Original Article

Smokeless tobacco use and related oral mucosal changes in Bengali Women

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Abstract

Background: Tobacco use is called the single most cause of preventable cause of death all over the world. The various study confirmed that smokeless tobacco use is directly related to oral cancer and pre-cancer. The prevalence of smokeless tobacco use varies widely in different countries and states based on age group, gender, with varied socioeconomic, cultural and educational backgrounds. **Context:** Bengali female population. **Aim:** Explore the pattern of smokeless tobacco use and oral mucosal changes caused by it. **Methods:** 155 women aged 15 years and above were selected. Face-to-face interview was conducted using a structured questionnaire. Data were summarized and statistically, analysis was done. **Statistical Analysis Used:** Chi-square test and univariate logistic regression done. **Results:** The prevalence of current smokeless tobacco use was found to be 18.7%. On univariate logistic regression, it was found that there was a significant association between smokeless tobacco use and less educated females, odds ratio 0.4209 (0.1855–0.9550) family income less than 10,000, odds ratio 3.9773 (1.3047–12.1242), and oral changes odds ratio 0.2693 (0.1027–0.7061). **Conclusions:** Health care providers, as well as social workers, should give all efforts to bring the women from behind the curtain and educate them about the hazards of smokeless tobacco use.

Keywords: Females, oral changes, smokeless tobacco, West Bengal

Introduction

Oral Cancer is an important public health problem globally, especially in South East Asia. In India, at least 90% of cases of Oral and Oropharyngeal cancers are caused by tobacco and more than half among them are by smokeless tobacco.[1]

Smokeless tobacco can be described as tobacco products that produce nicotine without smoke and they are commonly used by chewing or snuffing.[2]

In smokeless tobacco products, there are around 36 known carcinogens; among which tobacco-specific nitrosamines are the most abundant carcinogens in Indian products. These arise from nitrosation during the process of drying tobacco leaves.[1] Chewing tobacco-related oral lesions are mainly due to carcinogen itself or as a protective mechanism by oral mucosa.[2]

The risk of females using smokeless tobacco for oral cancer is 8 times higher than male smokeless tobacco users. There is also a high chance of adverse reproductive outcomes and cardiac problems in female smokeless tobacco users.[1]

Apart from carcinoma it also causes gingival inflammation, attachment loss, tooth wear as well as various potentially malignant disorders such as leukoplakia and oral submucous fibrosis in the oral cavity.[1,3]

Though traditional values and social norms do not favor smoking tobacco products by women, yet smokeless tobacco use in females

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is culturally acceptable in India. At present, more than 70 million women age 15 and older use smokeless tobacco in India. Low cost and easy availability can be easily blamed for this. While performing laborious and difficult tasks females of low socioeconomic category use smokeless tobacco to suppress their hunger. Parental use, peer pressure, as well as promotional advertisement, also play an important role in the habit of smokeless tobacco.[1]

As per GATS-2; 14.2% of women use tobacco in India. Among them, 12.8% are current smokeless tobacco user and 11.1% are daily smokeless tobacco users.[4]

For thousands of years, betel quid chewing was a socially accepted practice and part of the culture and religious customs in India. As soon as tobacco came from America by Portuguese traders in early 1600, it was added as an ingredient in betel quid. This combination is still widely used. In early 1970, areca nut containing new smokeless tobacco products was marketed.[1,2]

At present in India, a smokeless form of tobacco practice is more than smoking tobacco. Especially among teenagers, the use of commercially available sachet is more popular.[5]

These product preferences varied by gender as well as geographical location. These preferences are very complicated for females. Betel quid is mostly preferred by females of northeast and south India. Women of eastern, western, and central parts of India prefer smokeless tobacco products mainly for dental applications. Khaini is preferred by females of eastern, northeastern, and central region; whereas Gutka is mainly used by women of the central and northeastern regions. As per data, very few north Indian females use smokeless tobacco.[1]

Many deeply rooted misconceptions are associated with the use of smokeless tobacco among females. Such as it is believed that some form of smokeless tobacco makes a woman feel better from morning sickness during pregnancy and it can reduce bad breath as well as causes mental relaxation.[6]

Misconception, incomplete knowledge, as well as lack of awareness about its ill effect, can be blamed for the widespread use of smokeless tobacco products. They are also the major obstacles formulating effective tobacco control policies.

In India, tobacco consumption varies from state to state, even two geographically different locations in the same state. Therefore, to make proper policy, it is very important to gather information regarding the pattern of tobacco habits among the local population.[5]

Hence, our study was aimed to explore the pattern of smokeless tobacco use among females of West Bengal, the predictors associated with it as well as mucosal changes due to smokeless tobacco use among females.

Materials and Methods

This is a cross-sectional study of tobacco usage among women, which was conducted in different private clinics and oral health screening camps around different districts of West Bengal. Institutional Ethical Committee,Department of Physiology,University of Calcutta,Kolkata. Ethical Approval Date-7.4.17.

Patients above 15 years who had no systemic disease and willing to participate in this study were included.

Staff for the study chiefly consisted of medical social workers and oral pathologists.

Study Procedure

Medical social workers were trained for the duration of 3 months to take data from the study sample.

First, the purpose of the study was explained to the study participants and informed consent was obtained from them. A face-to-face interview was conducted and their oral cavity was clinically examined using mouth mirror and explorer under daylight to rule out if any tobacco-related oral lesion was present. All the oral lesions were clinically diagnosed as per the WHO criteria and color atlas of oral pathology.

Information regarding demographic characteristics was collected using a questionnaire formatted both in English and local language Bengali. Along with these, information regarding their tobacco habits was assessed using the WHO steps questionnaire.

The questionnaire and the study procedures were approved by the institutional human ethical committee, Department of the physiology of the University of Calcutta. The validity and reliability of the questionnaire were pretested.

Statistical analysis

For statistical analysis, data were entered into a Microsoft Excel spreadsheet and then analyzed by SPSS 24.0. and Graph Pad Prism version 5. Unpaired proportions were compared by Chi-square test or Fischer's exact test, as appropriate. *P* value ≤ 0.05 was considered statistically significant.

Results

Out of all females approached for the study, total of 155 women agreed to be a participant for the study. The prevalence of deleterious chewing habits in our study is 18.7% (29 chewers out of 155 participants).

The age range of study participants was 16 to 81. Majority of the participants was a housewife (68.4%) and below the level of

Table 1: Distribution of Study population based on socio demographic variables

Variables	Frequency	Percentage
Age		
15-20	14	9.0%
21-30	35	22.6%
31-40	44	28.4%
41-50	39	25.2%
51-60	12	7.7%
61-70	8	5.2%
71-80	2	1.3%
81-90	1	0.6%
Total	155	100.0%
Occupation		
Cook	2	1.3%
Doctor	1	0.6%
Farmer	1	0.6%
House wife	106	68.4%
Service	9	5.8%
Labor	7	4.5%
Nurse	2	1.3%
Pharmacist	1	0.6%
Student	20	12.9%
Tailor	2	1.3%
Teacher	4	2.6%
Total	155	100.0%
Place of residence		
Rural	123	79.4%
Urban	32	20.6%
Total	155	100.0%
Educational qualification		
Uneducated	26	16.8%
Primary	33	21.3%
Secondary	45	29.0%
H.S.	31	20.0%
Graduate	13	8.4%
Post-graduate	7	4.5%
Total	155	100.0%
Monthly income		
<2000	5	3.2%
2000 to <5000	22	14.2%
5000 to <10000	26	16.8%
10000 to 15000	20	12.9%
>15000	82	52.9%
Total	155	100.0%

*Distribution of various sociodemographic and socioeconomic variables with smokeless tobacco consumption habits

secondary education. The majority of their household income was below 10,000.

The distribution of age, educational qualification, place of residence, monthly income, and occupation of participants has been shown in Table 1.

In our study, no female participants had a habit of smoking. No tobacco consumption was reported among minor age groups (<18 years). The lowest age for oral habit is 25 in our study.

The different forms of tobacco used by the women of West Bengal are shown in Figure 1.

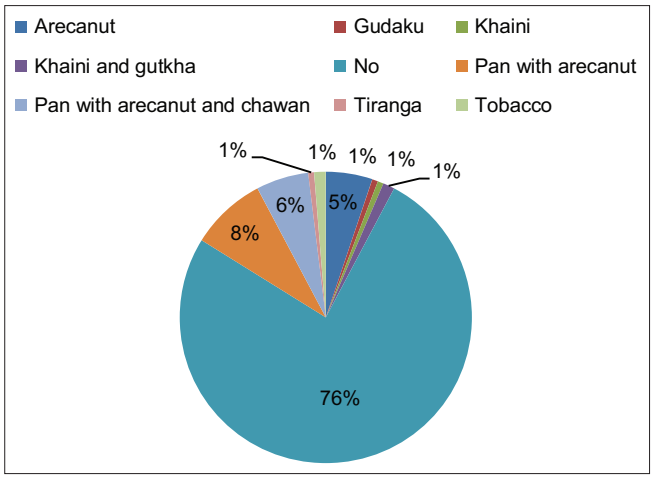

Figure 1: The different forms of tobacco used by the women of West Bengal

Distribution of different oral changes due to deleterious oral habits among female patients is described in Figure 2.

The association between the habit of smokeless tobacco and areca nut chewing and several factors has been shown in Table 2.

The association between smokeless tobacco chewing and areca nut-chewing habits and several factors.

In our study; association of tobacco chewing habit with less educational qualification (P = 0.0353), ≤10,000 family income (P = 0.0102), and oral changes (P = 0.0052) were statistically significant.

Though more number of housewives took part in this study yet the association between tobacco chewing habits and occupational groups were not statistically significant (P = 0.9407)

Under univariate analysis significant risk of chewing tobacco was found 0.4209 (OR-0.4209 [0.1855, 0.9550]; P = 0.0353) times more for less-educated women, 3.9773 (OR-3.9773 [1.3047, 12.1242]; P = 0.0102) times more women with family income Rs ≤ 10,000 per month and 0.2693 (OR-0.2693 [0.1027, 0.7061]; P = 0.0052) times more risk for women who had oral lesions.

Discussion

As per district level household and facility survey-4; 2012–13, the prevalence of women who use any kind of smokeless tobacco was 22.9%. In an urban area, it was 18.5% and in a rural area, it was 24.8%.[7] In our study, it was found that the prevalence of female smokeless tobacco chewers was a little low (18.7%).

The prevalence of female smokeless tobacco users found in the northeastern states of India is very high (51%) compared to our study.[8]

Table 2: Factors associated with Chewing habit

		Nil	Yes	Total	Odds ratio	Chi-square value	*P*
Age in years	<35	59	10	69	1.6731 (0.7209-3.8830)	1.4540	0.2278
	Row %	85.5	14.5	100.0			
	Col %	46.8	34.5	44.5			
	≥35	67	19	86			
	Row %	77.9	22.1	100.0			
	Col %	53.2	65.5	55.5			
	TOTAL	126	29	155			
	Row %	81.3	18.7	100.0			
	Col %	100.0	100.0	100.0			
Occupation group	Housewife	86	20	106	0.9675 (0.4047-2.3130)	0.0055	0.9407
	Row %	81.1	18.9	100.0			
	Col %	68.3	69.0	68.4			
	Others	40	9	49			
	Row %	81.6	18.4	100.0			
	Col %	31.7	31.0	31.6			
	TOTAL	126	29	155			
	Row %	81.3	18.7	100.0			
	Col %	100.0	100.0	100.0			
Education group	Less Educated	43	16	59	0.4209 (0.1855-0.9550)	4.4289	0.0353
	Row %	72.9	27.1	100.0			
	Col %	34.1	55.2	38.1			
	More Educated	83	13	96			
	Row %	86.5	13.5	100.0			
	Col %	65.9	44.8	61.9			
	TOTAL	126	29	155			
	Row %	81.3	18.7	100.0			
	Col %	100.0	100.0	100.0			
Place of residence	Rural	98	25	123	0.5600 (0.1798-1.7440)	1.0224	0.3119
	Row %	79.7	20.3	100.0			
	Col %	77.8	86.2	79.4			
	Urban	28	4	32			
	Row %	87.5	12.5	100.0			
	Col %	22.2	13.8	20.6			
	TOTAL	126	29	155			
	Row %	81.3	18.7	100.0			
	Col %	100.0	100.0	100.0			
Family income/month	≤10000	49	4	53	3.9773 (1.3047-12.1242)	6.5982	0.0102
	Row %	92.5	7.5	100.0			
	Col %	38.9	13.8	34.2			
	>10000	77	25	102			
	Row %	75.5	24.5	100.0			
	Col %	61.1	86.2	65.8			
	TOTAL	126	29	155			
	Row %	81.3	18.7	100.0			
	Col %	100.0	100.0	100.0			
Oral changes	Present	64	23	87	0.2693 (0.1027-0.7061)	7.7852	0.0052
	Row %	73.6	26.4	100.0			
	Col %	50.8	79.3	56.1			
	Absent	62	6	68			
	Row %	91.2	8.8	100.0			
	Col %	49.2	20.7	43.9			
	TOTAL	126	29	155			
	Row %	81.3	18.7	100.0			
	Col %	100.0	100.0	100.0			

*The association between smokeless tobacco chewing and areca nut-chewing habits and several factors

Mishra *et al.* in 2015 studied smokeless tobacco use in urban women in Mumbai and found 13.44% to 25.19% prevalence of smokeless tobacco use among them in the seven clusters. They also found that 0.50% of woman only use tobacco in smoked form.[9]

The data of our study matches with the study, GATS India survey 2009–2010, conducted by the International Institute of Population Sciences, Mumbai on behalf of MOHFW, Government of India. They found a prevalence of 18.4% among

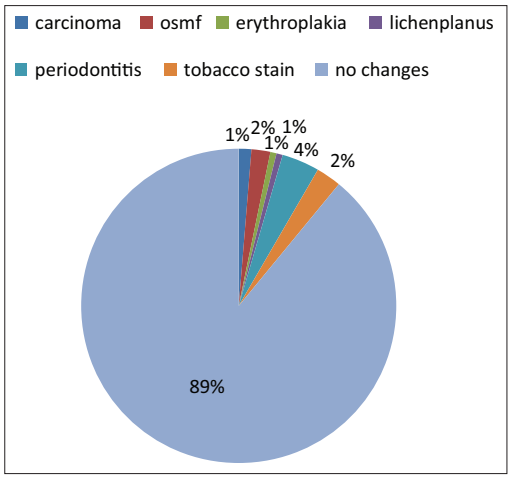

Figure 2: Distribution of different oral changes due to deleterious oral habits among female patients

female current smokeless tobacco users and 14.9% among female daily smokeless tobacco users.[10]

A study conducted by Dasgupta *et al.*[3] at Kolkata slum area and Rani *et al.*[11] found that the least educated, poor women, having minimal knowledge about the harmful effects of tobacco are more prone to smokeless tobacco use. These findings are consistent with our observation. In our study, we also found that the less educated women and women whose family income was below 10,000 are more prone to smokeless tobacco use.

Rani *et al.*[11] as well as Dasgupta *et al.*[3] found that the prevalence of smokeless tobacco use was very high among females above 35 years. This finding does not match our observations.

We could not found any increased prevalence of smokeless tobacco use among women above 35 years age.

Our study was conducted in different places of West Bengal with a different number of samples. On the other hand, a study conducted by Dasgupta *et al.*[3] is in a particular location. This could be the main reason behind the result difference.

A various study reported that most common oral mucosal alterations due to chewing tobacco use are oral squamous cell carcinoma, oral verrucous carcinoma, leukoplakia, erythroplakia etc.[9,12-16]

In 2019, Tejasvi studied oral mucosal lesions and various quid chewing habit patterns and confirmed the association between betel, tobacco, and various oral lesions.[13]

In our study, we also observed a positive relation between smokeless tobacco use and oral mucosal alterations among females.

We conducted our study in different parts of West Bengal so it can be considered as more generalized research to get any data related to oral habits and changes caused by them among females of whole West Bengal.

The study population was taken from different oral health screening camps as well as private dental clinics. Hence, the study population was a mixture of females with a different attitude towards oral habits and their effect on the oral cavity.

In our study, the majority of our participants were housewives. They are the most neglected group for any kind of study related to oral habits and their effect. Hence, our study is unique in this perspective.

The information collected for this study was based on the participants' self-report. Hence, there was a high chance of under-report their habit of smokeless tobacco use.

Therefore the observed prevalence of smokeless tobacco use might be underestimated. Hence, the study may have suffered from social desirability bias and recall bias in addition to the small sample size.

Previously it was believed that females do not consume tobacco much. This study brings forth some hidden truth that females are not lagging behind their male counterparts.

In our society due to social barriers, smoking habits are not very common among Indian females; but the prevalence of smokeless tobacco use is high and increasing day by day.

Due to a lack of awareness and knowledge regarding the use of smokeless tobacco and its ill effect; the habit is engulfing our female society.

Though there is a huge role of preventive initiatives on control of oral cancer incidence and mortality; yet there is a very limited study that addresses the role of primary health care on the female population to reduce the rate of oral cancer incidence and mortality.[17,18]

With minimal equipment, primary health care providers can easily identify risk factors and perform an early diagnosis to provide basic care for oral cancer and precancer patients.[17,18]

As primary health care providers work more on females in India, they should perform oral health examination routinely for them to detect oral precancer and cancer in a very early stage as well as increasing the chance of survival and cure.[18-21]

Based on the study report we recommend that periodically observation, as well as counseling by primary health care provider, is very much needed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Gupta PC, Arora M, Sinha DN, Asma S, Parascondola M, editors. Smokeless Tobacco and Public Health in India. New Delhi: Ministry of Health and Family Welfare, Government of India; 2016.
2. Kamala KA, Sankethguddad S, Nayak AG, Sanade AR, Ashwini Rani SR. Prevalence of oromucosal lesions in relation to tobacco habit among a Western Maharashtra population. Indian J Cancer 2019;56:15-8.
3. Dasgupta A, Manika P, Bobby P, Lina B. Int J Community Med Public Health 2018;5:1812-6.
4. Global Adult Tobacco Survey GATS 2 India 2016-17. Suggested Citation: Tata Institute of Social Sciences (TISS), Mumbai and Ministry of Health and Family Welfare, Government of India. Available from: https://ntcp.nhp.gov.in/assets/document/surveys-reports-publications/Global-Adult-Tobacco-Survey-Second-Round-India-2016-2017.pdf.
5. Hallikeri K, Naikmasur V, Guttal K, Shodan M, Chennappa NK. Prevalence of oral mucosal lesions among smokeless tobacco usage: A cross-sectional study. Indian J Cancer 2018;55:404-9.
6. Huque R, Zaman MM, Huq SM, Sinha DN. Smokeless tobacco and public health in Bangladesh. Indian J Public Health 2017;61:S18-24.
7. District level household and facility survey-4; State fact sheet-West Bengal-2012-13, International Institute for population Sciences, Mumbai, Ministry of Health and Family Welfare, Government of India.
8. Singh KJ, Singh N. Smokeless tobacco use among male and female in Northeast state, India. Global J Med Res 2016;16.
9. Mishra GA, Kulkarni SV, Gupta SD, Shastri SS. Smokeless tobacco use in Urban Indian women: Prevalence and predictors. Indian J Med Paediatr Oncol 2015;36:176-82.
10. GATS India survey 2009-2010, conducted by the International Institute for Population Sciences, Mumbai on behalf of MOHFW, GOI.
11. Rani M, Bonu S, Jha P, Nguyen SN, Jamjoum L. Tobacco use in India: Prevalence and predictors of smoking and chewing in a national cross sectional household survey. Tob Control 2003;12:e4.
12. Muthukrishnan A, Warnakulasuriya S. Oral health consequences of smokeless tobacco use. Indian J Med Res 2018;148:35-40.
13. Avinash Tejasvi ML, Anulekha CK, Afroze MM, Shenai KP, Chatra L, Bhayya H. A correlation between oral mucosal lesions and various quid-chewing habit patterns: A cross-sectional study. J Can Res Ther 2019;15:620-4.
14. Mortazavi H, Safi Y, Baharvand M, Jafari S, Anbari F, Rahmani S. Oral white lesions: An updated clinical diagnostic decision tree. Dent J (Basel) 2019;7:15.
15. Rohini S, Sherlin H, Jayaraj G. Prevalence of oral mucosal lesions among elderly population in Chennai: A survey. J Oral Med Oral Surg 2020;261-5.
16. Hung LC, Kung PT, Lung CH, Tsai MH, Liu SA, Chiu LT, *et al.* Assessment of the risk of oral cancer incidence in a high-risk population and establishment of a predictive model for oral cancer incidence using a population-based cohort in Taiwan. Int J Environ Res Public Health 2020;17:665.
17. Rocha TAH, Thomaz EBAF, da Silva NC, de Sousa Queiroz RC, de Souza MR, Barbosa ACQ, *et al.* Oral primary Care: An analysis of its impact on the incidence and mortality rates of oral Cancer. BMC Cancer 2017;17:706.
18. Almeida FC, Cazal C, Pucca Junior GA, Silva DP, Frias AC, Araujo ME. Reorganization of secondary and tertiary health care level: Impact on the outcomes of oral Cancer screening into the Sao Paulo State. Brazil Braz Dent J 2012;23:241-5.
19. Junqueira SR, Pannuti CM, de Mello Rode S. Oral health in Brazil--part I: Public oral health policies. Braz Oral Res 2008;22:8-17.
20. Brocklehurst P, Baker S, Speight P. Factors affecting the referral of potentially malignant lesions from primary dental care: A pilot study in South Yorkshire. Prim Dent Care 2009;16:13-8.
21. Lombardo EM, da Cunha AR, Carrard VC, Bavaresco CS. Delayed referrals of oral cancer patients: The perception of dental surgeons. Cien Saude Colet 2014;19:1223-32.