RESEARCH ARTICLE

Prevalence of Oral Pre-malignant Lesions and its Risk Factors in an Indian Subcontinent Low Income Migrant Group in Qatar

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Abstract

Background: The expatriate population in Qatar largely comprises workers from the Indian subcontinent which has a very high rate of oral malignancy. Social and cultural habits and as well premalignant risk factors in this population remain prevalent even after migration. Materials and Methods: This cross sectional study assessed the prevalence of risk factors and occurrence of oral precancerous lesions in a low income group expatriate community from the Indian subcontinent residing in Qatar. Results: Among the 3,946 participants screened for oral premalignant lesions 24.3% (958) were smokers and 4.3 % (169) were pan chewers while 6.3% (248) were users of both smoked and smokeless forms of tobacco. Significantly higher proportion of industrial laborers (49.9%) followed by drivers (24.1%) were found to be smokers (p=0.001). The prevalence of white lesions was higher in smokers versus non-smokers 3.5% versus 2.3% (p=0.111), however this difference was statistically non-significant. Red and white lesions were highly significant (i.e. 1.2 % and 10.9% respectively) in the subjects with pan chewing and smoking habits (p=0.001). A significant proportion (8.9%) of the subjects with pan chewing habit showed evidence of oral precancerous lesions (p=0.001). Conclusions: Even though smoking and pan chewing were two significant risk factors detected in this population, their prevalence and occurrence of premalignant lesions are low as compared to the studies conducted in their home countries.

Keywords: Oral premalignant lesions - risk factors - Indian migrants - Qatar

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Introduction

Increased prevalence of oral cancer and its risk factors in Asian populations is well documented (Pisani et al., 1999; Global Adult Tobacco Survey-GATS India, 2009). The complex association between poverty, education, reduced access to treatment, low prioritization of the disease and the specific cultural and social habits are the main reasons for increased incidence of oral cancer in this underserved population (Priebe, 2008). It has been consistently shown that total incidence of and mortality from cancer is higher in underprivileged socioeconomic groups (Pisani et al., 1999; Hashibe et al., 2000; Harold et al., 2007; Priebe et al., 2008). The oral cancer is the eighth most common cancer globally and its incidence levels among men range from one to 10 cases per 100,000 which is twice as high in developing countries as they are in developed countries (Petersen, 2005).

It is known that the social and cultural habits in this population remain prevalent even after migration to better resourced countries (Hashibe et al., 2003). Countries that once rarely experienced high levels of oral cancer are likely to see a considerable increase of this disease (Hashibe et al., 2003; 2000; Avon, 2004). Studies have shown that between less than 1 and up to 18% of oral pre-malignant lesions will develop into oral cancer (Lee et al., 2012). Early detection of premalignant lesions can improve the prognosis and is well proved as an effective aid in disease prevention (Malaowalla et al., 1976; van der Waal et al., 2011). This cross sectional study assess the prevalence of oral precancerous lesion and its risk factors in the low income group expatriate community from Indian subcontinent residing in Qatar. The prevalence of possible etiological factors in different nationalities mainly focusing on smoking and pan chewing are also detected.

Materials and Methods

The permission to conduct the study in a specially set up venue at Doha, Qatar was taken from the office of the Ministry of Health services Qatar and from the research department of Hamad Medical Corporation, Doha, Qatar.

A population-based cross-sectional study was conducted. Inclusion criteria were low income expatriate workers (monthly income-QR 0 to 2000/-) from Indian sub-continent who has been residing at Qatar for a minimum of six months. Workers in different fields were

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randomly selected from medical camps organized on a yearly basis during 2005 to 2010. Participants below 18 years and those with history of oral malignancy were excluded from the study. Workers were transported from the hostels and private accommodations to a venue equipped with screening facilities.

On the day of screening, all the participants were explained about the purpose of the study and then a written informed consent was taken from each of them before the screening. The participants were given the options not to participate in the study if they wanted while waiting for medical assessment.

The first stage comprised of an interview to get demographic and preliminary data for the study and was done by trained members of the organizing voluntary associations. The close-ended questionnaire contained questions relating to risk factors of oral cancer and socio-demographic situation. The questionnaire was tailored for the study by modifying the WHO oral health assessment form.

The main outcome measures from the preliminary data collection were socio-demographic variables associated with oral cancer. The following data were collected. Habits of 1) Smoking; 2) Alcohol use; 3) Reverse smoking; 4) Different methods of chewing tobacco.

In the second stage, the entire recruited participants underwent an oral examination by at least one locally practicing licensed dentist. Suspected lesions were further seen by specialist dental surgeons who were the principal investigators. All non scrapable lesions not pertaining to any disease, not a normal variant, detected by a general practitioner are considered as suspected lesions. Further exclusion was done by specialist dentist to group them into mainly two types i.e. white lesions and red and white lesions. Sub-mucous fibrosis is grouped into any one of these groups according to the clinical presentation. Any ulcerative or mixed lesions are grouped into red and white category. All the red and white lesions and confirmed pre malignant lesions which required histopathological study were referred for further definitive treatment at Hamad Medical Corporation, Doha, Qatar.

Analysis of data was performed by using SPSS-20.0. Results of categorical responses were presented in terms of frequencies and percentages. Chi-square test was applied to compare the demographic and soft-tissue lesion characteristics between tobacco and non-tobacco users, also with regards to type of lesions. p value ≤0.05 was considered significant.

Results

Demographic findings and Profile of the study population

3946 participants were selected for the study after applying exclusion criteria in 4080 subjects enrolled for the preliminary screening. Majority were males (97.9%) in the study population with maximum number of participants (38.3%) falling in the age group of 31to 40 years and 35.5% belonged to group 41 to 50 years. Average monthly salary of the earning population was Qatar Riyal (QR) 940 with a minimum of 650 QR and a Maximum of 1900 QR (1$=QR3.7). Majority of the study population were construction labourers (26.8%) out of which 25.2% were drivers. Home labourers and office labourers were 20.7% and 17.7% respectively. Indian expatriate workers were the majority of the study subjects (71.1%) Bangladesh, Pakistan, Nepal and Sri Lankan nationalities were 10.6%, 9.5%, 5.4% and 2.7% respectively.

Prevalence of risk factors

The prevalence of use of tobacco smoking and pan chewing were found 24.2% and 10.6% respectively. While considering major professions, significant proportion of unclassified or multiple job holders were the major tobacco users (34.8%) followed by industrial laborers (26.9%) and drivers (25.2%) (p=0.001) (Table 3). Bangladeshis were found to be a significant proportion of tobacco users (36%) followed by Sri Lankans (26.2%) and Indians (24.9%) (p=0.001). Out of 9 patients with red & white lesions, only 2 of them (22.2%) were tobacco users while 7 (77.8%) were non tobacco users. Among 103 white lesions, 33% were tobacco users. Data reveals statistically insignificant prevalence of soft tissue lesion (p=0.111) in tobacco user population (Table 3).

Among the 3946 participants 958 (24.3%) were smokers and 169(4.3%) were pan chewers while 248(6.3%) were users of both smoked and smokeless forms of tobacco. Of the 958 smokers majority were using filtered cigarettes alone where a very small group (9) were

Table 1. Demographic Data

Variables		No. of patients	%
Gender	Male	3864	97.93
	Female	82	2.07
Age (Years)	18-20	19	0.5
	21-30	766	19.4
	31-40	1372	34.8
	41-50	1234	31.3
	51-60	505	12.8
	61-70	48	1.2
	71-80	2	0.1
Nationality	Bengali	419	10.6
	Indian	2834	71.1
	Nepali	213	5.4
	Pakistani	373	9.5
	Sri Lankan	107	2.7
Profession	Home labor	427	17.7
	Driver	915	25.2
	Office house keeping	280	20.7
	Industrial labor	1777	26.8
	Salesman	499	20.4
	Unemployed	25	20.0
	Unclassified/multiple jobs	23	34.7

Table 2. Type of Tobacco Intake and Lesions Detected

Variables		No. of patients	%
Smoking	Smoker	958	24.3
	Non-smoker	2988	75.7
Oral tobacco intake	Pan chewing only	169	4.3
	Pan & smoking	248	6.3
	Non pan chewing	3529	89.4
Lesion detected	Red & White lesion	9	0.2
	White lesion only	103	2.6
	No lesion detected	3834	97.2

using Shisha (Inhalation of vaporized flavored tobacco passed through a water basin) along with cigarettes. Most of the pan chewers (237out of 248) were using pan betel leaf/Nut with tobacco and 11 were using pan masala with tobacco. The prevalence of smoking is higher among the age group of 31 to 40 (24%), and the majority were using 5 to 10 cigarettes per day for at least 3 years. Significantly commonest nationalities participated in the study were Indians and Bangladeshis respectively 73.7% and 15.8% (p=0.001) as shown in Table 3. Significantly higher proportion of Industrial laborers' (49.9%) followed by drivers (24.1%) were found to be smokers (p=0.001). The prevalence of white lesion was higher in smokers versus non-smokers 3.5% versus 2.3% (p=0.111), however this difference was statistically non-significant. The red & white lesions were equally prevalent in tobacco and non-tobacco users (Table 3).

Data on consumption of alcohol as a causative factor was not taken into account due to insufficient and unreliable data.

Ratio of occurrence of pre malignant lesions in the oral cavity

All the lesions detected were in male patients. No females (82) reported to have any smoking or chewing habits. Soft tissue lesions detected in the oral cavity were less compared to other similar studies conducted in their home countries. Only 2.83% of the participants were found to have any one of the soft tissue lesions. White lesions was the most common lesion detected (2.52%). Leukoplakia and nicotine stomatitis and chewer's keratosis were the most common white lesions detected. Red lesions (erythroplakia) were detected in 0.12 % of the population out of which one of the lesions was diagnosed as squamous cell carcinoma on histopathologic study following referral to the hospital. 55% of the oral lesions were detected in the age group of 31 to 50 years. No lesions were detected in the age below 30 years. However, the proportion of lesions was significantly high in age group 61-70 years (p=0.002). Nationality wise distribution of lesions were statistically insignificant i.e. 2.82%, 2.14%, 4.69% and 2.94% in Indians, Bangladeshi, Nepal and Pakistani populations respectively (p=0.237), however no lesions detected in Sri Lankan participants (Table 4).

Table 3. Tobacco vs Non-tobacco Users

Variables	Total (n)	Tobacco user (n=958)	Non-tobacco user (n=2988)	p value
Profession				0.001
Home labor	427	76 (17.8)	351 (82.2)	
Driver	915	231 (25.2)*	684 (74.8)	
Office house keeping	280	58 (20.7)	222 (79.3)	
Industrial labor	1777	478 (26.9)*	1299 (73.1)	
Salesman	499	102 (20.4)	397 (79.6)	
Unemployed	25	5 (20.0)	20 (80.0)	
Unclassified/multiple jobs	23	8 (34.8)*	15 (65.2)	
Nationality				0.001
Bengali	419	151 (36.0)*	268 (64.0)	
Indian	2834	706 (24.9)*	2128 (75.1)	
Nepali	213	36 (16.9)	177 (83.1)	
Pakistani	373	37 (9.9)	336 (90.1)	
Sri Lankan	107	28 (26.2)*	79 (73.8)	
Type of lesions				0.111
Red and White lesion	9	2 (22.2)	7 (77.8)	
White lesion	103	34 (33.0)	69 (67.0)	
No lesion found	3834	922 (24.0)	2912 (76.0)	

*Shows statistical significance of result at 5% level of significance

Table 4. Distribution of Lesion Detected

Variables	Total (n)	Type of lesion found: Red & White (n=9)	White (n=103)	No lesion (n=3834)	p value
Age (years)					0.002
18-20	19	0 (0)	0 (0)	19 (100)	
21-30	766	2 (0.3)	13 (1.7)	751 (98.0)	
31-40	1372	4 (0.3)	40 (2.9)	1328 (96.8)	
41-50	1234	1 (0.1)	33 (2.7)	1200 (97.2)	
51-60	505	1 (0.2)	11 (2.2)	493 (97.6)	
61-70	48	1 (2.1)*	6 (12.5)*	41 (85.4)	
71-80	2	0 (0)	0 (0)	2 (100)	
Nationality					0.237
Bengali	419	2 (0.5)	7 (1.7)	410 (97.9)	
Indian	2834	6 (0.2)	74 (2.6)	2754 (97.2)	
Nepali	213	0 (0)	10 (4.7)	203 (95.3)	
Pakistani	373	1 (0.3)	12 (3.2)	360 (96.5)	
Sri Lankan	107	0 (0)	0 (0)	107 (100)	
Oral tobacco					0.001
Pan chewing	169	0 (0)	15 (8.9)*	154 (91.1)	
Pan & smoking	248	3 (1.2)*	27 (10.9)*	218 (87.9)	
No pan chewing	3529	6 (0.17)	61 (1.73)	3462 (98.1)	

*Shows statistical significance of result at 5% level of significance

Association of premalignant lesions to smoking and pan chewing

Palatal stomatitis nicotina was not observed in any patients. Smokers showed more white lesions (3.75%) when compared to non-smokers (2.54%). But the prevalence of red and white lesions was not significant when comparing non-smokers (0.23%) to smokers (0.20%). Red lesions and white lesions were highly significant (i.e. 1.2% and 10.9% respectively) in the subjects with pan chewing and smoking habits (p=0.001). Significant proportion (8.9%) of the subjects with pan chewing habit showed oral soft tissue lesions (p=0.001). These lesions were considerably high when compared to the non-chewing population (1.92%) as shown in Table 4.

Discussion

The selected population is a cross section of the low income socioeconomic group of the current migrant workers to Qatar from the Indian subcontinent. Social and cultural habits in this population remain prevalent even after migration. However the life style changes after migration and the lack of availability of some specific type of tobacco products may have altered these habits and its effects.

Smoking and chewing tobacco are the main two risk factors detected in the subject population. Due to the restricted availability of alcohol and its legal consequences of illegal consumption in the country, the data collected in relation to alcohol consumption was not reliable. This data had been discarded suspecting impurity. This is the main pit fall of the study.

Though 64.4 % of Qatar cancer registry cases were reported in expatriate population of Qatar (Bener et al., 2007), oral cancer is not among the top ten malignancies

reported in the region. The majority of the diagnosed cancer involving head and neck region were observed in the male population from Indian subcontinent.

All the lesions detected in this study were in male participants. Since a vast majority of the low income expatriate work force in Qatar are male, the female population reported to our study was only 2.1%. The male predominance in oral cancer prevalence cannot be supported in this study. The overall prevalence of oral lesions in the population (2.83%) is less when compared to other similar studies (Moore et al., 2010). The prevalence of white lesions (2.61%), and red and white lesions (0.22%) were also less when compared to those found in other previous studies (Reibel et al., 2003; Byakodi et al., 2012).

Effect of nature of job and stress related to work site in developing and continuing causative habits are well documented. The overall prevalence of smoking was 24.2% in this study. Bangladeshi population was the highest (36%) and the Pakistanis were the lowest (9.9%). The smokers percentage is less when compared to the previous studies (Valliani et al., 2012). Out of all different professions studied, industrial labourers were one of the major groups found to have high (26.8%) percentage of smokers when compared to home labourers (17.7%). Among industrial labourers 33% of masons were smokers. None of the maids, home nurses and housekeepers reported with smoking or chewing habits explaining the correlation of nature of work to the habits.

Tobacco chewing (10.6%) was found to be at lower rate in this study when compared to the similar Indian and Sri Lankan studies (Parkin et al., 2002; Subba et al., 2011; Lee et al., 2012; Somatunga et al., 2012; Pimple et al., 2012). Ascertaining to previous studies the lesions detected among chewing population was quite high (10.79%) when compared to the non-chewing participants of the study. The occurrence of both habits together (Smoking and chewing) and the relation to the lesions detected was also significant (Thongsuksai and Boonyaphiphat, 2001; Neufeld et al., 2005). The smoking and chewing were found to be the main significant predictors of premalignant lesions in this population. The Nepali population were noted to have a high incidence of chewing habits (18.7%) but with low rates of smoking when compared to the other population. Correlating to the chewing habits a higher incidence rate of oral lesions (4.69%) is seen in this group. Studies have shown that various carcinogens are isolated from different form of smokeless tobacco products. Betel chewing may induce oral cancers via a p53-independent pathway (Thongsuksai and Boonyaphiphat, 2001). All forms of pan products are proved to be associated with occurrence of precancerous lesions. This necessitates implementation of further awareness programs in this group.

Work related stress, financial burden and trauma of separation from the family are some of the factors that could lead to develop detrimental habits such as tobacco use. Though officially banned, the availability of pan products at the work site among the low income working population may also be a reason for the higher incidence of this habit in some of the study group. However while considering the whole study population the change in the life style, non availability of pan products in the market and fully engaged work schedule may explain the lower ratio of these habits and incidence of the lesion when compared to similar studies conducted in their home countries.

It has been seen in the study that the chewing habit is proved to be associated with premalignant oral lesions. As reported by Malcome, considerable advances have been made in tobacco control in south East Asian population and there is considerable decrease in pan chewing habits among the youth in these regions (Moore et al., 2010). Even though similar community measures were taken by the health authorities in the Middle East to control tobacco use, they are yet to show the desired results.

In conclusion, smoking and pan chewing are two significant risk factors of premalignant lesions of the oral cavity in the low income expatriate population. Prevalence of risk factors and occurrence of premalignant lesions are at a lesser rate in this population when compared to the studies conducted in the Indian subcontinent. However the availability of already banned pan products to this population necessitates the need for further more effective awareness campaign in this community. Studies of this nature could potentially help clinicians in identifying risk factors of similar immigrated population and would be beneficial for providing statistical evidence to the local health authorities for better resource planning.

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