table 2).

According to Chi-square test, there was a significant relationship between smokeless tobacco consumption and students' knowledge and attitude (p<0.001). Also multinomial logistic regression showed that there is a significant association between students' knowledge, smokeless tobacco use.

Discussion

In this study, 431 male students from the universities of Zahedan were studied. By the time of conducting the study, 102 students (23.7%) had already consumed smokeless tobacco, and 49 students (11.4%) were current users (consuming at least once in 30 days before the study). Among the studied universities, the maximum and minimum consumption rate belonged to the Sistan and Baluchestan University and University of Medical Sciences, respectively.

In a study conducted among South African medical students, 3.1% of participants (subjects) had a history of smokeless tobacco consumption during past 30 days (Senkubuge et al., 2012).

In a study conducted among the medical students of Karachi, Pakistan, 6.4% of participants (subjects) had a history of smokeless tobacco consumption during past 30 days (current user) (Sardar et al., 2007).

In a study reported that the history of smokeless tobacco consumption was 15.7% in male students, among whom 5.3% were current users (Bhojani et al., 2009). The studies conducted on medical students show lower prevalence of smokeless tobacco consumption, which is probably due to their higher awareness of the dangers of these drugs. Our study also showed a lower prevalence of smokeless tobacco consumption among medical students.

In the study of Bhojani et al. (2009) smokeless tobacco consumption decreased as students' degree and their GPA increased. In a study reported that the prevalence of smokeless tobacco consumption is lower among those with higher degrees (Arif et al., 2012).

In addition, in the studies conducted by Hu et al. (1996) and Jones et al. (1988) the prevalence of smokeless tobacco consumption was higher among the students with a poor academic performance (Jones et al., 1988; Hu et al., 1996). Our study also showed that smokeless tobacco consumption decreases as the GPA increases.

Smokeless tobacco consumption decreased among students as parents' education level increased (until masters) which is probably due to the parents' increased awareness as their education level increases. This has led to parents' greater control over their children. However, the prevalence of smokeless tobacco consumption was high among students whose parents had PhD degrees. This might be due to parents' preoccupation with their work that disables them to adequately supervise their children's behavior and performance.

On the other hand, smokeless tobacco consumption was higher among students whose parents had a history of tobacco consumption. In a study conducted, there was also a significant relationship between smoking parents and smoking children (Majidpour et al., 2005). Tobacco smoking in figures selected as models could be effective in increasing the risk of tobacco consumption among people.

Our study showed a higher prevalence of smokeless tobacco consumption among students living in rental houses. Student life will increase people's vulnerability towards the consumption of cigarette and other materials (Reed et al., 2007). This might be due to the special conditions of dormitory life, lack of parental supervision, family separation, and loneliness. Therefore, efforts should be made as much as possible to accommodate non-native students in dormitories and make family separation tolerable for them to make good use of their leisure time by providing sports equipment, computer services, libraries,

study halls, and holding pilgrimage and tourism camps for dormitories.

At the time of conducting the study, 36.8% of the students were smoking cigarette, 18.6% of whom consumed cigarette and smokeless tobacco simultaneously. There was a statistical significant relationship between cigarette and smokeless tobacco consumption. In a study conducted in 2012 on the male students of Gilan University of Medical Sciences, 23% of the students were cigarette smokers (Ghodsi et al., 2012). In another study conducted in 2008 in Kerman, 21.5% of the male students were cigarette smokers (Divsalar et al., 2008). In a study conducted, 17.3% of the students were cigarette smokers (Senkubuge et al., 2012). In a study, 34.2% of the students were cigarette smokers as well (Tong et al., 2004). Compared to the previous studies, our study shows a large increase in the rate of cigarette smoking (36.8%), which is probably due to fading ugliness of cigarette smoking and easier reporting by students.

In total, 59.2% of the students enjoyed a good level of awareness and attitude. A good level of knowledge and attitude was one of the factors contributing to the low prevalence of smokeless tobacco. In another study, students' awareness of the dangers of tobacco consumption was 78.3% (Bhojani et al., 2009). In a study conducted in Pakistan, 79% were poorly aware of the carcinogenicity of smokeless tobacco. In this study, only 2.4% had university education and there was a significant relationship between education level and awareness (Khawaja et al., 2006). Another study conducted in India also indicates the relationship between education level and awareness of the carcinogenicity of smokeless tobacco (Raute et al., 2011).

Finally, it is worth mentioning that due to the differences in methodologies and prevalence of tobacco products consumption in various countries, it is difficult to compare our study with other studies conducted in this field – which is considered as one of the limitations of the study.

In conclusions, it is concluded from the above findings that it is necessary to include the issue of smokeless tobacco in the content of university courses and educate it formally. Moreover, the mass media should play a more active role to make people, and students in particular, aware of the dangers of smokeless tobacco so that the prevalence of these materials decreases.

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