

SMOKELESS TOBACCO AND IT'S ASSOCIATION WITH TOOTH LOSS

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ABSTRACT

Smokeless tobacco is one of that cause of oral disease and especially in Pakistan and India.¹ Objective this study was to determine the prevalence of smokeless tobacco use and the association with tooth loss and oral health in patients coming Dow University of Health Sciences Karachi, Pakistan.

256 patients of age above 18 years were studied in outpatient department of oral diagnosis at Dow University of Health and sciences Karachi. The participants were clinically examined in two different groups according to exposure of smokeless tobacco. The oral health problems found among the participants were gingival recession (72%), tooth loss including tooth wear loss (68%) and missing teeth (60%). However, there were significant association between smokeless tobacco and gingival recession, tooth wear and edentulousness, as a result P-value obtained less than 0.05 on chi-square test. Furthermore odds ratio revealed that people who used smokeless tobacco had 4 times more chances to have tooth loss and 3 times more chances to have gingival recession than those people who don't use smokeless tobacco.

It was concluded that those who chew smokeless tobacco are more likely to have missing teeth, attrition and gingival recession.

Key Words: Partially Edentate, edentulousness Gingival recession, Attrition, Tooth loss, Tooth wear, Chewing tobacco (smokeless tobacco).

INTRODUCTION

Smokeless tobacco use is common in all over the world especially in south Asian countries, Africa, North America and Europe.¹ Smokeless Tobacco has fetal effects globally and causing mortalities and morbidities due to which 90% of death are because of its carcinogenic nature.² Smokeless tobacco users have higher risk of tooth loss and oral carcinomas due to continuous wear and tear in oral cavity including hard and soft tissues.³ In Karachi Pakistan smokeless tobacco are available in various forms like Betel Quid (pan), Gutka, and Main puri.⁴ In different countries it comes with different brand names, but usually main ingredients are the same in all types of smokeless tobacco.

Use of smokeless tobacco is one of traditional habits in Pakistan and India, due to that around 100 millions of people have an addiction, In India 49% of men and

90% of women have this habit and diagnosed with carcinomas of neck region.²² Furthermore a study was conducted in out-patient department among hospital in Karachi reported 20% and 17% of tobacco and betel chewing respectively.²³ India, Sri Lanka, Maldives, Bangladesh, Myanmar, Taiwan and numerous islands in South Pacific, Thailand, Indonesia, Malaysia, Cambodia, Vietnam, Philippines, Laos, China and in migrant communities from these countries are also involved in consumption of smokeless tobacco.⁵ Snuff (Niswar) is also another type of smokeless tobacco available in powdery form and is highly consumed in Khyber Pakhtunkhwa region of Pakistan. Chewing tobacco is also popular in Far East and Middle East countries and in these countries it is mixed with areca nut and lime and is sold as pan masala.⁷

Chewing tobacco (Pan) is composed of piper betel leaf filled with sliced areca nut, slaked lime, catechu and Tobacco. Another type of smokeless tobacco is Gutka which is made by mixing of betel nuts, aromatic spices and tobacco, both are available in chewable form whereas Snuff (Niswar) is mainly made up of tobacco with small amount of spices, lime, cardamom and menthol, Snuff has typical style of using by keeping in buccal vestibules of oral cavity.^{4,6}

It is seen that regarding edentulousness in India 62% of people are edentate either completely or par-

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Received for Publication: September 17, 2015

Revised: December 2, 2015

Approved: December 4, 2015

tially due to multiple reasons like periodontal diseases, systemic diseases, and chewing tobacco habits.⁸ Attrition, erosion, and abrasion also cause tooth loss which could be due to bruxism or continuous mastication and grinding load on teeth while chewing tobacco.⁹ In this study the objective was to assess association between tooth loss and use of smokeless tobacco.

METHODOLOGY

Total 256 people were observed clinically keeping important variables in questionnaire and has been asked history of smokeless tobacco use, among 256 patients 128 were exposed to smokeless tobacco and same amount were unexposed. Group sample size was calculated according to open-Epi software following the patient's ratio at Dow University of Health sciences. Study was carried out from April 2015 to September 2015. Convenient sampling has been used. All persons above 18 years old formed inclusion group and those below 18 years old were excluded.

The examination was conducted by myself as dental surgeon and by post graduate trainee, who acted as the principal investigator. Single tooth or more than one tooth missing was reported under edentate status. In Questionnaire assessment of edentulousness, was reported "Yes" if the teeth were completely or partially missing in oral cavity and "No" if all teeth were present except wisdom tooth. Wisdom tooth is excluded because there were chances of impaction of third molar which might cause false association in study.

Tooth surface loss or attrition, caries was also reported as same criteria of which edentulousness variable been reported. Gingival recession was recorded "Yes" if it was found present either localized or generalized. The data was subjected to descriptive and analytical statistics in form of frequencies, and percentages using SPSS software version 16. Test of significance was done by using Chi square statistics and $P < 0.05$ was considered as being statistically significant. Odd ratio has been calculated to check that how likely to be diseased to being a smokeless tobacco user.

RESULTS

Out of the 128 participants of smokeless tobacco exposed group 90 of them were male giving a prevalence of 70% and 30% of female. Majority were using smokeless tobacco in chewable form like Pan and Gutka except 4 patients (3%) have been found who keep snuff (non-chewable) along the buccal sulcus of oral cavity. The oral health problems among the participants were gingival recession (72%), tooth loss including tooth wear lesion (68%) and missing teeth (60%) where as in control group out of 128 participants were gingival recession (46%), tooth loss including tooth wear lesion (35%) and missing teeth (29%). However, there were

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS WHO USE SMOKELESS TOBACCO

Parameters	No. of users	P-value
Age (years)		0.01
18-20	4(3%)	
21-40	96 (75%)	
41-60	24 (18%)	
>60	4 (3%)	
Gender		0.88
Male	90(70%)	
Female	38(30%)	
Education Level		0.002
Primary	18(14%)	
Middle	24 (19%)	
Matric	32 (25%)	
Graduation	30 (23%)	
Master	2 (2%)	
No education	22 (17%)	
Employment Status		0.05
Employed	60 (47%)	
Self employed	22 (17%)	
Un employed	46 (36%)	
Routine Dental Visit		<0.01
Every three month	8 (6%)	
Every six months	2 (2%)	
Every year	40 (31%)	
Never visited	78 (61%)	
Duration (years)		<0.01
1-5	24 (18%)	
6-15	70 (54%)	
> 15	34 (26%)	
Frequencies (time/day)		<0.01
1-5	51(39%)	
6-20	73 (57%)	
> 20	4 (3%)	

TABLE 2: TOOTH LOSS AND ORAL HEALTH ISSUES AMONG THE PARTICIPANTS

Oral health parameters	No. of Users	P-value
Edentulousness	78(60%)	<0.01
Tooth wear	86(68%)	<0.01
Gingival recession	92(72%)	<0.01

- There is significant association if P-value is less than 0.01

significant association between smokeless tobacco and gingival recession, tooth wear and edentulousness as a result P value obtained less than 0.05 on chi-square test.

Furthermore odds ratio revealed that people who use smokeless tobacco have 4 times more chances to have tooth loss and 3 times more chances to have gingival recession than those people who don't use smokeless tobacco (Table 1 and 2).

DISCUSSION

When we consider prevalence then we found that in this study there were more males than females who use smokeless tobacco so if we compare this with another study conducted in Karachi that also show high prevalence of male who use smokeless tobacco.^{6,10} One study research on sports men 50% of them were found being smokeless tobacco users and approximately same results was were found in African adults whereas an opposite result found in Bangladesh and Malaysia where females are more users of smokeless tobacco than males which could be due to cultural differences between population in different countries.¹¹

Most important issue revealed in this study was that people who were exposed to smokeless tobacco they had more gingivally recessed teeth, tooth wear and missing teeth which is statistically significant. Tooth surface loss and gingival recession can be due to continuous load on tooth while chewing and frequent use of smokeless tobacco on specific location in oral cavity as a result this can also lead to buccal and mucosal changes like Hyperkeratosis and Acanthosis.¹²⁻¹⁷ Snuff is non-chewable smokeless tobacco but it is lesion producing tobacco and cause severe localized gingival recession due to its typical style of use, similarly according to one another study population sample of adolescents, the use of smokeless tobacco (moist snuff) was not associated with the presence of periodontal disease except for a significantly high prevalence of gingival recessions.^{12,18}

When compared to non-users of tobacco, tooth loss was greater among subjects who consumed tobacco in India so that in this study as well.¹⁹ Moreover if we look at socioeconomic status than we will find that smokeless tobacco consumer are more in employed than unemployed. The reason behind these results possibly due to their affording condition to buy the smokeless tobacco, as far as education is concern than Matric and graduate people have more job frequency in data. In Pakistan it has also been noticed that there is common culture of using smokeless tobacco among students' especially medical students which is raising alarm for our health departments.²⁰

In present study there could be chance of information bias because approximately 99 percent of patients had started tobacco chewing at age of 19 whereas it was also found that 52 patients who were between age of 18-22 were exposed to smokeless tobacco and 48 of them has started smokeless tobacco use even before the age of 18, so the point is very clear that in Pakistan specially in city of Karachi children have very easy access to tobacco and they can purchase tobacco from anywhere and anytime they want to, also in Mariana island on third of school children have started use of smokeless tobacco at age of 10 years.²¹ It was also found that most of the people knew the hazards of smokeless tobacco use but they have said that they feel relaxed and usually they enjoy when they grind tobacco under the teeth.

Furthermore lots of smokeless tobacco producing companies spent huge amount on their marketing and also they make chewing tobacco packing very attractive. These companies usually appoint super models in their commercials which makes impression on audience that smokeless tobacco chewing is very enjoyable activity but in reality it is not. It is very important to Bann all type of tobacco especially smokeless. Pakistan's health departments should look in to this issue, though in this study only one case has been found regarding excessive mucosal growth which may be carcinoma but still lots of researches have proved that smoke or smokeless tobacco both could cause cancer at any stage of life.

There are some limitations and weakness in present study. I believe that this study do not compare the results with smoking status of participants. Initially while examining the patient taking interview by researchers no medical history has been taken so we don't know that those patients who have gingival recession or tooth loss whether it is because of tobacco or any other medical condition. Caries detection has not achieved properly due to staining and attrition of teeth in exposed group and also x-ray has been avoided due to its cost and rays exposure. If we consider another important aspect than we will find that limited study settings and small sample size is also weakness of this study, as this study has been done in an outpatient department of Dow university of Health Sciences, Karachi, so it is difficult to generalized it to whole population of Karachi but this study gives an idea that there is some link between smokeless tobacco and tooth loss.

Nevertheless the results of this research can be used by health authorities to make intervention policies regarding tooth loss and also statistics of this study can be provided to Law enforcement authorities which will be wakeup call for them to restrict import and production of any type of tobacco. Finally I recommend that Social media, Print media, and broad telecasting channels

should play important role to awake smokeless tobacco user. Dental surgeons and other medical practitioners should keep updating their patients regarding hazards of smokeless tobacco. As far as community, social worker and public health members are concern they can also encourage the community against the use of smokeless tobacco by making strategies, policies and delivering oral health awareness. As a parents and guardian of children it's our responsibility to keep an eye on all activities of our kids especially when they are going to jump in teen age. Pocket money spending should be supervised by parents and guardians and also try to convince our local shop keeper to stop selling smokeless tobacco containing items.

CONCLUSION

It is concluded that smokeless tobacco use is associated with tooth loss and this study have found that there is some relation and link between use of smokeless tobacco specially in chewable form and tooth loss. People who chew the tobacco have higher chances to lose their teeth than those who don't smoke.

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