

Assessment of oral mucosal conditions among beedi workers residing in beedi workers colonies in Karnataka, India

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Abstract

Background and Objectives: Beedi workers are an important part of our society. Due to their occupation of beedi making, they face different types of health hazards. This study was undertaken to assess the oral mucosal conditions among beedi workers residing in beedi workers' colonies in Karnataka.

Methodology: A cross-sectional study was carried out among 700 beedi workers in the age group of 18–60 years residing in five beedi workers' colonies in Karnataka. The information was recorded regarding personal history by personal interview by the investigator. The clinical examination was done using WHO 1997 “Oral Health Assessment Form.” Significance is assessed at 5% level of significance.

Results: It was found that 26.9% of study population had different oral mucosal lesions.

Interpretation and Conclusion: The present study showed that oral mucosal conditions of beedi workers residing in beedi workers' colonies in Karnataka were relatively poor.

Keywords: Beedi workers, health hazards, occupation, oral mucosal conditions

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INTRODUCTION

India has an important place in the beedi production in the world. The beedi industry is mainly a labor-intensive industry coming under the category of unorganized sector. Millions of families are earning their livelihood in this industry. According to the Ministry of Labor, Government of India (2003), the total employment in the beedi industry in India is over 4.48 million.^[1]

Beedis are the most popular smoking form of tobacco in India. Thirty-four percent of the tobacco produced in India is used for making beedis. Beedis are puffed more frequently than cigarettes.^[2] Beedi rolling in the organized

sector during the early 20th century but gradually shifted to the unorganized sector, consisting of households, small unincorporated units and workshops.^[3]

Exposure to chemical, physical and biological agents in the workplace can result in adverse effect on workers ranging from simple discomfort and irritation to debilitating occupational diseases.^[4] Apart from general health consequences, the injurious effect of occupational hazards manifests themselves in the teeth, jaw bones, periodontal tissues, tongue, lips and oral mucosa.^[5] Oral health is an integral part of general health and plays an important role in improving the quality of life. Environmental hazards

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contribute to poor oral health in many occupations, as oral cavity is a port of entry for many diseases and present several unique features, which make it equally prone to occupational diseases.^[6]

Beedi worker colony is a group of houses constructed with the support of subsidy from the Central Government under the Rajiv Gandhi Housing Scheme for economically weaker section of people engaged in beedi making.

Beedi making is a skilled job. Beedis are made from processed tobacco wrapped in tendu leaves. The leaves are moistened by soaking them in overnight. The wet leaves are then cut into pieces roughly rectangular in shape, in sizes depending on the length of the beedi. The processed tobacco in powdered form is thoroughly mixed by hand and then rolled on a piece of tendu leaf. A thread is then tied around it towards the narrower end to maintain the shape of a beedi [Figure 1].

In Karnataka, there are five colonies for beedi workers which are meant especially for them and they work from their houses. Due to their occupation, low standard of living, poor personal hygiene and financial instability, they are prone to different types of health problems but one of the most important problems, which have not attracted much attention so far, is related to their oral health.

They inhale tobacco dust and suffer from ailments such as asthma, tuberculosis, cancer, arm and neck pain and other respiratory problems. According to a study on female beedi workers, handling tobacco has reportedly led to allergic growth of boils in the mouth.^[7] The beedi workers, majority of them are beedi smokers,^[8] are vulnerable to tobacco-related oral diseases. The workers staying in the beedi workers' colonies constitute a well-defined population group and therefore provide several practical advantages for conducting epidemiological studies.

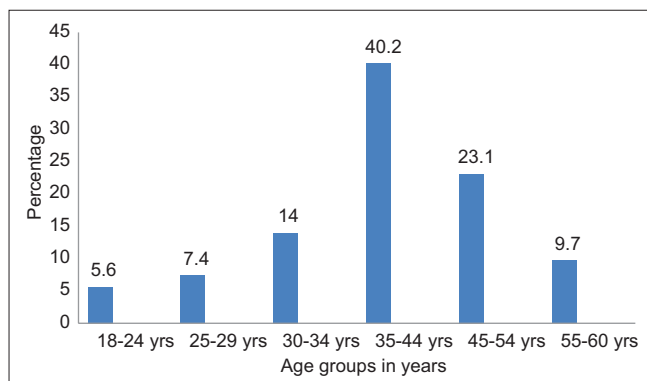


Figure 2: Distribution of participants according to the age group

There are very few published studies regarding the assessment of oral mucosal conditions among beedi workers. Since there is no study undertaken among beedi workers residing in beedi workers' colonies, this study is taken up in Karnataka.

METHODOLOGY

A cross-sectional study was carried out among five beedi workers' colonies present in Karnataka. They are, namely, Bangalore, Ramanagar, Channapatna, Mandya and Mysore. A list of beedi workers' colonies present in Karnataka and the number of beedi workers residing in each colony was obtained from the office of Karnataka State beedi workers' Multipurpose Co-operative Society Limited. With the assumption of 50%, beedi workers had the oral health problems in Karnataka state, the sample size of 610 was estimated for the 5% precision, and 99% confidence interval at 6950 total beedi workers residing in Beedi workers' colonies in Karnataka. Using Proportionate Stratified Random Sampling Method, the present study was undertaken at 700 samples accommodating expected 15% nonresponse in the study. Participants aged between 18 and 60 years involved in beedi making for 1 year or more and residing in beedi workers' colonies were included in the study. On an average, 20–25 workers were interviewed and examined per day by the principal investigator in their respective colonies. The clinical examination was done using WHO 1997 "Oral Health Assessment Form."^[9] Ethical clearance to conduct the study was obtained from the Institutional Ethical Review Board, and informed consent was obtained from the participants.

RESULTS

A cross-sectional study was conducted to assess the oral mucosal conditions among 700 beedi workers, residing in five beedi workers' colonies in Karnataka.



Figure 1: Ingredients used in beedi preparation

The study was in the age group of 18–60 years with mean age group of 40.26 ± 9.34 years. It was divided into the following subgroups: 18–24 years, 25–29 years, 30–34 years, 35–44 years, 45–54 years and 55–60 years. Maximum number of study population were in the age group of 35–44 years (40.2%) followed by 45–54 years (23.1%) [Figure 2].

There were 360 male participants comprising 51.4% and 340 female participants which comprise 48.6% of the total population. Among the total number of participants, 625 (89.3) were married and 75 (10.7%) participants were unmarried. It was found that 687 (98.1%) participants were Muslim, 8 (1.2%) were Hindu and 5 (0.7%) were Christian.

Majority of participants (321 [45.9%]) were illiterate, 266 (38.0%) had education up to primary school, 63 (9.0%) had middle school completion, 38 (5.4%) had high school certificate and 12 (1.7%) of them had education level up to intermediate or posthigh school diploma.

A total of 39 (5.6%) participants were working 3–5 h a day, 118 (16.8%) of them were working for 6–8 h a day, majority of the participants, that is, 427 (61.0%) were working 9–12 h a day and 116 (16.6%) of the participants were working more than 12 h a day.

A total of 549 (78.4%) of the participants had deleterious habits and 151 (21.6%) of them were free from these habits. Of 549 (78.4%) participants who had deleterious habits, 514 (93.6%) were beedi smokers. Majority of them (428 [77.9%]) were smoking more than or equal to 11 beedis per day, 67 (12.2%) of them were smoking beedis since 16 years or more than this duration, majority of them (317 [57.7%]) were smoking beedis since 6–15 years and only 44 (8.0%) of them were smoking beedi since 5 years or less than this duration. Only 3 (0.6%) among 549 (78.4%) participants were smoking cigarette. It was found that 2 (0.4%) participants were smoking more than or equal to 11 cigarettes per day and 1 (0.2%) participant was smoking 5 cigarettes per day. There were 2 (0.4%) participants who were smoking since 6–15 years and 1 (0.2%) participant was smoking since 5 years.

A total of 75 (13.7%) participants were using smokeless tobacco. Majority of them (69 [12.6%]) were using more than or equal to 11 packets of smokeless tobacco per day and 6 (1.1%) participants were using 6–10 packs of smokeless tobacco per day.

There were 27 (4.9%) participants using smokeless tobacco since 16 years or more than this duration, 41 (7.5) were

using this since 6–15 years and 7 (1.3%) were using since 5 years or less than this duration. A total of 43 (7.8%) participants were placing smokeless tobacco on the left side of the oral cavity, 19 (3.5%) participants were placing on the right side, 10 (1.8%) participants were placing on both the sides that is left and right sides and the participants placing on any other places were 3 (0.6%) [Table 1].

It was found that only 3 (0.6%) participants had a habit of paan chewing without tobacco, and they were consuming

Table 1: Distribution of participants according to habit of smoking tobacco (n=549)

	n (%)
Frequency	
Nil	474 (86.3)
≤5 times a day	0 (0.0)
6–10 times a day	6 (1.1)
≥11 times a day	69 (12.6)
Duration	
Nil	474 (86.3)
≤5 years	7 (1.3)
6–15 years	41 (7.5)
≥16 years	27 (4.9)
Area of placement	
Nil	474 (86.3)
Left	43 (7.8)
Right	19 (3.5)
Both	10 (1.8)
Any other place	3 (0.6)

Table 2: Distribution of students according to habit of paan without tobacco (n=549)

	n (%)
Frequency	
Nil	546 (99.4)
≤5 times a day	0 (0.0)
6–10 times a day	3 (0.6)
≥11 times a day	0 (0.0)
Duration	
Nil	546 (99.4)
≤5 years	3 (0.6)
6–10 years	0 (0.0)
≥11 years	0 (0.0)
Area of placement	
Nil	546 (99.4)
Left	3 (0.6)
Right	0 (0.0)
Both	0 (0.0)
Any other place	0 (0.0)

Table 3: Distribution of participants according to oral mucosal conditions (n=549)

Oral mucosal conditions	n (%)
Malignant tumor (oral cancer)	12 (2.1)
Leukoplakia	38 (6.9)
Lichen planus	17 (3.1)
Ulceration (aphthous, herpetic and traumatic)	42 (7.6)
Acute necrotizing gingivitis	0 (0.0)
Candidiasis	33 (6.0)
Abscess	0 (0.0)
Other conditions	8 (1.2)

Table 4: Distribution of participants according to the location affected by oral mucosal conditions (n=139)

Oral mucosal location	n (%)
Vermillion border	18 (12.9)
Commissures	14 (10.1)
Lips	8 (5.7)
Sulci	0 (0.0)
Buccal mucosa	65 (46)
Floor of the mouth	2 (1.4)
Tongue	8 (5)
Hard and/or soft palate	24 (17.2)
Alveolar ridges/gingival	0 (0)

6–10 paans per day. They had this habit since 5 years and less than this duration, and all of them were placing paan without tobacco on the left side of the oral cavity [Table 2].

Of 549 participants, 12 (2.1%) had malignant tumor, 38 (6.9%) had leukoplakia, 17 (3.1%) had lichen planus, 42 (7.6%) had ulcerations and 33 (6%) had candidiasis [Table 3].

It was found that buccal mucosa was the most affected area with oral mucosal conditions among 65 (46%) participants, palate was affected in 24 (17.2%) participants, vermilion border in 18 (12.9%) participants, commissures in 14 (10.1%) participants and the tongue in 8 (5.7%) participants [Table 4].

DISCUSSION

By “occupational environment” is meant the sum of external conditions and influences which prevail at the place of work and which have a bearing on the health of the working population. The workers today are placed in a highly complicated environment which is getting more complicated as man is becoming more ingenious.^[10]

The beedi workers work continuously for hours in improper working postures and beyond their normal working capacities, which lead to the development of serious physiological manifestations. The main raw material used for beedi rolling involves tobacco, which is provided in the powder form, to which the beedi workers are constantly exposed. Hygienic factor involves direct contact with the skin and becomes absorbed through the skin into the blood. Nicotine is harmful to the body since it is carcinogenic in nature and can cause cancer during a long exposure.^[11]

The occupational health hazards of beedi workers remained neglected since long time, and there was a need to study the health hazards predominant in beedi workers, especially oral health problems which have got less attention till now; hence, the present study was undertaken.

The present study was a cross-sectional study to assess the oral mucosal conditions among 700 beedi workers in the age group of 18–60 years residing in beedi workers' colonies in Karnataka.

In the present study, 38 (6.9%) participants had leukoplakia, 17 (3.1%) had lichen planus, 42 (7.6%) had ulceration (traumatic), 33 (6%) had candidiasis and 8 (1.2) had other conditions (oral mucous fibrosis, smoker's melanosis and smoker's palate). The result of the present study showed higher prevalence of oral mucosal conditions compared to the previous study conducted by Jahanbani^[12] among Iranian textile factory workers that showed 115 workers (9.9%) had red and white lesions. Following exclusion of traumatic and inflammatory lesions, 43 cases (3.7%) had leukoplakia and 6 cases (0.5%) had lichen planus, and a study conducted by Ikeda *et al.*^[13] among factory and office workers of Japan, where 77 individuals (2.5%) had leukoplakia. The results of the present study are comparable with the study done by Ariyawardana *et al.*^[14] A study conducted among tea estate workers in Central Sri Lanka showed that 14 participants diagnosed with oral cancers and 848 participants diagnosed with oral precancer (6.7%), giving prevalence of 46.1/1000 for leukoplakia and 16.4/1000 for oral mucous fibrosis. The presence of oral mucosal conditions in the present study among the participants might be due to the high prevalence of deleterious habits and less dental care utilization among the participants.

The present study showed that buccal mucosa was the most affected location with oral mucosal conditions among 65 (46%) participants which is similar to results of study done by Silverman *et al.*^[15] among industrial workers of Gujarat.

Inference of the study

The prevalence of tobacco habits and oral mucosal lesions was relatively high among the study population which can be attributed to lower education level, less dental utilization, work environment and easy accessibility to tobacco products.

CONCLUSION AND RECOMMENDATIONS

The results of the present study showed that oral mucosal conditions of beedi workers resulting in beedi workers' colonies in Karnataka were relatively poor, with the higher prevalence of periodontal diseases and dental caries. Lower education level, longer working hours, poor oral hygiene practices, higher deleterious habits and less dental utilization seemed to influence the oral mucosal conditions of the beedi workers. It was found that extensive unmet dental treatment

needs were required in the study population. Tobacco habits were at very high prevalence among these workers which should be recognized by the government and to initiate “tobacco cessation programs” at the work environment.

- Oral cancer screening programs should be instilled periodically in the beedi workers colonies
- Dental insurance and subsidized dental care should be provided to the workers. Curative and rehabilitative services should be provided to all the workers
- Beedi workers at risk for tobacco dust exposure should be made aware of the situation and made to wear personal protective mouth mask.

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Conflicts of interest

There are no conflicts of interest.

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