Profile of buccal mucosa carcinoma patients in Regional cancer centre, Tamilnadu, India

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Abstract: Background: Oral cancer is sixth most cancers in worldwide. In developing countries, a high proportion of incidences from lower socioeconomic classes. Among all oral subsites, buccal mucosa carcinoma is common form due to the widespread use of tobacco in different form. Hence, the study aim was to analyse buccal mucosa carcinoma patient's profile. **Materials and Methods:** The cross sectional study was conducted in Arignar anna memorial cancer hospital and research centre, Kanchipuram, Tamilnadu from 2013-2015. Sociodemographic, economic and their habits details were collected by direct interview. **Results:** A total 198 buccal mucosa carcinoma subjects comprise 125(63.1%) of male and 73(36.9%) of female participant in 1.7:1. The mean age of the subjects was 54.16±17.25 years; majority of the subjects 64 (32%) were in the age range of <60-79 years and 19(9.6%) were young adults who were <40yrs of age groups. In the present study, most of subjects 124 (63%) were from lower socioeconomic classes, who were more likely to chew tobacco, smoke bidi and drink alcohol because of illiterate, unemployment and ignorance. Of 198 subjects, 117(59.09%) had individual risk habits of smokeless tobacco, pan, areca nut chewing, smoking and alcohol consumption, 78(39.39%) were multihabituated and three subjects 3(1.53%) were no habituated. **Conclusion:** The present study concluded that male predominant than females and 98.48% subjects were risk habitual in different form. However, further studies need to find hidden risk factor for non-habitual and also need to bring social awareness of risk habits through the education, camp and media programs, especially for lower socioeconomic people.

Introduction

Oral cancer is the sixth common cancer in world. According to World Health Organization, 40% of oral cancers which were diagnosed worldwide occur in developing countries (1). India is the second largest producer of tobacco and most of the tobacco produced is consumed within the country, approximately 274.9 million tobacco users according to Global Adult Tobacco Surveys-GATS (2).

Socioeconomic status is one of the most important variables affecting health related quality of life and an important predictor of disease mortality and morbidity (3). Low socioeconomic condition related to poor hygiene, poor diet or infections of viral origin and most widespread form of tobacco consumption had been demonstrated as a major risk factor for oral cancer (4).

Apart from risk habits, there were few studies reported, oral cancer increases among young adults, who have not practice of risk habits had prompted many to postulate role of factors like immune deficiency, genetic factors, viruses, ill-fitting dentures, poor oral hygiene, syphilis, inadequate diet, malnutrition and chronic irritation from rough or broken teeth were reported more frequently in oral cancer patients (5).

In India, because of cultural, ethnic, geographic factors and the popularity of addictive habits, the frequency of oral cancer is high. Though, many studies had been done in the different parts of world but only few studies were carried out in South India. Hence, this study was designed to analyse the profile of buccal mucosa carcinoma subjects.

Materials and Methods:

The cross-sectional study was carried out during the year of 2013-2015 in Regional Cancer Centre, Arignar Anna Memorial Cancer Hospital and Research Centre, Kanchipuram, Tamilnadu. The institutional ethical committee permission from directorate of medical education, Tamil nadu was obtained to conduct the study (No.24984/2013).

Clinical and Histopathology confirmed buccal mucosa carcinoma subjects were included in the study whereas pre-malignant lesions / conditions and other oral subsites alveolus, tongue, palate, retromolar trigone, tongue and floor of mouth were excluded from the study. A total of 198 buccal mucosa carcinoma subjects were included with their informed consent.

Data collection

A standardized questionnaire was used to collect participant demographic, socioeconomic information and their risk habits by direct interview.

Body mass index (BMI) was computed as weight (kg) divided by height squared (m^2). In relation to BMI, the study population was divided into four categories according to the World Health Organization (WHO) international classification (6): underweight subjects (BMI\<18.5 kg/m^2), subjects with normal weight (18.5 kg/m^2- BMI\24.9 kg/m^2), overweight (25.0 kg/m^2 - BMI\29.9 kg/m^2) and obese subjects (BMI ≥30 kg/m^2).

Kuppusamy's modified scale was used to evaluate socioeconomic status of study subjects. Socioeconomic scale scoring was on the basis of three variables includes education, occupation and income of total family. The total three weight ages was assigned to each according to the seven point's predefined scale which was graded to indicate five socioeconomic classes such as upper class, upper middle, lower middle, lower upper and lower class (7).

Statistical analysis:

The statistical analysis software SPSS for windows version 16 was used to measures of mean and standard deviation for quantitative variables and the absolute and relative frequencies of the qualitative variables.

Results

The study consists of 198 subjects of buccal mucosa carcinoma. Fig.1 shows the distribution of age groups and gender. A total 198 buccal mucosa carcinoma subjects comprise 125 (63.1%) of male and 73 (36.9%) of female participant in 1.7:1. The mean age of all participants was 55.72 ± 16.82 (mean ± SD) years in the range from 21 to 88 years. The majority of the subjects were <60-79 years age groups whereas 19 (9.6%) subjects were young adults who were <40yrs of age groups.

Fig.2 illustrates the distribution of body mass index (BMI) of study subjects. The mean body mass index (BMI) was 22.34 Kg/m^2. Of all subjects, Most of subjects 89 (45%) were diagnosed with underweight below 18 Kg/m^2 might be severely malnutrinised and 50 (25%) of subjected diagnosed with healthy weight (18-5-24.9 Kg/m^2), Whereas 39 (20%) of subjects had overweight (25-29.9 Kg/m^2) and 20 (10%) were obese (30-35 Kg/m^2) in the study subjects.

Table-1 depicted the scoring of socioeconomic status of subjects according to kuppusamy's scale. Of 198 subjects, Illiteracy constitutes 82 (41.41%), primary/ middle and high school were 83 (42%) and post high school, graduate and professional degree was 33 (17%) subjects. Thus, the study revealed that

illiteracy was one third of the study subjects. Occupation constitutes 79 (39.9%) unemployed subjects among them most of the subjects were aged and illiterate. Unskilled workers constitutes 46 (23.2%) followed by 12 (6.06%) semiskilled workers, 18 (9.1%) were skilled worker, 11 (5.55%) were Clark/ shopkeeper/ farmers, 16 (8.1%) were semi professional and 10 (5.05%) were professional. Among our study subjects, 157 (79.3%) had <Rs.5000 family income whereas others 41 (19.7%) had >Rs.5000 income of family.

The distribution socioeconomic status of study subjects was shown in Fig.2. In our study, most of the subjects from lower socioeconomic class 124 (63%) followed by other classes lower upper 32 (16%), lower middle 21 (11%), upper middle 16 (8%) and upper class 5 (2%) based on scoring of education, occupation and income level.

The present study shows the buccal mucosa carcinoma subjects habits profile in Fig.3. Of 198 subjects, 2 (1.01%) were alcohol consumer, 7 (3.53%) areca nut (pan parak/masala) chewing different form, 5 (2.52%) pan consist of pieces of areca nut, processed or unprocessed tobacco, aqueous calcium hydroxide (slaked lime) chewing, 36 (18.18%) tobacco smoking (cigarettes and bidis) and tobacco chewing (gutka, zarda, mawa and khaini) shows individual habits, 16 (8.08%) alcohol and pan chewing without tobacco, 51 (25.76%) pan chewing with tobacco. Therefore, of 198 subjects, 117 (59.09%) subjects had individual risk habits for development of cancer. However, 78 (39.39%) subjects had multihabitual which constitute smoking, smokeless tobacco, arecanut and alcohol and 3 (1.5%) were found without any habits.

Discussion

Cancer is a multifactorial origin and several environmental interactions are possible. Age, gender, illiteracy or low education level, occupation; working in agriculture sector, income; low monthly household income, marital status and married people resulting in smoking, chewing, drinking and dietary habits can be considered as significant contributing factors modifying the multistage process of carcinogenesis (8-9).

In the present study, male to female ratio was 1.7:1; high proportion of subjects among both gender were 60-79yrs of age groups. Similarly, one of the south Indian study reported that age group of >60yrs were affected higher percentage. Further, Gangane reported in his study 50-59yrs (10-11). Thus, proving buccal mucosa carcinoma to be common in older adults.

Radoi reported in his study that Obesity (body mass index) was one of the risk factor for oral cancer occurrence due to smoking habits but the present study

consisted 45% of subjects with lower body mass index and 10% of obese subjects. This is in contrary with our results maybe the people visiting the government hospitals belong to low socioeconomic status with a below poverty line card generally (12).

In a meta-analysis study, 41 case-control studies across the globe had demonstrated that lower socioeconomic condition as an independent risk factor for development of oral squamous cell carcinoma (13). People doing manual occupations such as agriculture, labouring and working in industries were at increased risk for developing oral cancer (14). Our study also supports the previous reports, in the present study one third of subjects (63%) from lower socioeconomic status. Hence, Illiterates those who never attended school and with low educational attainment have greater risk of oral squamous cell carcinoma occurrence.

Rao *et al.,* revealed that betal/aracanut, pan chewing with and without tobacco, alcohol and tobacco consumption (smoking/ smokeless) as impeded risk factor in his study. Likewise, our study also indicated that tobacco consumption, alcohol, areca nut/ betal nut chewing habits and pan chewing (betal leaf, areca nut and lime) with tobacco and without tobacco as independent risk factor for occurrence of disease (15). Bhawna gupta and Roopan reported that multihabits were the most significant risk factor than single independents habits for oral cancer

development (2 & 16). Similarly, our study also consisted most of the subjects (39.4%) with multihabits which includes tobacco consumption (smoking/ smokeless form), betal/ areca nut, tobacco chewing and alcoholism.

Several studies had been reported that age, dietary factors, poor oral hygiene, poor dental status, denture irritation, genetic predisposition, oncogenic viruses (human papilloma virus), occupation might be risk factor for development of oral cancer (17). The present study revealed that 3 (1.51%) were without risk habits. However, due to study limitation factor, the hidden risk factor for buccal mucosa carcinoma could not able to find it. Hence, further studies warred to identify the hidden risk factor for buccal mucosa carcinoma.

Conclusion:

Buccal mucosa carcinoma is highly preventable disease because in this study most of subjects had a habit of consuming tobacco in different form. Prevention against risk factors, especially lower socioeconomic classes will be sign-spot to reducing the burden of buccal mucosa carcinoma. However, the social awareness through the education, camp and media programs about the risk of oral cancer in India is highly warranted. The awareness can help in presentation at early stage of cancer which improves morbidity and mortality rate.
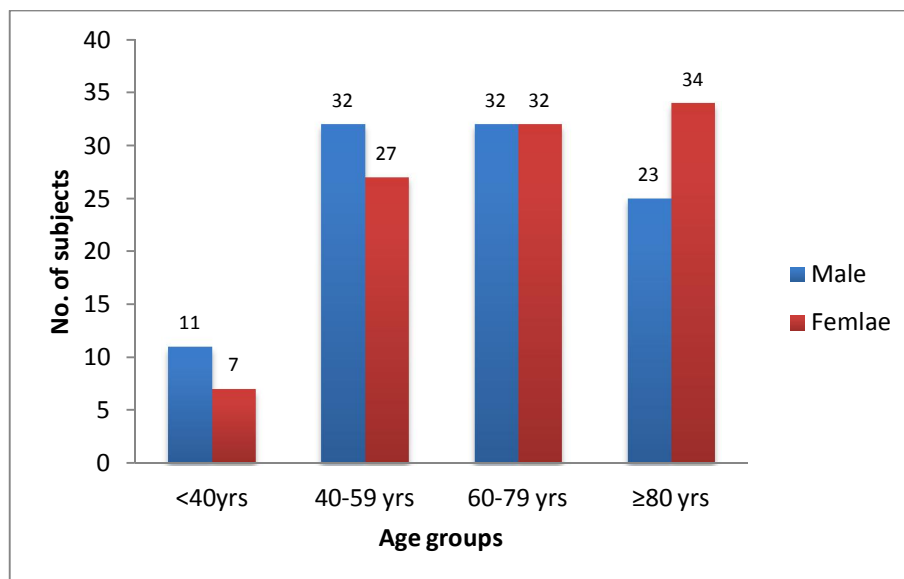

Fig 1. Distribution of age groups and gender of buccal mucosa carcinoma
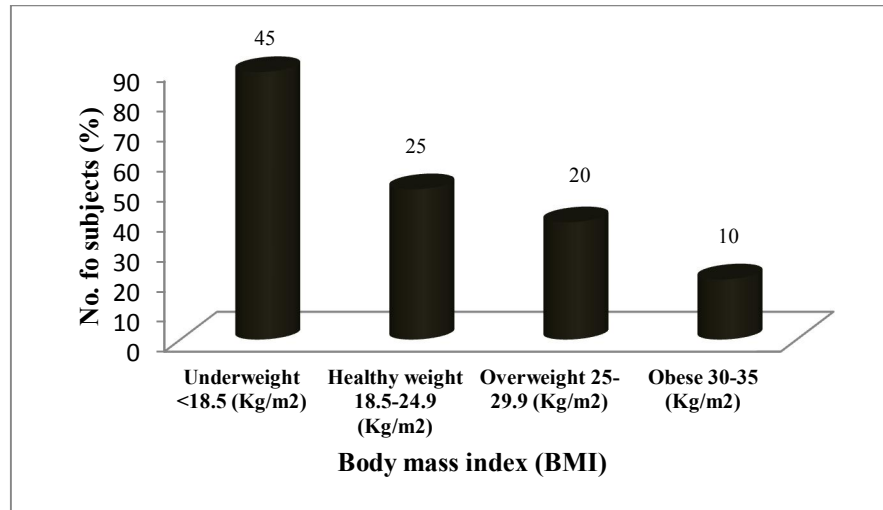
Fig.2 Distribution Bodymass index of study subjects

Table 1: Kuppusamy's revised classification for socioeconomic status among study subjects

| Characteristic	Score	No. of subjects n (%)
Education		
Professional degree	7	6 (3.03%)
Graduate	6	8 (4.04)
Post high school	5	19 (9.6)
High school	4	15 (7.6)
Middle school	3	9 (4.5)
Primary school	2	59 (29.8)
Illiterate	1	82 (41.41)
Occupation		
Profession	10	10 (5.05)
Semi-profession	6	16 (8.1)
Clark/ shop owner/ farmer	5	11 (5.55)
Skilled worker	4	18 (9.1)
Semi skilled worker	3	12 (6.06)
Unskilled worker	2	46 (23.2)
Unemployed	1	79 (39.9)
Family Income		
$\geq$32050	12	7 (3.5)
16020-32049	10	7 (3.5)
12020-16019	6	10 (5.05)
8010-12019	4	17 (8.6)
4810-8009	3	21 (10.6)
1601-4809	2	54 (27.3)
$\leq$1600	1	82 (41.41)
Class: Education +Occupation+ Income score		
Upper Class	26–29	5 (2)
Upper Middle Class	16–25	16 (8)
Lower Middle Class	11–15	21 (11)
Lower Upper Class	5–10	32 (16)
Lower Class	Below 5	124 (63)
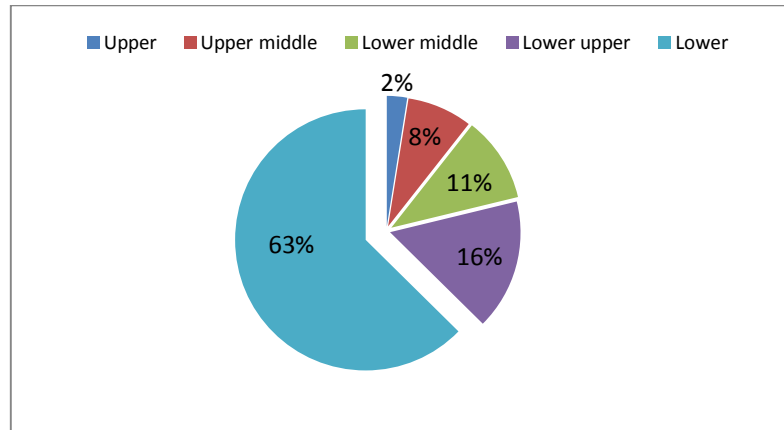
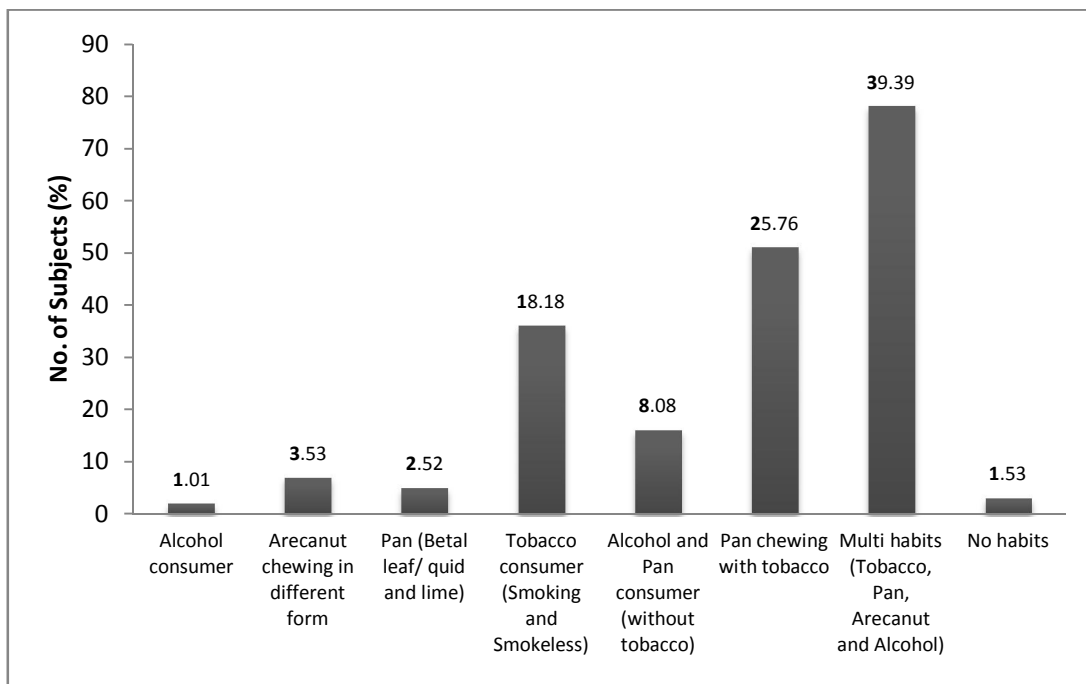**Fig. 3: Distribution of socioeconomic class among buccal mucosa carcinoma subjects (n-198)**

Fig. 4 Distribution of risk habits profile of buccal mucosa carcinoma

Acknowledgement

Conflict of interest

The authors declare that they have no conflict of interests.

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