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Frequency of premalignant lesions of oral cavity in Lyari Town, Karachi.

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Abstract:

Introduction: Usage of tobacco in any form and its related products is the chief avoidable reason of death around the globe based on reports published by WHO. Currently, approximately 6 million fatalities occur each year and majority of these deaths, almost 4 out of every 5 fatalities occur in less developed countries around the world.

Objective: To find out the frequency of premalignant lesion in oral cavity in persons consuming betel nuts and tobacco in Lyari town Karachi, Pakistan.

Methodology: After Institutional ethical committee approval, this cross-sectional survey was carried out in the routine camps at Bihar colony Lyari town under supervision of ENT and Oral Pathology Departments Sindh Government Lyari Hospital Karachi. Patients fulfilling inclusion criteria and given written informed consent were selected for the study.

Results: The demographic profile of study participants and it was seen that 15 (5.3%) of them were aged 20 to 30 years, 200 (70.4%) of them were males, 92 (32.4%) of them had primary education, 109(38.4)of them were laborers 89(31.3%) of them were Sindhi. The overall frequency of premalignant lesions of oral cavity was found in 28 (9.86%) in study participants. Oral submucous fibrosis (OSF) was seen in 11 (39.3%) of the individuals, 8(28.6%) were having Lichen planus, 5(17.9%) were having leukoplakia, and 4(14.2%) were having erythroplakia.

Conclusion: Despite the fact that the study found a higher frequency of OPML than earlier studies in this demographic, the proportion of those who used tobacco in any form was significantly higher.

Keywords: Oral premalignant lesions, screening, risk factors, tobacco use, Betel Quid

Introduction:

Usage of tobacco in any form and its related products is the chief avoidable reason of death around the globe based on reports published by WHO.¹ Currently, approximately 6 million fatalities occur each year due to the usage of tobacco and projections estimate that by the year 2025, the number of deaths associated with the use of tobacco will increase to a staggering 9 million deaths each year. The majority of these

deaths, almost 4 out of every 5 fatalities will occur in less developed countries around the world.² Betel nuts and tobacco is used in a multitude of different ways from smoking cigarettes and pipes to products that are smokeless and are readily available in various mixtures and textures. The consumption of smokeless tobacco products is prevalent both in India and Pakistan. India is the world's second-largest prominent country, with prevalence rates of 21.3 percent in men

and 19.3 percent in women.³

As expected, the prevalence and occurrence of oral cavity pre-malignant lesion is significantly higher in developing countries when compared with relatively more developed nations around the world. South Asian countries such as India, Pakistan, Bangladesh, and Sri Lanka are considered high-risk, with the oral cavity accounting for nearly a quarter of all new occurrences of oral cavity cancer.⁴ Squamous cell carcinoma (SCC) accounts for more than 92 percent of oral cavity and oropharyngeal malignancies. It is the highest occurring type of oral cavity cancer in the southern areas of Pakistan.⁵ Consumption of betel nuts, alcohol, tobacco and its related products combined with other factors such as dietary and the environmental issues are highly correlated with this type of oral cavity lesions.⁶

The most common oral precancerous lesions as determined by WHO (World Health Organization) are oral leukoplakia, oral submucous fibrosis (OSMF) and oral erythroplakia.⁷ Chewing betel nuts, tobacco chewing, and tobacco smoking are all risk for developing potentially pre-malignant oral lesions. The link between tobacco chewing in the form of ghutka and smoking cigarette with both pre-cancerous and cancerous pathological lesions has been substantiated already.⁸ At times, early stages of malignancy may mimic benign lesions which may lead to incorrect treatment and thus potentially fatal consequences for the patient. In these conditions, oral cavity develops malignant lesions from premalignant conditions.^{9,10}

Many cancers are not identified until late stages of disease, despite the oral cavity's general accessibility during physical examination. Multiple screening and detection strategies have been developed to address the problem of malignant transformation of these precursor lesions. Early identification of cancer is crucial since survival rates rise dramatically when the oral tumor is discovered at an early stage.¹¹ The frequency of oral squamous cell carcinoma is increasing worldwide. The major risk factors of OSCC are chewing of betel nuts, smoking and consumption of alcohol. In Pakistan and other parts of South Asia, chewable tobacco is used in the form of products include naswar, tambaku, paan and chalia.¹² In Pakistan, the leading causes of oral cavity cancer include the use of betel nuts, alcohol, smoking of cigarettes and chewing of betel quid which is primarily made by using toxic ma-

terials such as slaked lime and areca nut.¹³

Oral cavity cancer is an aggressive disease but usually preceded by pre-malignant phase. This study will help in determining proportion of pre-malignant oral cavity lesions in patients. Limited research has been carried out in this perspective in our country however incidence of oral cavity pre-malignant lesion is enhancing day by day.

Objective:

To find out the frequency of premalignant lesion in oral cavity among persons consuming betel nuts and tobacco in Lyari town Karachi, Pakistan.

Methodology:

This After Institutional ethical committee approval, this cross-sectional survey was carried out in the routine camps at Bihar colony Lyari town under supervision of ENT and Oral Pathology Departments Sindh Government Lyari Hospital Karachi. Patients fulfilling inclusion criteria and given written informed consent were selected for the study. To be selected for the study, patient should not be on treatment for any lesion of the oral cavity, having no dental implants, there should no history of surgery, chemotherapy or radiotherapy for oral lesion in the past. As per a recently published study¹⁴ the prevalence of oral potentially malignant illnesses in Indian population is 13.7. Sample size calculation is done by using single proportion mathematical formula using OpenEpi open resource sample size calculator recommended by WHO. Consider by $z=1.96$ by taking 95% confidence interval, acceptable margin of error (0.04). Finally, we have considered $n=284$ patients during the study period. The study's participants were chosen non-probability convenience sampling technique. Data was collected from each patient through a questionnaire. Questionnaire was administered to the patients in Urdu and English and information was recorded by a research officer. The patients gave their written informed permission. Before agreement was obtained, the study's purpose, procedure, risks, and benefits were explained. Confidentiality about the patient's particulars was ensured. The questionnaire include the socio-demographic details of the patient as well as patient's history of clinical symptoms, types of addictions, and duration of addiction of betel nuts, tobacco smoking and chewing. The statistical package for social science (SPSS) version 21 used to enter and analyze the data. For categorical variables, frequencies and percentages

were calculated, and for continuous variables, means and standard deviations were calculated. Chi square test was used to compare the categorical variables. The significance level was kept at 0.05.

Results:

Total The demographic profile of study participants showed that 15 (5.3%) of them were aged 20 to 30 years, 200 (70.4%) of them were males, 92 (32.4%) of them had primary education, 109 (38.4) of them were laborers 89 (31.3%) of them were Sindhi.

Table 1: Association of socio demographic characteristics with oral pre malignant disorders.

Factor	Variables	OPML Present N (%)	OPML Negative N (%)	p-value
Gender	Male	19(9.5)	181(90.5)	0.754
	Female	9(10.7)	75(89.3)	
Social Status	Middle	13 (13.7)	82(86.3)	0.125
	Lower	15(7.9)	174(92.1)	
Ethnicity	Sindhi	8(9)	81(91)	0.948
	Mohajir	6(8.3)	66(91.7)	
	Baloch	7(12.1)	51(87.9)	
	Pashtun	3(9.7)	28(90.3)	
	Punjabi	4(11.8)	30(88.2)	

In the study group, 75 (45.7%) people smoked tobacco 1 to 5 times per day, 61 (37.2%) subjects smoked 5 to 10 times per day, and 28 (17.1%) subjects smoked more than 10 times per day. The overall frequency of premalignant lesions of oral cavity was found in 28 (9.86%) in study participants. Oral submucous fibrosis (OSF) was seen in 11 (39.3%) of the individuals, 8 (28.6%) were having Lichen planus, 5(17.9%) were having leukoplakia, and 4(14.2%) were having erythroplakia. For the site of tumor, 19(67.9%) had buccal mucosal cancer while 9 (32.1%) had non-buccal mucosa. The results showed that tongue to be the commonly affected site in oral cancers was tongue followed by floor of mouth because of the tobacco exposure due to smoking rather than chewing. For the oral habits, 172(60.6%) was daily brushing with toothpaste while 41(14.4%) was using miswak and 71(25%) using any other form. A family history of oral cancer was found in 26 people (9.2%), while a family history of any cancer was found in 32

people (11.3 percent). The most prevalent complaint among people with OPML was a difficulty to open the mouth (19.8%), followed by a burning sensation in the mouth while eating (12.8%), bleeding (2.7%), discomfort while swallowing (4.3%), and a recent change in taste (3.3%).

Table 2: Association of chewing habits and frequency of Chewing habits with oral pre malignant disorders.

Factor	Categories	OPML Present N(%)	OPML Negative N(%)	p-value
Chewing Habits	Pan	5(13.5)	32(86.5)	0.018
	Gutka	6(7.1)	29(82.9)	
	Niswar	2(22.2)	7(77.8)	
	Chaalial	4(14.8)	23(85.2)	
	Smoking	2(6.4)	29(93.6)	
	Mixed	9(66)	11(44)	
Frequency of Chewing Habits	1 to 5 times a day	4(5.3)	71(94.7)	<0.001
	5 to 10 times a day	8(13.1)	53(86.9)	
	> 10 times/day	16 (57.1)	12(42.9)	

Table 3: Association of oral habits and family history of oral cancer with oral pre malignant disorders.

Factor	Categories	OPML Present N(%)	OPML Negative N(%)	p-value
Oral Habits	Daily brushing with toothpaste	6(3.5)	166 (96.5)	<0.001
	Miswak	5(12.2)	36(87.8)	
	Any other form	17 (23.9)	54(76.1)	
Family History of Oral Cancer	Yes	10 (38.5)	16(61.5)	<0.001
	No	18(7)	240(93)	

Discussion:

Oral cancers are usually caused by precancerous lesions that have the potential to become cancerous.

Potentially malignant lesions (PML) are oral mucosal lesions that have a higher chance of developing into cancer than healthy mucosal lesions.¹⁵ The overall prevalence of OPML was 9.86 percent, with prevalence rates of 17.9 percent, 14.2 percent, and 39.3 percent for leukoplakia, erythroplakia, and OSMF, respectively. This is similar to Burungale SU et al findings in Jaitala, where OPML was found in 3.25 percent of the population.¹⁶ However, the prevalence of OSMF was higher and that of leukoplakia was lower in comparison to the current study. However, this contrasts with the findings of Narasannavar A et al., who found a greater prevalence of OPML in Belgaum. OSMF was the most prevalent OPML among these lesions, followed by lichen planus, erythroplakia, and leukoplakia.¹⁷ Kumar et al., found a higher incidence of OSMF, leukoplakia, and lichen planus in Indore, Madhya Pradesh, while erythroplakia was determined to be the least frequent OPML. Erythroplakia was also shown to be uncommon in our study. Saraswathi et al., reported a reduced prevalence of OPML and all kinds of OPML in a hospital-based study from Chennai.¹⁸

People aged 35 and up, 13 and up, and 14 years and up were studied by Lim et al., Saraswathi et al., and Sujatha D et al., respectively.¹⁸⁻²⁰ The current study, however, included the population with a mean age group of 20 years and above with a mean age group as indicated by other authors. The majority of the participants in this study were in the 30 to 50 year and >50 year age groups, which is comparable to the findings of Hazarey et al.²¹

Oral Lichen planus was found to be present in 28.6% of the participants in the current investigation. Snuff users had a slightly higher frequency of Lichen planus than smokers, according to Axell and Rundquist. Smoking habits may affect the natural history of oral Lichen planus, despite the fact that the potential for malignant transformation of such a lesion is unknown.²² Chewing pan masala with tobacco was the most common practice reported by participants in this survey, and it was statistically significant. According to Maher R et al. and Shiu MN et al.^{23,24}, the risks increased with the duration and frequency of the practice. In the current study, 17.1% of participants had a frequency of >10 times per day for a period of >10 years, and 37.2 percent had a frequency

of 5 to 10 times per day for a period of >10 years. Betel quid chewing was found to be the primary cause of PML in Oral Leukoplakia (OL) and OSF in the current investigation. In this study, habits were found to be the major cause of PML and oral cancer, with chances increasing as the habit's duration and frequency increased.

According to Hashibe et al., having a high socioeconomic position was protective for the development of OPML.²⁵ In our investigation, no significant differences in the frequency of oral premalignant illnesses were detected between different socioeconomic position and ethnicity groups. According to Garavello et al., oral cancer in the family is a robust predictor of acquiring oral cancer.²⁶ In the current study, 38.5 percent of people with OPML had a family history of oral cancer. Other sorts of oral habits were discovered to be used by 23.9 percent of subjects in our study. This is in line with a study conducted in Nigeria by Oji et al., which found that poor oral hygiene was caused by not brushing teeth on a regular basis.²⁷ The majority of the patients in Akram et al., study came from low or lower middle socioeconomic groups. Urdu was spoken by the majority of the patients, followed by Sindhis, Pushtoons, Punjabis and Baluchis.²⁸ The majority of the participants in our study were Sindhis and Mohajirs.

Conclusion:

Despite the fact that the study found a higher frequency of OPML than earlier studies in this demographic, the proportion of those who used tobacco in any form was significantly higher. Cigarette smoking and betel quid chewing with and/or without tobacco chewing are the two most significant risk factors for PMLs, according to the findings of this study.

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