



Prevalence of Oral Submucous Fibrosis among Different Habitual chewers

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Abstract:

Background

OSMF is the most commonly occurring premalignant condition progressively more distressing the youth. This is the most common disorder occurring at younger age people using arecanut, pan, betelnut, gutka. The occurrence of OSMF in gutka chewers is far more faster and more severe as compared in other forms of areca nut products chewers. Arecanut products are easily available in public places has impacted for younger generation which has lead to increased occurrence of OSMF. So on use of areca nut and its products in various forms specially gutkha and pan masala have to control by individual.

Aim

The study aims to determine the association of gutkha, arecanut, pan and other smokeless forms of tobacco among 150 patients with oral submucous fibrosis.

Materials and methods

The study included 150 patients diagnosed histologically with Oral submucous fibrosis. A questionnaire was distributed to the patients and the results were correlated with the grades of Oral submucous fibrosis. The data was analysed by SPSS (Statistical Package for Social Services, version 10) and inferential statistics such as Chi – Square test was used following the method of Rao and Richard.10

Results:

This study showed people who chewed gutka for a period of two to four years after keeping five to ten minutes with a frequency of more than ten pouches per day are prone to oral submucous fibrosis.

Conclusion :

There is a higher prevalence of potentially malignant disorders with oral submucous fibrosis showing a higher prevalence in the younger generation establishing the higher rate of occurrence of OSMF among chewers

Key words : Oral submucous fibrosis, arecanut, pan ,gutka.

INTRODUCTION :

Oral sub mucous fibrosis (OSMF) is an insidious, chronic fibrotic change affecting any part of oral mucosa and has been considered as potentially malignant disorder. OSMF is a chronic disease of oral mucosa characterised by inflammation and progressive fibrosis of the lamina propria and deeper connective tissues, followed by stiffening of mucosa resulting in difficulty in opening the mouth [1,2].The diagnosis of OSMF is made on clinical grounds.

Habitual chewing of gutkha (mixture of dry areca nut, tobacco and other chemical in trace for flavouring) and other areca nut quid plays a major role in the aetiology of the disease [3,4] Gutkha is very commonly used by younger generation and has become extremely popular acting as a main cause of OSMF [5]. It is usually established today that areca nut quid plays a key role in the aetiology of the disease [6]. While many causative factors have been discussed in the literature [7] about the people who do not chew areca nut [3,4]. Studies also correlate with the frequency and duration of chewing areca nut.[5,6].The disease occur mainly in India and in South East Asia but the cases have been reported worldwide like Kenya, China, UK, Saudi Arabia. [8,9].

Comparative studies of the OSMF in habitual chewers of gutkha, panmasala and betel quid have exposed very exciting data, that the increasing use of gutkha is related with an earlier onset of OSMF. It was found that gutkha

was liable for early onset of the disease. In analysis of such a situation when there is a incredible enhance of OSMF cases and its early onset, there is a need to accomplish the comparative studies to estimate the consequence of gutkha in young adults of the area where it is highly prevalent. It becomes essential to investigate the area of damage done by the considerable utilization of gutkha along with areca nut with reference to the onset of OSMF and its histopathological changes. There is a lack of reports on staging it by severity with socioeconomic status, and habitual eating of gutkha and other quids. The main purpose of this study was to investigate the relationship of gutkha and other areca nut quid with severity of OSMF along with socioeconomic status of the patient.

MATERIALS AND METHODS:

The present study was conducted at selected private dental college in the city of Chennai, India. Patients attending the private dental college of Chennai or oral diseases (disorders) were screened for Oral Sub mucous Fibrosis. The total 150 patients of Oral Sub mucous Fibrosis were selected for study in the period of 2015-2016. The youngest case of OSMF was 20 year old and the oldest one was 65years of age. The criteria for the existence of disease was prepared on the basis of subjects who gave a positive history of areca nut product in the form of gutkha ,pan masala and based on signs and symptoms which include

restriction of mouth opening, hyper salivation, difficulty in swallowing, inability to protrude the tongue. The exclusion criteria included patients with other systemic disorders, smokers and people who consumed alcohol.

An questionnaire was prepared to collect complete information of all the subjects such as age, sex, socioeconomic status, residential status, religion, oral hygiene condition, any chewing habits, brand of quid, frequency of taking quid, style of chewing, duration of chewing habits, were recorded. Socioeconomic status was classified according to the income and education of the patient.

The data also incorporated factors such as burning sensation of mouth and tongue, irritation of mouth with chillies and spicy food, dryness of mouth or hyper salivation, difficulty or inability in opening mouth, blanched appearance of mucosa, soft palate movement restriction, inability to protrude tongue, occurrence of palpable fibrous band.

The cases were divided into three stages according to the severity of the disease; grade I (mild), grade II (moderate) and grade III (Severe). Grade I (mild) subjects had burning sensation and dryness of the mouth, irritation on eating hot and spicy food, Oral mucosa was blanched with little restriction of mouth opening. Grade II (moderate) when all the clinical finding present in grade I and blanched, considerable restriction of mouth opening, tongue protrusion is little restricted, difficulty in speaking and eating and oral hygiene poor. In grade III (severe) all the clinical features were like grade I and grade II including thick fibrous bands occurring on both buccal mucosa of cheek, very little mouth opening, restricted tongue protrusion, speech and eating very much impaired and oral

hygiene very poor. The data were analysed by SPSS (Statistical Package for Social Services, version 10) and inferential statistics such as Chi – Square test was used following the method of Rao and Richard.10

RESULTS:

Severity of the disease was concurrent with the use of gutkha and other areca nut products along with its duration of use, time of using the products in the mouth, frequency and style of chewing. The socioeconomic status of the patients was also correlated with the severity. Out of total 150 OSMF patients, 24cases belonged to grade III followed by 54grade II and 72grade I. It was observed that in middle socioeconomic class maximum number of cases 59.25 percent belonged to grade 2 followed by grade 3 58.3 percent and grade III 5.5 percent. In low socioeconomic class pattern was same as of the middle class being percent of 20.8 grade I, 16.67percent grade II and 20.8percent grade III. In the upper middle class severity of cases in the grades was grade III 58.3percent followed by grade II 14.8 percent and grade I 5.5percent where as OSMF cases belonging to the upper class equally suffered from grade III and grade II being 12.5percent, 9.25 percent and grade I, 5.5 percent respectively (Table .1). $P < 0.00001$.

All the OSMF cases were having some chewing habits only 1 case were found to be without chewing habits and they suffered from grade II. It was observed from the data that most of the cases were gutkha chewers and among them 42.5 percent developed grade I followed by grade II 38.8 percent and grade III 20 percent. Pan chewers were also having same pattern, maximum number of cases 38.5 percent were suffering from grade I which is quite higher than those who used gutkha (Table 2). $P = 0.32$

Table: 1 Showing socioeconomic statuses of OSMF cases in relation to severity of disease.

Socioeconomic status	Grade 1 (Mild)		Grade 2 (Moderate)		Grade3 (Severe)		Total	
	No.	%	No.	%	No.	%	No.	%
Lower class	15	20.8	9	16.67	5	20.8	29	100
Middle class	49	68	32	59.25	2	8.3	83	100
Upper middle class	4	5.5	8	14.8	14	58.3	26	100
Upper class	4	5.5	5	9.25	3	12.5	12	100
Total	72	24.1	54	24.9	24	24.9	150	100

$X^2 = 42.65$ p value is < 0.00001 The result is significant at $p < 0.05$

Table: 2 Showing severities of OSMF cases using gutkha and other products

Gutkha and other products	Grade1 (Mild)		Grade2 (Moderate)		Grade3 (Severe)		Total	
	No.	%	No.	%	No.	%	No.	%
No habit	0	0	1	0	0	0	1	100
Gutka	23	42.5	21	38.8	12	20	56	100
Pan	28	38.8	14	25.9	7	14.1	49	100
Panmasala	11	1.5	12	22.2	5	13.8	28	100
Arecanut	10	13.8	6	11.1	0	0	16	100
Total	72	24.1	54	24.9	24	24.9	150	100

$X^2 = 9.23$ p value is 0.32 The result is not significant at $p < 0.05$

The data show that 43 percent patients who were chewing gutkha and other products for less than 2 years suffered from grade I, followed by 24 percent grade II and only 17.3 percent grade III. Whereas the patients who chewed gutkha and other products between 2 < 4 years suffered more about 56.5 percent grade III and 35.1 percent grade II (Table .3). P = 0.004

It has been also observed from the data that the patients who were using gutkha and other products for less than 2 minutes in the mouth developed 18 percent grade I, 7.4 percent grade II and not a single case from grade III. The OSMF cases who kept it between 5 < 10 minutes suffered

65.2 percent grade III, followed by 35.1 percent grade II and 25 percent grade I (Table 4). P< 0.05

Table 5 shows the distributions of severity of OSMF in relation to the frequency of using gutkha and other related products per day. The data show that the patients who used gutkha and other products less than 2 pouches per day developed 33.3 percent grade I followed by 14.8 percent grade II and not a single developed grade III. On the other hand the OSMF cases used gutkha and other related products more than 10 pouches per day developed 34.7 percent grade III, 9.2 percent grade II and 2.7 percent grade I (P< 0.05) highly significant.

Table 3 Showing duration of using gutkha and other products related to the severity of OSMF cases

Duration of using gutkha and other products	Grade1 (Mild)		Grade2 (Moderate)		Grade3 (Severe)		Total	
	No.	%	No.	%	No.	%	No.	%
< 1 yr	11	15.2	4	7.4	0	0	14	100
1 < 2 yrs	31	43.0	13	24	4	17.3	48	100
2 < 4 yrs	18	25	19	35.1	13	56.5	50	100
≥ 5 yrs	12	16.6	18	33.3	6	26	36	100
Total	72	24.9	54	24.9	23	24.9	149	100

$X^2=18.76$ p value is .004587. The result is significant at $p < .0$

Table : 4 Showing duration of using gutkha and other products in mouth related to the severity of OSMF cases

Duration of using gutka and other products	Grade1 (Mild)		Grade2(Moderate)		Grade3 (Severe)		Total	
	No.	%	No.	%	No.	%	No.	%
<2 mins	13	18	4	7.4	0	0	17	100
2<5 mins	29	40.2	13	24	3	13	45	100
5<10 mins	18	25	19	35.1	15	65.2	52	100
≥10 mins	12	16.6	18	33.3	5	21.7	35	100
Total	72	24.9	54	24.9	23	24.9	149	100

$X^2=23.26$ p value is .000711. The result is significant at $p < .05$

Table : 5 Showing frequency of using gutkha and other products related to the severity of OSMF cases

Using gutkha and Other products per day	Grade1 (Mild)		Grade2(Moderate)		Grade3 (Severe)		Total	
	No.	%	No.	%	No.	%	No.	%
< 2 pouches/day	24	33.3	8	14.8	0	0	32	100
2<5 pouches/day	24	33.3	13	24	3	13	40	100
5<10 pouches/day	22	30.5	28	51.8	12	52.1	62	100
≥10 pouches/day	2	2.7	5	9.2	8	34.7	15	100
Total	72	24.9	54	24.9	23	24.9	149	100

$X^2=35.5678$ p vaue is <0.00001. The result is significant at $p < .05$

Table : 6 Showing style of chewing gutkha and other products related to the severity of OSMF cases

Style of chewing gutka and other products	Grade1 (Mild)		Grade2(Moderate)		Grade3 (Severe)		Total	
	No.	%	No.	%	No.	%	No.	%
Keeping in the cheek	3	4.7	7	12.9	9	39.1	19	100
Chewing and spitting	63	37.5	32	59.2	8	34.7	103	100
Chewing and swallowing	7	9.7	15	27.7	6	26	28	100
Total	72	48.7	54	33.2	23	33.2	149	100

$X^2= 31.0904$ p-value is <0.00001. The result is significant at $p < .05$

About 59.2 percent of the patients who chewed gutkha and other products and spitted it out after keeping for few minutes developed grade II OSMF followed by 37.5 percent grade I and 34.7 percent suffered from grade III. On the other hand those who chewed and swallowed the gutkha and other products or kept it in the buccal vestibules for longer periods suffered from grade II 27.7 percent and 26 percent grade III. (Table 6) $P < 0.00001$, Highly significant

DISCUSSION :

Explanation of the OSMF cases due to habitual gutkha chewing have been comparatively analysed for assessment of severity and related risk factors. Confirmed cases of OSMF by patient's history have been divided into three grades: grade I (mild), grade II (moderate) and grade III (severe) depending upon the extent of the severity of the disorder. The salient features of such grading on the basis of symptoms are discussed here in order to have a comparative idea of the OSMF subjects.

It was observed that the maximum number of cases of grade I OSMF belonged to middle class and low class people; i.e. 68percent and 28percent respectively, where as maximum number of grade III OSMF belonged to upper middle class and low class; i.e. 58.3percent and 20.8percent respectively. It might be due to low socioeconomic class can not have enough money to buy more gutkha and other areca nut products.

It was interesting to note that pan chewers mostly developed grade I OSMF. 42.5percent whereas maximum number of gutkha chewers developed grade III of OSMF. The data show that pan chewing does produce OSMF but does not increase the severity of the disease. It might be owing to the being there of betacarotene in pan, which probably delays the onset of OSMF. As in the present study, gutkha chewers developed more severe OSMF probably due to use of more areca nut and tobacco as compared to other chewing products.

In the present study it was also found that most of the OSMF cases, who were using gutkha and other products since less than 2 years developed grade I of OSMF where as the patients who were taking the gutkha and other products more than 4 years developed mostly grade II and grade III of OSMF. The OSMF patients who were chewing gutkha and other products for less than 5 minutes in duration and less than 5 pouches (1 pouch = about 3.5 gram) per day in quantity mostly developed grade I of OSMF. On the other hand OSMF cases who were chewing gutkha and other products at a rate of 10 pouches per day with a chewing period of more than 5 minutes developed more severe OSMF.

From the present study it becomes clear that frequency of dependence, duration of chewing with style of using the

smokeless tobacco products in minutes the gutkha and other products have significant relation with the severity of the disorder, as some of the worker have frequency and duration of chewing gutkha is directly interrelated to the severity of the disease. Style of chewing gutkha and other products have very significant relation with the severity of OSMF. From Table 6 it becomes clear that most of the patients who chewed the gutkha and other products and spitted it out after using the product for few minutes, developed mostly grade I of OSMF compared to the OSMF cases that chewed and swallowed it or kept it in the buccal vestibules for a longer period.

About 37.5per cent of OSMF cases developed grade I of OSMF who chewed and spitted the gutkha and other products where as 34.7percent developed grade III. It is possible that as areca nut has high alkaloid arecoline and tobacco ingredients like nitrosoamine, which are engaged more in the patients who keep it for longer periods in their buccal vestibules or swallow it, have more severity of the disorder.

The current study shown that the use of commercially existing arecanut and tobacco have shown a higher severity in requisites of clinical grading. It was also initiate that habit with variables in the form of duration, frequency and chewing for longer duration and swallowing without spiting have increased significant.

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