

# The Frequency of Oral Manifestations in Alcoholics, Tobacco Products and other Addictive Drugs Abusers Referred to Mashhad Dental School

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## Abstract

**Background and objective:** Head and neck squamous cell carcinoma is one of the most common cancers. Important risk factors is use of tobacco and alcohol. Late diagnosis and lack of treatment of oral pre-cancerous lesions lead to develop cancer. Therefore, in this study we assessed the frequency of oral lesions in tobacco products and alcohol and other addictive substances users in patients referred to Mashhad dental school. **Methods:** This cross-sectional study was performed on 401 patients (200 consumers of tobacco products, alcohol and other addictive substances and 201 patients, who did not have any consumption history) from the patients referred to Mashhad Dental School. Data were collected using a questionnaire and clinical examination then analyzed by Statistical tests: Chi-square, Chi-square and logistic regression. **Findings:** The mean age in the case and control groups was  $41.28 \pm 12.71$ ,  $40.16 \pm 14.81$ , and 87.5% of subjects in the case group and 55.7% in the control group were males. The most common substance was cigarette (57%). A significant correlation was found between smoking and pigmentation ( $P < 0.001$ ), fissured tongue ( $P < 0.001$ ), hairy tongue ( $P = 0.004$ ), and plaque-like candidiasis ( $P = 0.014$ ). Relationship between hookah with lichen planus, and pan with tobacco-pouch were significant ( $p = 0.003$ ,  $p < 0.001$ , respectively). **Conclusion:** The most frequent substance was cigarette in the men and hookah in the women. The most common oral change was pigmentation. The majority of pan

users had pre-cancerous lesions in the mouth.

**Keywords:** Tobacco Products, Oral Manifestations, Alcohols, Risk factors.

## Introduction

Head and neck Cancer is the third most common malignancy in the world (Antonia-Kolokythasa et al., 2013). Among this, Squamous cell carcinoma of the mouth with 5-year survival rate 5% and 200,000 deaths per year, is one of the most important health challenges around the world (Lin et al., 2011; Ashok-Kumar and Babita, 2014). Tobacco, alcohol, and carcinogenic alcohol metabolites are recognized among the most common and most dangerous risk factors of the disease (Ashok-Kumar and Babita, 2014; Neville, Damm and Bouqout, 2015). Based on the latest predictions by the World Health Organization (WHO), the rate of deaths from chronic consumption of tobacco products and nicotine addiction will reach 10 million by 2030 (Maka Sabashvili, 2018). Unfortunately, in Asia the rate of addiction to all opioids is high and tobacco has been associated with about half of mouth cancers in recent decades (Mallery et al., 2014; Ahmadi-Motamayel et al., 2013). In Iran, reports show that 2.8% of the population over the age of 15 years old is addicted to at least one addictive substance. However, reports indicate a 0.5% of addiction for the global population (Aflatoonian et al., 2014). Although the oral cavity is known as an easily accessible area for examinations, there is often a late referral or lack of proper treatment of pre-cancerous lesions. Therefore, oral cancers are generally diagnosed during advanced stages (Janbaz et al., 2014). so that, early diagnosis of pre-cancerous lesions and understanding their association with addictions are among the most critical methods for understanding and preventing deaths from oral cancer (Maka Sabashvili, 2018). Dentists have a key role in early detection of this oral changes, because of their familiarity with oral structure and interference in any kind of examination. Therefore, the aim of the present study was to investigate oral manifestations, specifically pre-cancerous lesions associated with the use of tobacco products and alcohol, as well as addictive drugs in patients referred to Oral Diseases department in Mashhad dental school. So that, we tried to

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establish a better understanding of the oral health in these patients and provide beneficial information for future studies.

## Method

This cross-sectional study was performed on 401 patients referred to Mashhad Dental School from March 2015 to June 2017. Among them, 200 subjects were selected for the case group and 201 subjects were selected in the control group. In the case group, subjects with an age of over 15 years and a history of at least one year of addiction to cigarettes, alcohol, hookah, non-smoking tobacco (pan), and other addictive substances entered the study. In addition, 201 subjects, who did not have any history of consumption of the substances mentioned above (in the past or present), enrolled in as control group. In the case group, patients addicted to hookahs (at least 3 times a month), cigarettes (2.5 rolls), pan (once a day), and alcohol drinkers were included in the study. (Patients who stopped consumption of mentioned substances for 5 years or more were excluded from the study) (Ahmadi-Motamayel et al., 2013; Aflatoonian et al., 2014; Patil, bahti and chaudhari, 2013; Shirzaei, 2011).

The data were obtained using a questionnaire-based interview, as well as examination. This checklist included: a. demographic information including age, sex, occupation, and education level; b. the potential presence of possible chronic disease, its type, and the drugs used; c. the history of the addictive substance, its type and amount (as well as the duration of addiction). Following the completion of the checklist, an oral diseases specialist examined the patients using a mirror and unit light, and any mucosal alteration and other observation of any lesion were recorded. In addition, sampling of the suspicious lesions was done. Then, the lesions were categorized based on the classification of reference books of oral diseases (Lester William Burket et al., 2015) into 4 general groups: white and red lesions, exophytic, pigmentation, and ulcers. Data were analyzed using SPSS 21 software, and descriptive statistics were used to evaluate the abundance of lesions and demographic characteristics of them. Furthermore, logistic regression was used to investigate the relationship between consumption of addictive substances and oral lesions, and Chi-square test for investigation of relationship between demographic variables and the using of the substances.

## Results

Out of the 401 referred patients to the dentistry faculty, 87.5% out of 200 cases, and 55.7% out of 201 controls were males. In addition, the average range of age in the case and control groups was  $40.116 \pm 14.81$  and  $41.28 \pm 12.17$ , respectively. According to Table 1, 68.5% of the case group and 15.9% of controls had a lesion in the oral cavity (Table 1).

the distribution of addictive substances misusers indicated that cigarettes alone (46.5%) and hookah alone (14%) were the most frequent substances. the gender distribution showed that hookah was the most misused addictive substance in females and cigarettes were the most substance for males. in addition,

regarding the patients consuming several substances simultaneously, the highest frequency was found for patients misusing cigarettes and other addictive substances (i.e Opium, Methamphetamine, Crystal and Heroin) at the same time (10.5%). The most common oral lesions in the case group included pigmentation (37%), fissured tongue (31.5%) and hairy tongue (25%), respectively. (Table 2).

Analysis of data was implemented using logistic regression. Analysis of each oral manifestations showed that there is a significant relationship between smoking and pigmentation ( $p < 0.001$ ), fissured tongue ( $p < 0.001$ ), hairy tongue ( $p = 0.004$ ), and plaque-like candidiasis ( $p = 0.014$ ). Furthermore, a statistical relationship was found between using hookah and Lichen planus precancerous lesions ( $p = 0.003$ ), as well as consuming pan and tobacco pouch ( $p < 0.001$ ). In addition, misusing other addictive substances had a relationship with candidiasis, but, alcohol (alone) was not associated with any oral manifestations (Table 3).

## Discussion

The results from this study indicated that cigarette was the most commonly misused addictive in the case group. As well, pigmentation and fissured tongue were the most common oral manifestations in the case group. The results showed that the most common precancerous lesion in the case group was plaque-like candidiasis, tobacco pouch, and Lichen planus. the reports indicate that spread pigmentation of oral tissue is higher in cigarette smokers compared to non-smokers (Goyal et al., 2017; Kato et al., 2017), which can be due to exposure to high levels of smoke and the presence of nicotine and benzoprine in the cigarettes, as well as the local heat stimulating the melanocytes of the oral tissue. It should be noted that a number of studies have mentioned age factor, specifically the age of beginning to smoke cigarettes, and the duration of tobacco misuse (Patil, bahti and chaudhari, 2013; Baala Vignesh and Thenmozhi, 2018). Histologically, the cellular stress induced by smoking and hookah may lead to abnormal inflammation in the oral mucosa, cellular structural changes, alternation of size in the nucleus and cytoplasm, and accelerating the aging process in epithelial cells (Seifi et al., 2013). the comprehensive review of Sabashvili et al (2018) in the United States showed that smokers are 6 times more likely to be at risk of precancerous malignant oral lesions, and plaque-like candidiasis is the most precancerous mucosal lesion in the oral cavity, which is most likely to occur among consumers of tobacco products in the United States and China (Maka Sabashvili, 2018; Kato et al., 2017). Their results are consistent with the results of this study.

Pan is a non-smoked chewed form of tobacco. We found that it is another risk factor for developing pre-malignant lesions in the oral tissue. In fact, chewing Pan for a long time inside the mouth can facilitate the absorption of nicotine and other carcinogen agents, including nitrosamine and aromatic hydrocarbons from oral mucosa and lead to keratotic lesions (Sahitha, 2014). In the study of Behura (2015) in China, Tobacco pouch was concluded to be the most important keratotic and pre-cancerous lesion among Pan users. His results are consistent with the current

study. In contrast, the study of Shirzaie (2011) on tobacco users of Zahedan city, no significant relationship was found between the consumption of Pan and the occurrence of pre-cancerous Tobacco pouch. The possible explanation for this difference can be in the type of Pan or possible additives to it, or the low population of his study. It should be noted that the duration of consuming Pan is another factor involved in the current study, which was more than a year based on input criteria. This matter was not mentioned in the study of Shirzaie.

On the other hand, it was found that oral manifestations are less invasive and malignant in non-smokers and non-alcoholic patients. Alcohol damages the structure of proteins which can increase the vulnerability to carcinogen agents (Scheidt et al., 2012). Lin et al. (2011) stated that oral cavity cancers happen to occur 3.1 times more in alcohol user patients. They found no statistically significant relationship between drinking alcohol and any oral lesions. It should be noted that due to the low sample size, they were not able to investigate this relationship more thoroughly. Considering the fact that getting access to statistics of alcohol users in Iran is moderately difficult and regarding religious restrictions, most people do not explicitly disclose information. This issue was a limitation of this study, and we suggest using other methods to collect information on this subject as well.

Today, there has been a dramatic increase in the prevalence of using tobacco products, alcohol, and addictive substances, and there has been a lack of awareness among most consumers about the alternations in these materials and the harmful effects associated with oral tissues, it is now very necessary to pay attention to this matter and conduct preventive programs to achieve the goal of early diagnosis in dentistry referrals. Furthermore, since quitting these substances as quickly as possible lead to an increase in the chance of recovery, paying attention to the public's awareness about the dangers of misusing these products is of major importance.

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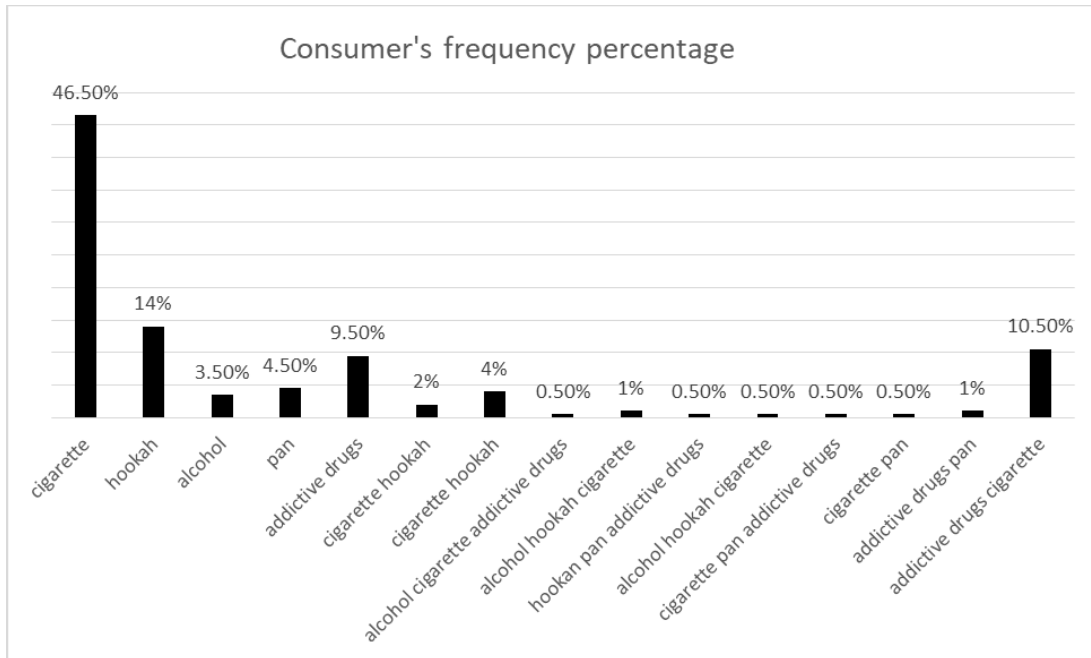


Chart 1- frequency percentage of Consumers of addictive substances

Table 1: Frequency of patients based on lesions in the two groups

Presence of lesions group	Yes		No
	Case	Abundance	137
Percent		68.5%	31.5%
Control	Abundance	32	169
	Percent	15.9%	84.1%

(Chi-square test of independence) p <0.001

Table 2: Frequency of lesions based on patients in the two groups

Lesion	Case		Control	Chi-square test of independence P-value
	Tobacco pouch	Abundance	10	
	Percentage	5%	0	
Lichen planus	Abundance	8	4	.238
	Percentage	4%	2%	
plaque-like candidiasis	Abundance	13	0	<0.001
	Percentage	6.5%	0	
Squamous cell carcinoma	Abundance	1	0	-
	Percentage	0.5%	0	
Candidiasis	Abundance	10	2	0.006
	Percentage	5%	1%	
Exophitic	Abundance	1	1	.565
	Percentage	0.5%	0.5%	
Pigmentation	Abundance	74	4	<0.001
	Percentage	37%	2%	
Aphthous	Abundance	3	0	-
	Percentage	1.5%	0	

Fissured tongue	Abundance	63	20	<0.001
	Percentage	31.5%	10%	
Hairy tongue	Abundance	25	1	<0.001
	Percentage	12.5%	0.5	
Ulcer	Abundance	23	3	0.407
	Percentage	11.5%	1.5%	

Table 3: The relationship between abuse of each addictive substance and occurrence of lesions

Type of oral lesion Addictive substance		<b>Fissured tongue</b>	<b>Hairy tongue</b>	<b>Candidiasis</b>	<b>Pigmentation</b>	<b>Lichen planus</b>	<b>plaque-like candidiasis</b>	<b>Tobacco pouch</b>
Cigarette (only)	93 persons	p<0.001	0.004	0.071	p<0.001	0.587	0.014	-
	46.5%							
Hookah (only)	28	0.204	0.142	0.998	0.391	0.003	0.607	-
	14%							
Alcohol (only)	7	0.999	0.999	0.999	-	0.999	0.999	-
	3.5%							
Non-smoked tobacco (only)	9	-	0.864	-	-	0.999	-	p<0.001
	4.5%							
Addictive drugs (only)	19	0.084	-	0.033	0.299	0.998	0.278	-
	9.5%							