ORIGINAL ARTICLE

Types of Various Oral Mucosal Lesions with Respect to Trends of Chewable Tobacco and Their Subsequent Histopathological Findings

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ABSTRACT

Objective: To find out the pattern of tobacco use practices and the effects of chewable tobacco and other forms of tobacco use on oral mucosa.

Study Design: Retrospective observational study.

Place and Duration of Study: Study was started from 1st July 2018 to 31st December 2018 and was conducted at Maxillofacial surgery OPD, Isra Dental Hospital.

Materials and Methods: Samples of leukoplakia, erythroplakia or growth in oral cavity were collected from Maxillofacial surgery OPD. After taking detailed history including chewable tobacco habits, biopsy was taken and then results were analyzed by using SPSS version 22.0.The categorical data were expressed in terms of frequencies and percentages. The Chi square test was used to determine the association of different variables.

Results: Majority of the patients were found to have naswaar addiction followed by gutka, smoking, areca nut, mainpuri and paan. Most of the patients i.e., 59% with oral lesions were having basic education at primary level and belonged to middle class monthly income category 35(39.77%) followed by low monthly income 28(31.8%).We noted significant association between various oral habits of tobacco use and biopsy reports and oral squamous cell carcinoma was observed as the common findings among study population.

Conclusion: We have reached to the conclusion that in our region chewable tobacco is most common and significantly associated with risk of development of oral lesions and subsequent oral squamous cell carcinoma.

Key Words: *ChewableTobacco, Gutka, Mainpuri, Naswar, Oral Lesions, Squamous Cell Carcinoma*.

Introduction

In Southeast Asian countries including Pakistan tobacco is easily available in open market and our cultural norms are adding support to these habbits.[1] The habits of chewing tobacco are also popular in younger age groups and females due to attractive appearance and easy availability of these products at cheaper rates. Such habits are also supported by illiteracy and deficiency of knowledge about their devastating effects. The cultural norms and regional demographic variations are responsible for differences in the incidence of oral lesions.[2] Tobacco use is directly linked with higher incidence of oral cancer as large proportion of our population is consuming the various forms of tobacco. Tobacco is used in the form of cigarettes, pipe, bidi or chewable form such as naswar, ghutka and paan.[3] Various studies have reported the presence of nearly 28 or more carcinogenic agents in chewable tobacco such as tobacco-specific nitrosamines (TSNAs), polonium, formaldehyde, cadmium, lead and benzopyrene.The various forms of chewable tobacco have been reported to be linked with malignant tumors of head and neck.[4,5]

Most of the cases of oral lesionsinvolve prolonged usage of tobacco. Such lesions also have chances of malignant transformation at the rate of 3-5%.[6] The type of oral lesionboth malignant and nonmalignant varies with the type of tobacco being consumed and the way it is used.[7] Oral cancer is gaining attention as one of the most challenging dilemma for the world which is thought to be directly associated with prolong tobacco usage.[8] Despite of modern therapeutic modalities, Pakistan is still ultra-receptive to oral cancer. This can possibly be credited

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to the exposure to lower socioeconomic status, illiteracy, and various environmental factors.[9]

Looking at the co-morbidities associated with use of tobacco and its consequences, it is very sad to write here that at the country level no definitive measures are being taken. Thereforeit is a real need for public awareness to curtail such tobacco addiction to reduce the incidence of different oral lesions as well as oral squamouscell carcinoma.[2] Although we know that tobacco is linked with oral cancer but it is not clear in literature that which form of tobacco and tobacco chewing habits are more prone to cause which type of oral lesion; therefore the present study was designed with the objective to find out the patterns of tobacco use practices and the effects of chewable tobacco and other forms of tobacco use on oral mucosa.

Materials and Methods

This was a retrospective observational study done from 1st July 2018 to 31st December 2018.The study was approved by Ethics Review Committee (ERC), Board of Advanced studies and Research (BASR)Isra university Hyderabad. A total of 88 samples were collected from Maxillofacial surgery OPD, Isra Dental Hospital by non-probability purposive sampling technique. Samples from patients with leukoplakia, erythroplakia or growth in oral cavity were included in the study.Both the male and female patients, belonging to all age groups and ethnic groups without socioeconomic discrimination were included in this study. Medical records were studied for demographical data of the participants.

Samples with inadequate oral biopsy material were excluded from the study. Informed consent was taken from all the participantsand biopsy was performed by standard protocols by dental surgeon. Paraffin embedded blocks were prepared from all the biopsy samples and were cut into 5µ thin sections by microtome. Thin sections were processed further by using Haematoxylin and Eosin stains and were focused under light microscope by experienced pathologists for the histopathological diagnosis. The data was analyzed through SPSS version 22.0. The categorical data were expressed in terms of frequencies and percentages. The Chi square test was used to determine the association of different variables.

Results

In present study 88 patients with leukoplakia, erythroplakia or growth in oral cavity were studied. In our study most of the patients i.e., 59% with oral lesions fall under the category of basic education level according to proforma designed (Table-I). According to socioeconomic status patients were divided into four categories with respect to their monthly income as shown in table-I. Most of the patients with oral lesions belonged to middle class monthly income category 35(39.77%) followed by low monthly income 28(31.8%). The biopsy findings based on histopathological diagnosis revealed; oral squamous cell carcinoma (OSCC) being most common finding with 64(72.7%) cases (Table-II).According to the various addiction trends majority of the patients were found to have naswar addiction 21(23.9%) followed by gutka 15(17%), smoking 15(17%), areca nut 13(14.8%), mainpuri 6(6.8%) and paan6(6.8%). However about 12(13.6%) patients were found with no use of chewable tobacco. This shows that most patients with oral lesions 61(69.3%) were addicted to smokeless tobacco use (Table-III).The association between various oral habits of tobacco use and biopsy findings were found statistically significant with p-value=0.01, as is shown in table-III.

TableI: The Distribution of Patients according to Literacy Level and Economy Status

S.No	Education Status	No. Of Patients (88)	Percentage
1	Illiterate	24	27.27 %
2	Basic education (Up to Primary)	52	59%
3	High education (Up to Matriculation)	10	11.36 %
4	Graduation	02	2.27 %
	Socio-Economic Status	**No. of Patients (88)**	**Percentage**
01	Very Low monthly Income(<Rs.20,000/-)	15	17.04%
02	Low monthly Income(20,001 to 50,000/-)	28	31.8%
03	Middle monthly Income (50,001 to 100,000)	35	39.77%
04	High monthly income(>100,000/-)	10	11.36%

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TableII: TheDistribution of Patients According to Biopsy Findings (n=88)

Biopsy Diagnosis	Number of Patients (n=88)	Percentage
Squamous cell carcinoma	64	72.7%
Benign tumor (Pyogenic granuloma, Squamous cell papilloma)	15	17%
Inflammatory	06	6.8%
Material inadequate	03	3.4%

Table III: Association of Biopsy Findings with Various Chewable Tobacco Habits

Biopsy Findings	Habits							Total	p-value
	Naswaar	Gutka	Smoking	Areca nut	Mainpuri	Paan	None		
Oral squamous cell carcinoma	21	10	11	11	0	3	8	64	0.01
Benign tumor (Pyogenic granuloma, Squamous cell papilloma)	0	5	4	2	3	0	1	15	
Inflammatory	0	0	0	0	3	3	0	6	
Inadequate material	0	0	0	0	0	0	3	3	
Total	21	15	15	13	6	6	12	88	

P value significant at ≤ 0.05

Discussion

Tobacco induced oral mucosal lesions are result of damage to oral protective mechanism or presence of carcinogen in tobacco products.[10]In our study the most prevalent habit was naswaar chewing. Similar results with little variations were given by Saira et al in 2019.[11]Inpresent study the second most common habit was smoking and gutka chewing which is in consistent with the results of Behura SS in 2015.[12] However another study conducted in India by Rooban has reported alcohol as most seen habit for oral mucosal lesions.[13]These differences might be due to cultural variations and increase alcohol misuse among individuals in their population. In another study, the second mostly reported chewing habits was betel quid which is in similarity with our study showing 17% cases with gutka or quid chewers.[14]

According to our study most encountered oral lesions were oral squamous cell carcinoma which was in contrast with the results found by Mohiuddin S in 2016 and Priya MK in 2018 who found oral submucus fibrosis as most common tobacco induced oral lesions.[15,16]In present study majority of the patients i.e., 59% with oral lesions had primary education level. This finding is consistent with an Egyptian cohort study in which they classified patients according to education level in three groups i.e. No education, basic education, and high education and their most of the patients were of basic education (55.2%).[17] In another study in Iran has divided population in two groups i.e., illiterate and literate having 78.9% oral lesions in illiterate people. However, they did not define the term illiterate. As many people doesn't consider primary education as criteria of literacy; if it is that so then our study is also consistent with this study.[18]

In present study majority of the patients with oral lesions belonged to middle class monthly income category 35(39.77%) followed by low monthly income 28(31.8%).It may be also because most of the population in our country is comprised of middle class that is low monthly income and middle monthly income. It may also be due to their working environment and easy availability or affordability of chewing tobacco to these proportions of population. The comparable findings by some other studies have reported the low socioeconomic status in majority of the patients in other parts of the country.[19] Another national study conducted in Karachi reported higher 45% of the cases with OSCC with very low socioeconomic status which contrasts with the findings of present study.[20]

Our study revealed that most of the OSCC cases were smokeless tobacco addicts;in the form of naswaar and ghutka which was in similarity with the results of studies done by Younis S et al in 2016 and Muange P in 2014.[21,22] However Wang X has revealed that joint effect of tobacco and alcohol had a significant effect on occurrenceof OSCC.[23] Our study showed that second mostly seen risk factor for oral squamous cell carcinoma was smoking and areca nut which was in similarity with the results by Khan et alwho have reported both smoking and betel nut chewing as most common related factors for oral submucus

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fibrosis.[24] According to present study tobacco induced reactive inflammatory lesions were about 7% which is also supported by Kamble KA study, conducted in india.[25] But in contrast Cebeci AR in 2009 reported that mostly oral mucosal lesions are reactive in nature.[26] This difference might be due to less frequent usage of tobacco among study groups and some cultural variations.

Our study proved the indication that unfortunately prevalence of tobacco induced OSCC in our community is 17%. However other authors believed that tobacco induced OSCC is only 1% in their society.[27] This variation might be due to adequate screening programs of oral precancerous lesions by timely biopsies done by oral practitioners in their society. But in our society oral soft tissue biopsies are advised at very late stage.[28]

Conclusion

We reached to the conclusion that in our region chewable tobacco is most common and significant risk factor for development of oral lesions and subsequent oral squamous cell carcinoma.

REFFERENCES

1. Kaur J, Rinkoo AV. Public health perspectives of smokeless tobacco and areca nut use in the COVID-19 era. Nicotine and Tobacco Research. 2020 Sep;22(9):1660-1.
2. Younus S, Hadi NI, Ahmed F, Mohammad H. Role of chewing habits and cigarette smoking in differentiation of oral squamous cell carcinoma. Pak J Med Dentistry 2016; 5 (03):32-37.
3. Khan Z, Suliankatchi RA, Heise TL, DregerS.Naswar (Smokeless Tobacco) Use and the Risk of Oral Cancer in Pakistan: A Systematic Review With Meta-Analysis.NicotineTob Res. 2019 Jan 1;21(1):32-40. doi: 10.1093/ntr/ntx281.
4. Stanfill SB. Reducing carcinogen levels in smokeless tobacco products. In Smokeless Tobacco Products 2020 Jan 1: 167-187, Elsevier.
5. Agarwal A, Bhattacharya M. Tobacco use and oral mucosal changes in Baiga tribals of Madhya Pradesh. The Journal of Community Health Management. 2020;7(4):136-40.
6. Fatima N, Mohiuddin S, Hosein S, Hosein M. Socio-economic implications of a Younger aged Female Predilection in malignant transformation of Oral Sub mucous Fibrosis. J Ayub Med Coll Abbottabad 2019;31(1):16–20.
7. Tirukkovalluri SS, Luck CP, Makesh RL, Akhshaya PT, Radhakrishnan A, Karthick RC, et al. Workplace based potentially malignant oral lesions screening among tobacco consuming migrant construction site workers in Chennai, South India: A pilot study. Journal of Family Medicine and Primary Care. 2020 Sep;9(9):5004.
8. Hu Y, Zhong R, Li H, Zou Y. Effects of Betel Quid, Smoking and Alcohol on Oral Cancer Risk: A Case–Control Study in Hunan Province, China. Substance use & misuse. 2020 Jun 1;55(9):1501-8.
9. Javed A, e Zahra G, Qureshi AM. Epidemiology of Oral Cancer in Pakistan. American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS). 2020 Sep 11;72(1):118-27.
10. Kamala KA, Sankethguddad S, Nayak AG, Sanade AR, Rani SA. Prevalence of oromucosal lesions in relation to tobacco habit among a Western Maharashtra population. Indian Journal of Cancer. 2019 Jan 1;56(1):15.
11. Saira, Ahmed R, Malik S, Khan MF, Khattak MR. Epidemiological and clinical correlates of oral squamous cell carcinoma in patients from north-west Pakistan. JPMA. The Journal of the Pakistan Medical Association. 2019 Aug;69(8):1074-8.
12. Behura SS, MasthanMK, Narayanasamy AB. Oral mucosal lesions associated with smokers and chewers–a case-control study in chennai population. Journal of clinical and diagnostic research: JCDR. 2015 Jul;9(7):ZC17.
13. Rooban T, Rao A, Joshua E, Ranganathan K. The prevalence of oral mucosal lesions in alcohol misusers in Chennai, south India. Indian Journal of Dental Research. 2009 Jan 1;20(1):41.
14. Driemel O, Kunkel M, Hullmann M, Kleinsasser N, Staudenmaier R, Muller-Richter U, et al. Performance of conventional oral brush biopsies. HNO. 2008 Feb;56(2):205-10.
15. Mohiuddin S, Fatima N, Hosein S, Hosein M. High risk of malignant transformation of oral submucous fibrosis in Pakistani females: A potential national disaster. J Pak Med Assoc. 2016 Nov 1;66(11):1362-6.
16. Priya MK, Srinivas P, Devaki T. Evaluation of the prevalence of oral mucosal lesions in a population of eastern coast of South India. Journal of International Society of Preventive & Community Dentistry. 2018 Sep;8(5):396.
17. El-Aziz A, AbouShousha A, Ali S, Zahran F. Prevalence of Potentially Malignant Lesions and Oral Cancer Among Smokers in an Egyptian cohort: A Hospital-based Cross-Sectional Study. Advanced Dental Journal. 2020 Jul 1;2(3):93-100.
18. Saravani S, Kadeh H, Arbabi S. Oral and Dental Status, Oral Health-Related Quality of Life and Associated Factors among Institutionalized Elderly in Southeast Iran-A Cross Sectional Study. Journal of Dental Materials and Techniques. 2020 Dec 1;9(4):176-84.
19. Yasser F, Mushtaq S, Ahmad A, Tauseef A, Yasser R. Examine the Prevalence of Risk Factors and Causes of Oral Squamous Cell Carcinoma. Medical Forum monthly. 2020 Aug;31(8):97.
20. Anwar N, Pervez S, Chundriger Q, Awan S, Moatter T, Ali TS. Oral cancer: Clinicopathological features and associated risk factors in a high-risk population presenting to a major tertiary care center in Pakistan. Plos one. 2020;15(8):e0236359.
21. Younus S, Hadi NI, Ahmed F, Mohammad H. Role of chewing habits and cigarette smoking in differentiation of oral squamous cell carcinoma. Pak J Med Dent, 2016; 5(3): 32-

DOI: https://doi.org/10.57234/652

37.
22. Muange P, Chindia M, Njiru W, Dimba E, Mutave R. Oral squamous cell carcinoma: A 6-month clinico-histopathologic audit in a Kenyan population. Open Journal of stomatology. 2014;4(10):475.
23. Wang X, Xu J, Wang L, Liu C, Wang H. The role of cigarette smoking and alcohol consumption in the differentiation of oral squamous cell carcinoma for the males in China. Journal of cancer research and therapeutics. 2015;11(1):141.
24. Khan KA, Javed AW, Javed M. Correlation of Smoking and Betel Nut with the Effect of Survivin Expression in Oral Submucous Fibrosis in Local Population J Pak Dent Assoc 2015; 24(3):121-128.
25. Kamble KA, Guddad SS, Nayak AG, Suragimath A, Sanade AR. Prevalence of oral mucosal lesions in Western Maharashtra: A prospective study. Journal of Indian Academy of Oral Medicine and Radiology. 2017;29(4):282.
26. Cebeci AR, Gulsahi A, Kamburoglu K, Orhan BK, Oztas B. Prevalence and distribution of oral mucosal lesions in an adult Turkish population. Med Oral Patol Oral Cir Bucal. 2009;14(6):E272-7
27. Do LG, Spencer AJ, Dost F, Farah CS. Oral mucosal lesions: findings from the Australian National Survey of Adult Oral Health. Australian Dental Journal. 2014;59(1):114-20.
28. Amjad K, Anwar A, Malik YR, Sukhia HR. Knowledge, attitude, and practice of dental practitioners in karachi regarding oral cancer. Pakistan Oral & Dental Journal. 2018;38(4):508-12.

CONFLICT OF INTEREST

Authors declared no conflicts of Interest.

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DATA SHARING STATMENT

The data that support the findings of this study are available from the corresponding author upon request.

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