JCHR (2023) 13(3), 469-476

Journal of Chemical Health Risks

ORIGINAL ARTICLE

Studying the Prevalence of Smokeless Tobacco Products and Related Factors among High School Students in Chabahar City

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(Received: 26 June 2021 Accepted: 7 September 2021)

KEYWORDS

Smokeless Tobacco;
Students;
Teenagers;
Chabahar

ABSTRACT: Smokeless tobacco consumption is one of the serious health-threatening factors in society, especially among adolescents. Due to the high usage of these products in the southeastern regions of Iran, this survey was conducted to investigate the prevalence of smokeless tobacco products and related factors among high school students in Chabahar city. This study was a cross-sectional (descriptive-analytical) study, in which 330 high school students were selected by a simple multi-stage random sampling method. Data were collected via a researcher-made questionnaire and was filled using an in-person method. Data were then analyzed using descriptive and analytical tests by SPSS v.21 software. In this study, the mean age of the students was 16.3±1.14 years. Results showed that the prevalence of smokeless tobacco products was 45.8% among students, 43.3% among close friends, and 38.8% in families, where the predominant form of smokeless tobacco products was Pan-Prague (62.2%). Furthermore, the results of logistic regression revealed that addiction of close friends (OR=3.8, *p*=0.001), addiction of family members (OR=2.1, *p*=0.03), addiction of males (OR=2.2, *p*=0.001), low awareness (OR=3.9, *p*=0.001), and low attitude (OR=2.7, *p*=0.001) can significantly increase the likelihood of smokeless tobacco usage in students. Altogether, the findings of this study showed that the prevalence of smokeless tobacco usage among high school students in Chabahar is high, and thus, appropriate, effective, and preventive interventions should be taken into account regarding the influential factors.

INTRODUCTION

Tobacco use is one of the leading causes of preventable deaths and accounts for more than six million deaths worldwide annually [1]. It is estimated that by 2030, 10 million deaths will have occurred in developing countries due to tobacco usage. These figures are higher than AIDS, drug abuse, road accidents, homicide, and suicide [2]. Tobacco products are generally divided into two categories; tobacco products (with smoke) and smokeless tobacco products (without smoke) [3]. Smokeless tobacco use causes the death of more than 250,000 people around the world per year, with the majority of deaths (85%) occurring in Southeast Asia [3]. Smokeless tobacco products are

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DOI: 10.22034/jchr.2021.1934101.1343

highly addictive due to their high concentration of nicotine and they contain more than 3000 different chemicals [4, 5]. At least 28 chemicals have been identified in smokeless tobacco products [6]. Consumption of these products is potentially responsible for oral malignant lesions and oral cancer [7, 8]. The use of smokeless tobacco products is etiologically associated with various types of oral diseases such as periodontal disease and oral mucosal lesions, which ultimately lead to tooth loss [9, 10]. The use of smokeless tobacco products can also increase the risk of tooth decay and esophageal and pancreatic cancers.

A considerable part of a child's daily life is spent in school. Additionally, with increasing problems such as poverty, promiscuity, single-parent families, and violence, the role of schools has become even more important [11]. Since the usage of smokeless tobacco products, especially if it is limited to the school environment, can easily remain hidden and lead to the usage of cigarettes and other industrial drugs, assessing the use of smokeless tobacco products should be performed in the context of preventive health programs to help reduce harms [12]. The prevalence of smokeless tobacco is about 49% among Indian students, while this rate is 78% in Karachi, Pakistan [13, 14]. In Zahedan City, the consumption of pan, one of the types of smokeless tobacco, has been reported to be about 29.9% among male high school students [15]. In Iran, in the southeastern regions of the country, this substance is imported through the Pakistan border. These tobacco substances cause addiction, loss of balance, and behavioral disorders, as well as cancer. The use of these products have been increased because of their cheapness, lack of control of families, and the feeling of intoxication of this drug, in addition to misconceptions about its use and the very low awareness of adolescents and young people about the side effects of this drug [16]. Due to the high prevalence of drug use in the world among students, their low awareness of the side effects of the drug, and lack of study in this area, this study was conducted to determine the prevalence of smokeless tobacco use and its related factors among the second-year high school students in Chabahar city in 2020.

MATERIALS AND METHODS

Study design and setting

This research was conducted to investigate the prevalence of smokeless tobacco products and related factors among high school students in Chabahar city.

Study participants and sampling

This study was a descriptive-analytical cross-sectional study. The study population included high school students in Chabahar city. Other inclusion criteria included consent to participate in the study and having Iranian nationality. Those who smoked or consumed other tobacco products were excluded from the study. The sample size was primarily determined to be 286 people due to the prevalence of 24.8% of smokeless tobacco products among students [16]. However, considering the error coefficient of 0.05% and alpha 5%, 15% was added to the sample size to increase the accuracy of the study, resulting in the final sample size of 330. The sampling method was simple multi-stage random sampling. For this purpose, first, the schools (high schools) of Chabahar city were divided into three sections (Plan, Dashtiari, and Markazi) and in the next stage; two schools per section were selected by simple random sampling (six schools in total). Finally, with the reference of the researcher, 55 students of each school (330 people in total) meeting the inclusion criteria were randomly selected. Data collection was performed using a researcher-made questionnaire, which was filled by an in-person method. The questionnaire consisted of three parts. Moreover, in this questionnaire, seven items were related to demographic information questions, 10 items to awareness questions, 10 items to attitude questions, and five items to behavioral questions. For knowledge questions, a score of 3 was given to the "correct" option, 2 to the "I do not know" option, and a score of 1 to the "incorrect" option. On the other hand, for attitude questions, the "I strongly disagree" option was given a score of 5, "I disagree" option was given a score of 4, "I have no opinion" option was given a score of 3, "I agree" option was given a score of 2, and "I

strongly agree" option was given a score of 1. For behavior questions, if a person used one of the products of smokeless tobacco, the questions were asked about the type of used smokeless tobacco, the number of consumed times, the start date of consumption of smokeless tobacco products, and the manner of excretion of saliva caused by salivation following the consumption of these products. Content validity and Cronbach's alpha tests were used to test the validity and reliability of the questionnaire, respectively. To determine the validity of the questionnaire, it was sent to 10 health education specialists. A number of changes were made to the questionnaire in light of the opinions of experts. The validity of the questionnaire was higher than 80%. To measure reliability, the questionnaire was completed by 30 students who were blinded to the study. Using Cronbach's alpha test, the reliability coefficient of knowledge questions was 0.77, the attitude was 0.82, and behavior was 0.81.

Statistical analysis

Data were analyzed by Chi-square, Fisher, and logistic regression tests using SPSS software version 21.

RESULTS

The mean age of the students was 16.34±1.14 years. The highest age group was in the age group of 15 to 20 (62.2%) and most of the students were male (71.2%). Also, the highest level of education of parents was illiterate and elementary. In terms of economic status, 77 of them (23.3%) were poor, 185 (56.1%) were average, and 68 (20.6%) were good (Table 1).

Table 1. Information on demographic and contextual variables of students studied

Demographic variable		Number	Percent
Age	10-15	125	37.8
	15-20	205	62.2
Gender	Male	235	71.2
	Female	95	28.8
Grade	10^{th}	104	31.5
	11^{th}	147	44.5
	12^{th}	79	24
Father's level of education	Illiterate	60	18.2
	Elementary	197	59.7
	Intermediate	24	3.7
	Diploma and above	49	14.8
Mother's education level	Illiterate	252	76.4
	Elementary	26	7.8
	Intermediate	13	4
	Diploma and above	39	11.8
The economic situation	Weak	77	23.3
	Mediocre	185	56.1
	Good	68	20.6

The results of the present study showed that the prevalence of smokeless tobacco products was 45.8% among students. The remaining (54.2% of students) stated that they did not use any smokeless tobacco products. On the other hand, 43.3% of close friends and 38.8% of a family member of students had a history of smoking smokeless tobacco. Also, Pan-Prague was the predominant form among all smokeless tobacco products (62.2%), followed by Naswār with 19.8%. Gotka and Mava were the least predominant with 7.3% and 0.7%, respectively. Most people (71.8%) who used smokeless tobacco started using it at the age of below 10 years. In terms of daily consumption, 86.4% of consumers reported consuming one of the smokeless tobacco products between one and five times daily. Around 80.3% of the participants in the study were excreted saliva due to saliva secretion after consuming various forms of smokeless tobacco in public places in an unsanitary manner (Table 2).

Table 2. History of smokeless tobacco use among students, friends and family members

Smokeless tobacco consumption		Number	Percent
Student consumption	Yes	151	45.8
	No	179	54.2
Consumption among close friends	Yes	143	43.3
	No	187	56.7
Consumption among family members	Yes	128	38.8
	No	202	61.2
Product type	Pan Prague(Paan)	94	62.2
	Gutkha	11	7.3
	BT	45	29.8
	Mava	1	0.7
Age of onset	Before 10 Years Old	108	71.8
	After 10 Years Old	43	28.2
Number of daily consumption	Less Than 5 Times	131	86.4
	More Than 5 Times	20	13.6
Excretion of saliva	Sanitary	30	19.7
	Insanitary	121	80.3

The relationship between demographic variables and consumption of smokeless tobacco products among students was assessed using Chi-square and Fisher tests. The results showed that the use of smokeless tobacco products had a significant relationship with the variables of gender, parents' education, and economic status ($p < 0.05$); i.e. the use of smokeless tobacco products was higher among male students and students with parents with low levels of education and poor economic conditions (Table 3).

Table 3. Relationship between demographic variables and consumption of smokeless tobacco products in students intervention

Demographic variable		History of Smoking Smokeless Tobacco Product		P-value
		No	Yes	
		Number (Percent)	Number (Percent)	
Age	10-15	62(49.6)	63(50.4)	0.21
	15 - 20	117(57.1)	88(42.9)	
Gender	Male	84(35.7)	151(64.3)	0.001
	Female	57(60.5)	38(39.5)	
Grade	10^{th}	50(48.1)	54(51.9)	0.21
	11^{th}	87(59.2)	60(40.8)	
	12^{th}	42(53.2)	37(46.8)	
Father's level of education	Illiterate	22(36.7)	38(63.3)	0.01
	Elementary	91(46.3)	106(53.7)	
	Intermediate	13(50.8)	11(49.2)	
	Diploma and above	41(83.7)	8(16.3)	
Mother's education level	Illiterate	100(39.6)	153(60.4)	0.03
	Elementary	11(42.3)	15(57.7)	
	Intermediate	6(46.2)	7(53.8)	
	Diploma and above	37(94.9)	2(5.1)	
The economic situation	Poor	37(48.1)	40(51.9)	0.04
	Mediocre	95(51.4)	90(48.6)	
	Good	47(69.1)	21(30.9)	

All the studied variables were entered into the logistic recursion model to predict smokeless tobacco use. The results showed that five variables, including the usage among close friends, the usage among family members, gender, awareness, and attitude, could predict the students' smokeless tobacco use. Thus, the odds ratio of smokeless tobacco use was 3.8 times higher for students whose close friends used smokeless tobacco compared to students whose close friends did not smoke tobacco (OR=3.8, p <0.05). The odds ratio of smokeless tobacco use in students who had smokeless tobacco use among family members was 1.2 times higher than other students (OR=2.1). On the other hand, smokeless tobacco use was 3.2 times higher among male students than female students (OR=3.2). The odds ratio of smokeless tobacco was 3.9 higher for students who had poor knowledge about the side effects of smokeless tobacco (OR=3.9). Also, the odds ratio of smokeless tobacco use among students with a poor attitude towards the side effects of smokeless tobacco use was 2.7 higher compared to those with a good attitude (OR=2.7, see Table 4).

Table 4. Predictor variables of smokeless tobacco use by using logistic regression test

Independent variables	ß (regression coefficient)	S.E	OR (odds ratio)	P-value
Use among close friends				
NO	-	-	1	-
Yes	1.54	0.81	3.8	**0.001**
Use among family members				
No	-	-	1	-
Yes	0.8	0.87	2.1	**0.03**
Gender				
Female	-	-	1	-
Male	1.2	0.68	3.2	**0.001**
Awareness				
Good	-	-	1	-
Mediocre	0.61	0.53	1.1	**0.02**
Poor	1.85	0.89	3.9	**0.001**
Attitude				
Good	-	-	1	-
Mediocre	0.78	0.69	1.2	**0.01**
Poor	0.98	0.70	2.7	**0.001**

DISCUSSION

The results showed that the prevalence of smokeless tobacco products was 45.8% in this study, meaning that approximately half of the high school students in Chabahar consumed various smokeless tobacco products. It seems that the attractiveness of these products and their social acceptance among adolescents is one of the reasons for the prevalence of various forms of smokeless tobacco. In a study [19], 78% of the students were reported to use smokeless tobacco in Karachi, Pakistan, which is higher than our study. One reason for this variation can be found in cultural differences between the two countries, such as differences in customs, traditions, and norms that prevail in the two societies [20]. In another study, the prevalence of smokeless tobacco was reported to be 49% among Indian students [12].

The consumption of pan among male high school students in Zahedan was 29.9% [14]. However, our study shows an increase in consumption among this group compared to previous years. The existence of a common border between Chabahar city and Pakistan, smuggling of these products into the country, and traditional production and processing of some forms of smokeless tobacco can be the primary

reasons for the increase in usage of these products among this target group in the city. Lack of coordination and inter-sectoral cooperation between the in-charge institutions and lack of serious determination in dealing with sellers and producers can be other reasons for the increase in consumption. The predominant product consumed among students in the present study was Pan-Prague (62%). In a study in India, 59% of participants in the study used Battle Quaid (pan) and 45% used chewing tobacco [17]. In another study, 48.8% of students used pan in Karachi, Pakistan [18]. Also, the use of NAS was 5.8% in Nigeria [19].

The production process of Pan-Prague, which is traditionally done by local people in the region, and its selling in ordinary packaging wrapped in newspapers without any health warnings can be considered as one of the reasons for the increase in consumption of this type of smokeless tobacco among the students of the community. Around 43.3% of the participants in the present study reported the use of one of the smokeless tobacco products among close friends and 38.8% of them reported the use of smokeless tobacco among parents. In some studies, 65% and 60% of the participants reported that one of the forms of smokeless tobacco is consumed by family members and friends, respectively, [20, 21], which was higher than the present study. In this study, there was a statistically significant relationship between the level of education of parents and the smokeless tobacco use of their children. Similarly, in another study, the prevalence of tobacco products was higher among students with illiterate parents [14, 22]. It can be concluded that the higher level of education of parents leads to more awareness of the harms of these products and therefore parents will control their children.

The results of logistic recursion showed that students' smokeless tobacco use had a significant relationship with the use of family members and close friends, so that the odds ratio of smokeless tobacco use in students who used one of their family members or close friends was more in comparing to other students, It was more consistent with some studies [18, 21] that smokeless tobacco use in family and friends was associated with adolescent use in the family. The family plays the most important role in people's addiction. The family can be considered the most important social institution in most human societies, which has a great impact on the development and evolution of the individual. The basis of individual adjustment in society is made in the family. The family is the first place where one sees oneself and it can be said that most of one's personality is formed under the influence of the family. For this reason, when one person in the family uses smokeless tobacco, other members of the family become addicted to it, too. On the other hand, considering that adolescents are more affected by same age groups and friends during puberty than ever before, because in this period, adolescents reduce their reliance on their family so they seek to find other support, which same age groups are the most important groups. Adolescents are usually influenced by the actions, behavior, speech and thoughts of friends and accept their demands and opinions without any resistance. It is in these friendships that the teenager, for the first time, accepts his friend's request and unknowingly risks his life by experiencing smoking. Smokeless tobacco use among students was different between the two genders and the boys had a 3.2 times higher chance of using it than girls. This is consistent with a cross-sectional study that the prevalence of smokeless tobacco was higher in boys among students in Sistan and Baluchestan province [23]. The existence of biological and educational differences between the genders, different cultural and social expectations, and greater freedom for boys may increase the likelihood of boys engaging in risky behaviors. Also, the odds ratio of smokeless tobacco use was 3.9 higher in students who had poor knowledge about the side effects of smokeless tobacco use than that of other. In another study, most of the subjects believed that tobacco-related advertising had an effect on its use and that it decreased as people became more aware of the side effects of smoking [24]. By increasing awareness of the side effects of smoking, an effective step can be taken to prevent the use of smokeless tobacco in students.

The results also showed that the odds ratio of smokeless tobacco was 2.7 higher in students with poor attitude towards the side effects of smokeless tobacco compared to

others with good attitude. In a study, students with poor attitude towards the side effects of smokeless tobacco had high use [13], which is consistent with the present study. One of the most important reasons for students' negative attitudes and increasing use among them is peer pressure**.** In the importance of attitude, it can be said that high-risk behaviors cannot be corrected by increasing awareness alone**.** Therefore, creating attitudes and motivating people is more important than awareness alone in order to achieve low-risk behavior in the long term.

CONCLUSIONS

In general, the results of the present study indicate the high prevalence of smokeless tobacco use among students in Chabahar. Therefore, in order to prevent smokeless tobacco addiction among students in the long term, it is recommended to have careful educational planning for students based on the impact of close friends, family members, knowledge, and attitude on smokeless tobacco use. One of the strengths of the current study was the easy access to the study group. Also, the main limitations were the application of the questionnaire as the only tool for collecting information and completing it in a self-report manner. As a result, the collected information may not reflect the existing facts and it is necessary to consider these cases in generalizing the results of the study to the whole community.

ACKNOWLEDGMENTS

This study is the result of a research project with ethics code IR.IRSHUMS.REC.1398.011 in the Research Ethics Committee of Iranshahr University of Medical Sciences. The cooperation of the participants in the study is hereby thanked and appreciated**.**

ETHICAL CANSIDERATION

This study is the result of a research project with ethics code IR.IRSHUMS.REC.1398.011 in the Research Ethics Committee of Iranshahr University of Medical Sciences. The cooperation of the participants in the study is hereby thanked and appreciated**.**

Conflicts of interest

There are no conflicts of interest

Financial support and sponsorship

The article has been derived from a research project.This study was financially supported by Iranshahr University of Medical Sciences, Iranshahr, Iran.

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