A DEMOGRAPHIC SURVEY OF PATIENTS WITH ORAL LESIONS AT A TERTIARY CARE CENTRE IN CENTRAL INDIA CONSIDERING THEIR EDUCATION AND SOCIOECONOMIC STATUS

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ABSTRACT

BACKGROUND

In developing countries, a high proportion of patients with precancer and oral cancer lesions are from lower socioeconomic classes. Currently, additional emphasis has been directed towards combined influence of demographic factors, level of education and status of oral hygiene on oral precancer and cancer lesions.

Objective- To conduct a survey of patients with oral lesions with special reference to lifestyle, demography, education and socioeconomic position on the oral mucosal alterations among 2000 tobacco consuming patients attending the Dental Outpatient Department (OPD) at Gajara Raja Medical College, Gwalior from 1st July 2014 till 31st of Dec 2015 in a prospective cross-sectional survey.

MATERIALS AND METHODS

A prospective cross-sectional survey was thus planned in the Department of Dental Surgery at Gajara Raja Medical College, Gwalior, MP, India. A pretested interviewer administered questionnaire was used to assess the correlation of socioeconomic status, education, demographic factors and risk factors with varying forms of oral lesions in 2000 tobacco consuming subjects which were randomly selected from the dental OPD.

RESULTS

This study confirmed the link between the inequalities in socioeconomic status and inequalities in oral health.

CONCLUSION

Tobacco cessation is an essential component for reducing the mortality and morbidity related to its use. Emphasis has to be laid on creating global awareness among the masses about the hazards of tobacco so as to eradicate its use completely.

KEYWORDS

Leucoplakia, Lichen Planus, Oral Cancer, Oral Submucous Fibrosis, Tobacco Chewing, Smoking.

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BACKGROUND

Inequalities in socioeconomic status underlie many health disparities in the world, including oral health. Thus, the need and demand for clear scientific evidence to inform and support the oral health policy-making¹ process is increasing day by day. Further to it, India is heading towards various types of non-communicable diseases. In developing countries, oral lesions account for a rapidly flourishing modern epidemic.^{2,3}

The social determinants of health are concerned with key aspects of people's living, working circumstances and with their lifestyles.⁴ Previous studies in various parts of the world have reported the prevalence of oral mucosa alterations, as well as their association with systemic changes,

deleterious habits like tobacco smoking, alcohol consumption and physical activity.⁵ The prevalence rates of such alterations usually vary with demographic distributions, socioeconomic status and general education of subjects.^{6,7,8} Therefore, in the present study, an attempt was made to investigate the effect of lifestyle, demography, education and socioeconomic position on the oral mucosa alterations among 2000 tobacco consuming patients aged between 10 to 70 years attending the Dental OPD at Gajara Raja Medical College, Gwalior from 1st of July 2014 till 31st of December 2015.

Tobacco use is a major global public health problem. It is the most leading and preventable cause of premature death worldwide. This use of tobacco is done in smoke and smokeless form in developing countries like India.⁹ Smoking of tobacco is mainly done in the form of chillum, chutta, bidi, cigarette, etc. whereas smokeless tobacco is chewed as gutka, khaini, mava, mishri, etc. Tobacco is an important risk factor related to the development of oral cancer and precancer lesions.¹⁰ Traditional forms like areca nut, betel quid, pan masala, tobacco with slaked lime and tooth powder containing tobacco are commonly used and the use of new products is increasing every day, not only among men but

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also women, children, teenagers, medical and dental students.¹¹

MATERIALS AND METHODS

Study Participants

A total of 6536 patients were screened in the Department of Dental Surgery, Gajara Raja Medical College, Gwalior, Madhya Pradesh during a span of 18 months from 1st July 2014 till 31st December 2015. Out of them, 2000 subjects were enrolled in the study after informed consent. Among them, 1564 individuals were identified as control, which had a positive history of tobacco with no oral lesion. A total of 436 individuals having dental complaints were categorised under cases with a positive history of the chewing or smoking habit as well as oral lesions. Written informed consent was taken from every patient, regarding the questionnaire and intraoral examination.

Data Collection:

The Study Consisted of Two Parts

1) Self-Reported Questionnaire Enquiry

Those subjects with the habit were questioned for the frequency of the habit in number per day and duration of the habit in years. Personal habits such as tobacco chewing/smoking-pan masala/bidi (tobacco wrapped in the leaf of *Diospyros melanoxylon*)/cigarette were recorded for the controls in a manner similar to the cases. Prior to the start of the study, ethical clearance was obtained from the Institutional Ethics Committee.

There is uncertainty and limited recognition of the relationship between sociodemographic inequalities and oral lesions. Despite of a wealth of literature on the effects of poverty and inequality on health, the effect of sociodemographic circumstances on oral lesions is given little recognition in a predominant medical model approach to research and prevention on the risk of the disease. Hence, information about chewing and smoking habit and other characteristics of the study participants was acquired using the standardised interviewer- based questionnaire.

- 2) Clinical examination of oral health status included examination of teeth, periodontium and oral mucosa. The type of lesion in the cases was decided on the basis of careful observation of the oral cavity.

Thus, all the participants of this planned hospital-based study were requested to answer the questionnaire which included questions concerning their personal history, socioeconomic status, educational qualification, profession and other important aetiological factors of oral health.

RESULTS

Study Variables

Regarding oral health, the reasons of disparities are complex. There are differences caused by biological factors like those due to increasing age which are inevitably present in a balanced society.¹ However, there are also inequalities which are avoidable being caused mainly by the socioeconomic differences.¹² The link between socioeconomic status and oral health is well established. Identifying age, gender, occupation, income and education specific disparities in tobacco use can provide a useful 'signpost' indicating inequalities that need to

be addressed by policy makers and broader community through allocation of resources.

Age Group (Years)	Male	Female	Total
10-19	36	12	48
20-29	316	20	336
30-39	388	60	448
40-49	388	64	452
50-59	292	20	312
60-69	232	28	260
70- above	136	08	144
Total	1788	212	2000

Table 1. Age and Sex Wise Distribution of Study Subjects

According to our study, out of 2000 subjects, 1788 were male and 212 female. Subjects were divided into 7 groups according to their age as shown in Table 1. Maximum number i.e. 448 and 452 of study subjects belonged to 30-39 and 40-49 years of age group. Higher number of lesions was evident in males than females.

Habit	Male	Female	Total
Tobacco chewer	964	164	1128
Tobacco smoker	428	16	444
Both	392	36	428

Table 2. Habit wise Distribution of Study Subjects

Table 2 shows that 964 males and 164 females were chewer of either pan, tobacco, gutkha or betel nut, 428 males and 16 females were smokers of either bidi or cigarette and 392 males and 36 females were both chewers and smokers.

Socioeconomic Status	Male	Female	Total
Lower	956	100	1056
Middle	688	112	800
Higher	144	00	144
Total	1788	212	2000

Table 3. Distribution According to Socioeconomic Status

Most of the subjects belonged to lower and middle economic classes.

Educational Status	Male	Female	Total
No education	444	100	544
Primary education	836	80	916
Secondary education	348	24	372
Graduation	160	08	168
Total	1788	212	2000

Table 4. Distribution According to Educational Status of Study Subjects.

Among 2000 study subjects, 544 were illiterates and 1456 were literates. Most of the subjects belonged to the group with primary education and least number to the group of graduates. This low literacy rate explains the relative correlation with increased number of lesions.

Type of Lesion	Male	Female	Total
Precancerous lesion/condition	320	20	340
Cancerous lesions	80	16	96
No lesion	1388	176	1564
Total	1788	212	2000

Table 5. Distribution of Premalignant and Malignant Lesions of Oral Cavity

Most of the study subjects presented with no precancerous/cancerous lesions (1564). Precancerous lesions/conditions were more prevalent in males (320). OSMF was the most common precancerous condition encountered in our study whereas Leucoplakia turned out to be the commonest precancerous lesion in our survey.

DISCUSSION

Although the oral cavity lesions constitute only a small minority of pathological conditions, they are of great significance, as they jeopardise the health and longevity of the patients.¹³ Tobacco use is a major global public health problem. It is used in smoke and smokeless form in Asian countries like India.

Betel nut quid is chewed owing to its medicinal properties and as a symbol of social life.¹⁴ It usually constitutes betel leaf (*Piper betel*), areca nut (*Areca Catechu*) also known as betel nut and lime (calcium hydroxide). Tobacco being an independent risk factor increases the risk of oral premalignant and malignant lesions by 11 times than in those people who never used tobacco. Smoking forms include the use of cigarettes, bidi, hookah, chillum, chutta, etc. Bidi is prepared by rolling dried tobacco flakes into a dried Temburni leaf (*Diospyros melanoxylon*) and secured with thread.¹⁵ Bidi smoking is more widely practised as compared to the use of cigarettes by the people of lower socioeconomic strata. The data collection of our sample in this hospital-based study is in accordance with similar and other population-based studies in India and other Asian countries which show a direct correlation between oral lesion and smokers.^{16,17,18}

Smokeless tobacco includes tobacco flakes, whole leaf, zarda, panmasala, khaini, mava and gutkha. Pan masala and gutkha are blends of tobacco, areca nut, lime and catechu. Mishri, a tobacco product applied as a tooth cleaner in Indian villages, also contributes to cases using smokeless tobacco. The present study supports the fact that smokeless tobacco users are at greater risk than those smoking tobacco which can be attributed to the lack of the protective effect of betel leaf.¹⁹ Though the nicotine content of chewing tobacco is lower than that in the smoking form, it is said to have an increased carcinogenic potential because it remains in contact with oral mucosa for longer periods of time. Evidence from an Indian study, however, differed from our data collection as it showed an increase in incidence of oral lesions was due to bidi smoking more frequently as compared to those chewing tobacco.²⁰

A total number of 1788 (89.4%) males and 212 (10.6%) females became a part of this study which clearly indicates the preponderance of tobacco habits among males which coincides with nearly all literature involving the relation of habits, lesions and epidemiology.^{3,9,10,21,22} This higher frequency among males of habits (Table 2) and lesions (Table 5) can also be attributed to the prevailing Indian social scenario, where males being the wage earners are privileged to spend their earnings for their pleasure. Our study revealed that the use of tobacco among males was often social, prompted by friends or other role models. However, females gave the remarkable history of initiation of tobacco use habit to decrease the intensity and frequency of dental pain in various decayed teeth.

These all later lead to addiction and longterm use which was similar to the findings of other studies reported in literature.^{9, 10} Comparatively females in Indian society are less indulged in smoking or chewing habits as shown in our study; however, a rising trend is seen in recent times.²³

Among men, tobacco chewing habits were maximum as seen in 964 males followed by 428 smokers. (Table 2). This can be due to the easy availability of smokeless tobacco and its cost-effectivity. Among smokers, bidi smoking was more common as most of the patients belonged to lower socioeconomic status. Majority of the females in the study were tobacco chewers. Similar observations were found in other studies.^{9, 10, 21}

In the current study, majority of the patients with lesion belonged to the 40-49 years age group which is common to the findings of other studies,^{3,9,24} whereas, few other studies found the sixth and seventh decades as the common stage of occurrence.^{25,26}

The risk of oral precancer and cancer lesions and conditions in the present study was found to be inversely proportional to the increasing levels of education, income and occupation which coincides with other similar studies.²⁷ It is observed from the Table 3 that most of the subjects belonged to lower middle and upper lower socioeconomic scale. It may be attributed to the poor oral hygiene and high prevalence of tobacco habits among lower socioeconomic group. Similar findings were observed when the socioeconomic scale was compared to the presence of oral lesions in other studies.^{3,28}

Prevalence of tobacco use is also more common among the less educated sections of the society. This was once again supported by our sociodemographic study conducted in our department which involves the huge number of patients from Gwalior, Chambal, Uttar Pradesh and Rajasthan.

In the present study, it was observed from Table 5 that precancerous conditions and lesions as well as cancerous lesions were more common in 400 males as compared to 36 females. The male to female ratio reaching to 11:1. This was in accordance to similar demographic study,²⁸ but differed from the inferences drawn from other author.¹¹ A total of 340 cases in our study had shown the presence of precancerous lesions and conditions amongst which leucoplakia was the commonest precancerous lesion and OSMF was clinically the predominant precancerous condition in our survey. This was in accordance to numerous authors from literature.^{2, 10, 23, 24, 29} A total of 96 patients in our survey were clinically diagnosed with oral ulcers representing oral cancer.

Limitations

The limitations of the study include that tobacco use pattern was not recorded. The education and occupation data were based on self-reports. In addition, the complexities of obtaining, recording and coding occupational data may have led to inaccurate classification of strata. Data was collected on individual basis and not on the household level and thus the data on socioeconomic position may have been incomplete in case of women. In our findings, case and control comparisons were not possible. This sample of 2000 individuals is a sample of those visiting the Department of Dentistry in the medical college and may not represent the trends in the community on the whole.

CONCLUSION

This review has drawn data from a tertiary care medical college in central India with a huge catchment area including districts from Madhya Pradesh, Uttar Pradesh and Rajasthan.

This study confirmed the link between the inequalities in socioeconomic status and inequalities in oral health. Tobacco consumption has been found to be a well-established risk factor for development of oral lesions in our study. The literature has also evidenced an increasing risk of oral lesions with the increased consumption of tobacco.^{2,27}

Thus, on the basis of the findings of the present study, health education of the community regarding hazards of tobacco consumption in terms of development of oral lesions and education about the danger signals of oral cancers (Leucoplakia, OSMF) is recommended.

More in-depth studies are needed to investigate the aetiology of oral cancer in patients. Larger studies, both institution and community based will help to understand the true spectrum of this disease in all age groups and probably help devise effective strategies at controlling it.

Tobacco cessation is an essential component for reducing the mortality and morbidity related to its use. Emphasis has to be laid on creating global awareness among the masses about the hazards of tobacco so as to eradicate its use completely.

Involvement of health professionals in tobacco cessation at all levels is essential for prevention of tobacco-related morbidity and mortality.³⁰

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