

Comparative Study to Evaluate the Periodontal Health of the Patient with the Habits of Gutka and Khaini

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Abstract

Background: Habits are as old as mankind. Human behavior relates to health directly as well as indirectly. Human habits and lifestyle behavior through social norms, culture as well as environment for which we do not have much control, affect health indirectly. Diet, physical fitness, preventive, and self-care behavior have its effects on health directly. One such habit that has deleterious effect on human body is tobacco consumption. The purpose of the present study was to compare the effect of consumption of gutka and khaini on periodontal health. **Materials and Methods:** A total of 300 subjects in the age range of 18–50 years were chosen for this cross-sectional study from the outpatient Department of Periodontology, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India. Among the selected subjects, 100 were gutka users and 100 were khaini users and were non-users. The clinical parameters included are plaque index (PI), gingival index (GI), probing pocket depth (PPD), clinical attachment loss (CAL), and gingival recession (GR). **Results:** PI, GI, CAL, and GR were significantly higher in khaini users than gutka users and subjects with no habits which were found to be statistically significant ($P < 0.05$). The mean PPD was higher in gutka users than khaini users which were also found to be statistically significant. **Conclusion:** Based on the observational facts, the authors draw the conclusion that PI, GI CAL, and GR were higher in khaini users whereas PPD was higher in gutka users.

Keywords: Gutkha, Khaini, Periodontal health.

INTRODUCTION

Tobacco and its numerous forms have existed for times immemorial. It has been indicated as a crucial factor for disease causation and death in modern times.

Tobacco consumption is broadly categorized as smoking tobacco and smokeless tobacco (SLT). The most common type of tobacco consumption is cigarette smoking. The combustion and pyrolytic products of tobacco generated during the course of smoking are considered to be accountable for the harmful effects.^[1]

SLT may be used orally or nasally. In the South East Asia, SLT is extensively used in oral form. SLT incorporates numerous compounds that are cancerous in nature. In India, approximately 35–40% of tobacco is consumed in smokeless forms.

SLT can be used by chewing which includes (a) tobacco with betel quid, (b) tobacco with slaked lime, and (c) tobacco with areca nut and slaked lime preparations or by sucking/sipping.^[2]

In India, pan, gutka, and khaini are very popular. The use of SLT can cause systemic vascular diseases, impart foster nicotine

addiction and dependence, it can also increase the chances of oral cancers and oral mucosal lesions at the placement site of tobacco.^[3] These site associated manifestations include gingival inflammation, changes in gingival blood flow, interproximal periodontal attachment loss, recession, and mucosal lesions.^[4,5]

At present, the addiction to SLT is increasing rapidly in school and college going students. In Jamshedpur, a district in Jharkhand the use of SLT is very common in the form of gutka and khaini, possibly due to low socioeconomic status and lack of awareness regarding oral health.

Hence, the present study was designed to analyze the influence of SLT on oral tissues and to compare the effect of consumption of gutka and khaini on periodontal health.

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MATERIALS AND METHODS

A total of 300 subjects in the age range of 18–50 years were chosen for this cross-sectional study from the outpatient Department of Periodontology, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India. Among the selected subjects, 100 were gutka users and 100 were khaini users and were non-users. The protocol for this study was endorsed by the Institution's Ethical Committee. Written informed consent was obtained from all participants before the inclusion in the study. Subjects using gutka and khaini for a minimum of 2 times a day for the past 6 months, having a minimum of 20 teeth present formed the inclusion criteria. Patients using tobacco in any form other than gutka and khaini, alcoholics, patients with known systemic disease, patients with history of periodontal treatment in the past 6 months, and patients on antibiotic therapy in the past 3 months were excluded from the study.

The assessment consisted of two parts. The first part consisted of a questionnaire about the individual's demographic details and usage patterns of tobacco. The second part incorporated the oral examination and recording the periodontal changes. The clinical parameters recorded included plaque index (PI),^[6] gingival index (GI),^[7] probing pocket depth (PPD), clinical attachment loss (CAL), and gingival recession (GR). GR was assessed as present or absent only. All the parameters were recorded using UNC-15 probe by a single examiner.

RESULTS

The subjects in the study were categorized into three groups: khaini users, gutka users, and no habit. Each group has 100 samples. The parameters compared between them were: PI, GI, CAL, PPD, and presence of GR. The comparison was done on the basis of the age of the subjects, frequency of khaini/gutka consumption, and duration of khaini/gutka consumption.

In all the three age groups (18–25 years, 26–35 years, and 36–50 years), the PI, GI, CAL, and GR were significantly higher in khaini users than gutka users and subjects with no habits which were found to be statistically significant ($P < 0.05$). The mean PPD was higher in gutka users than khaini users which were also found to be statistically significant ($P < 0.05$) (Table 1).

For all the three frequency groups (1–2 times, 3–4 times, and >5 times), the mean PI, GI, CAL, and GR were significantly higher in khaini users than gutka users and subjects with no habits which were found to be statistically significant ($P < 0.05$). The mean PPD was higher in gutka users than khaini users which were also found to be statistically significant ($P < 0.05$) (Table 2).

For all the three groups based on duration (1–5 years, 5–10 years, and >10 years), the mean PI, GI, CAL, and GR were significantly higher in khaini users than gutka users and subjects with no habits which was found to be statistically significant ($P < 0.05$). The mean PPD was higher in gutka

Table 1: Age-wise comparison

Plaque index							
Age groups	Khaini users		Gutka users		No habit		P-value
	Mean	SD	Mean	SD	Mean	SD	
18–25 years	0.7	0.1	0.4	0.1	0.2	0.1	0.021
26–35 years	1.6	0.3	1.3	0.2	0.9	0.2	
36–50 years	2.6	0.8	2.3	0.9	1.5	0.4	
Gingival index							
Age groups	Khaini users		Gutka users		No habit		P-value
	Mean	SD	Mean	SD	Mean	SD	
18–25 years	0.6	0.1	0.4	0.1	0.3	0.1	0.037
26–35 years	1.2	0.4	1.1	0.5	0.8	0.3	
36–50 years	2.9	1.2	2.6	1.1	1.7	1.1	
Clinical attachment loss							
Age groups	Khaini users		Gutka users		No habit		P-value
	Mean	SD	Mean	SD	Mean	SD	
18–25 years	1.8	0.2	1.6	0.1	1.1	0.1	0.041
26–35 years	3.1	1.4	2.9	1.1	1.2	0.1	
36–50 years	5.8	2.1	5.5	1.8	1.6	0.4	
Periodontal pocket depth							
Age groups	Khaini users		Gutka users		No habit		P-value
	Mean	SD	Mean	SD	Mean	SD	
18–25 years	1.8	1.2	2.2	0.9	0.6	0.1	0.002
26–35 years	2.4	1.4	2.9	1.2	1.1	0.7	
36–50 years	5.3	2.2	5.6	2.3	1.8	1.1	
Gingival Recession							
Age groups	Khaini users		Gutka users		No habit		P-value
	n	%	n	%	n	%	
18–25 years	15	15.0	12	12.0	10	10.0	0.018
26–35 years	35	35.0	30	30.0	14	14.0	
36–50 years	50	50.0	45	45.0	30	30.0	

users than khaini users which were also found to be statistically significant ($P < 0.05$) (Table 3).

DISCUSSION

In developed nations, one of the major causes of death is tobacco consumption which is also increasing in the developing countries and accounts for about 1/2 of the world's disease burden to tobacco as measured by DALY's (WHO).^[8,9]

The use of tobacco is one of the major risk factor for a wide range of pathologies and oral diseases such as oral cancer, oral mucosal lesions, gingival and periodontal diseases, and dental caries. Tobacco contains a large number of carcinogens, which are more in cigarette smoke than in smokeless ones. In SLT, nitrosamines are the strongest whereas in cigarette smoke benzo[a]pyrene and other polycyclic aromatic carcinogens are the main and strongest carcinogenic agents.^[10]

The rationale of this study was to analyze the outcome of gutka and khaini on the periodontium of SLT users as well as their

Table 2: Frequency-wise comparison

Plaque index					
Frequency	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–2 times	0.6	0.1	0.4	0.1	0.001
3–4 times	1.8	0.2	1.7	0.4	
>5 times	2.2	0.9	2.1	1.1	
Gingival index					
Frequency	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–2 times	0.5	0.1	0.3	0.1	0.031
3–4 times	1.9	0.3	1.8	0.6	
>5 times	2.7	1.1	2.5	0.9	
Clinical attachment loss					
Frequency	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–2 times	1.5	0.4	1.1	0.2	0.029
3–4 times	3.2	1.1	3.0	1.2	
>5 times	6.1	2.2	5.8	2.1	
Periodontal pocket depth					
Frequency	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–2 times	1.9	0.9	2.1	1.1	0.008
3–4 times	2.5	1.1	2.7	1.4	
>5 times	5.5	1.9	5.7	2.1	
Gingival recession					
Frequency	Khaini users		Gutka users		P-value
	n	%	n	%	
1–2 times	17	17.0	12	12.0	0.011
3–4 times	27	27.0	23	23.0	
>5 times	56	56.0	52	52.0	

comparison with the non-tobacco users and, also, to analyze the correlation between the severities of periodontal destruction with the kind of SLT in a Jamshedpur-based population.

In our study, 89.5% male and 10.5% of females used SLT which is in accordance with findings in the study conducted by Hazarey *et al.*,^[11] Sinha *et al.*,^[12] and Bala *et al.*^[13] Bala *et al.*^[13] observed that in males, consumption of tobacco was more than 2 times as compared to females and the use of pan masala was 4 times greater in males than in females. Sinha *et al.*^[12] found that 78% of men and 52% of females use tobacco in rural Bihar, India. Differences in male and female in tobacco use depend on local or regional matter.

In our study, 79% male and 21% female are khaini users whereas in gutka users, all are male (100%) this is similar to study done by Gupta *et al.*,^[14] where out of total candidates not a single female was found who use gutka or khaini.

In our study, peak incidence of khaini users lie in 18–25 years age group that is similar to study done by Saranya and Sudha.^[15]

Table 3: Duration-wise comparison

Plaque index					
Duration	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–5 years	0.5	0.1	0.4	0.1	0.025
5–10 years	1.9	0.6	1.8	0.3	
>10 years	2.4	1.1	2.3	1.2	
Gingival index					
Duration	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–5 years	0.8	0.1	0.7	0.1	0.006
5–10 years	1.9	0.4	1.8	0.5	
>10 years	2.7	0.9	2.6	1.1	
Clinical attachment loss					
Duration	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–5 years	1.7	0.3	1.3	0.1	0.043
5–10 years	3.4	1.2	3.1	0.9	
>10 years	5.9	2.1	5.7	1.9	
Periodontal pocket depth					
Duration	Khaini users		Gutka users		P-value
	Mean	SD	Mean	SD	
1–5 years	2.1	1.8	2.3	1.3	0.041
5–10 years	2.3	1.2	2.5	1.4	
>10 years	6.1	2.4	6.2	2.1	
Gingival recession					
Duration	Khaini users		Gutka users		P-value
	n	%	n	%	
1–5 years	14	14.0	10	10.0	0.038
5–10 years	26	26.0	22	22.0	
>10 years	60	60.0	55	55.0	

The study showed that gutka users were in the 36–50 years age group which is in contradiction with the study by Verma *et al.*^[16] According to the study by Kumar *et al.*,^[17] 60% of SLT users started the habit before 21 years of age and approximately 22% began to have it before the age of 15 years. According to the study by Singh *et al.*,^[18] the peak incidence of SLT intake was found in 21–30 years age group.

In our study, the results of PI and GI indicate that the non-SLT users have better oral cleanliness compared to SLT users which are similar to the study by Verma *et al.*^[16] Singh *et al.*^[18] also found that the SLT users had more calculus. Similarly, less percentage of gingival inflammation was present in non-tobacco users as compared to SLT users. These resembled the findings of Ramnath *et al.*^[19] and Yong *et al.*^[5] A site-specific study by Poore *et al.*^[20] reported greater gingival inflammation at SLT placement sites as compared to non-users. Study by Parmar *et al.*^[21] showed that the incidence of bleeding gums was significantly higher in quid-chewers than non-chewers.

Similarly study done by Amarasena *et al.*^[22] revealed that the plaque and gingivitis level were significantly higher in those using tobacco when compared to non-users. Amarasena *et al.*^[22] also confirmed that in the tobacco users, the number of sites showing gingival bleeding was remarkably more compared to non-users which are in accordance with many studies such as Arno *et al.*,^[23] Waerhaug,^[24] Preber and Kant,^[25] Preber *et al.*,^[26] and Linden and Mullally.^[27]

Verma *et al.*^[16] and Amarasena *et al.*^[28] showed that GR is significantly higher among gutka chewers than non-chewers. Study by Parmar *et al.*^[21] revealed that CAL and GR were more prevalent among gutka chewers than non-chewers. Study by Baelum *et al.*^[29] showed that a higher incidence of CAL was found in older age groups as compared to younger age groups which are similar to our findings.

Yong *et al.*^[5] reported that GR and CAL were observed in SLT users having habit of >10 years. PPD and CAL have been observed to be greater in SLT users than non-users. Kumar *et al.*^[17] reported that risk of PPD increased with the duration and frequency of tobacco consumption which is similar to findings of our study.

Singh *et al.*,^[18] in his study, compared the different types of SLT users and concluded that members having the habit for >5 years showed a higher incidence of PI, GI, and PPD compared to those having the habit for <5 years which is similar to our study.

CONCLUSION

Based on the observational facts, the authors draw the conclusion that PI, GI, CAL, and GR were higher in khaini users whereas PPD was higher in Gutka users. The pattern of periodontal destruction revealed a relationship between the frequency, duration, and type of SLT used.

Limitation

1. It was a short-term study with a small sample size.
2. Socioeconomic status was not recorded.

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