

# Factors Associated with Tobacco Use in Female Subjects: A Study from Eastern India

TUSHAR K BANDYOPADHYAY<sup>1</sup>, KUNAL SOM<sup>2</sup>, INDRANIL THAKUR<sup>3</sup>, RUDRAJIT PAUL<sup>4</sup>

## ABSTRACT

**Introduction:** Tobacco use among females is a rising public health problem. This is especially true in developing countries of South-east Asia. Certain factors like illiteracy, poverty and changing social norms are associated with this rising trend. There is very little data on the factors associated with tobacco use among females in India.

**Aim:** To document the pattern of tobacco use and also, some of the socioeconomic and demographic factors linked to tobacco use in females in Eastern India.

**Materials and Methods:** This was a hospital-based survey, done simultaneously in an urban and a rural hospital. A total of 155 adult female patients who were consuming tobacco (either smoking or smokeless) were included in the study after proper screening and interviewed. The pre-tested and validated structured questionnaire was used to collect socioeconomic and demographic information, information on tobacco use pattern and also tobacco use in the family. Then, the relative distribution of these various variables in female tobacco users was analysed.

**Results:** Authors had a total of 155 subjects (female tobacco users) in the study and the mean age was 27.6±7.3 years. An 80% of the subjects belonged to some tribal group. A 57% were completely illiterate and >60% were home-makers. Only 20% were smokers and the rest used Smokeless Tobacco (SLT). Of the different forms of SLT, Khaini was the most popular (36.8%) followed by Zarda (31%). A 27% of the subjects used two forms of tobacco simultaneously. A 72% of the subjects had their partners using tobacco and 39% had their mothers using tobacco.

**Conclusion:** Smokeless tobacco was much more common than smoking in female tobacco users. Factors associated with female tobacco use were illiteracy, poverty and familial tobacco use. Simultaneous use of more than one form of tobacco was present in around one-third. When tobacco control programs are devised for the females, stress should be placed on controlling smokeless tobacco. Also, the program must especially reach out to the illiterate and economically disadvantaged females.

**Keywords:** Bidi, Indigenous population, Smokeless tobacco, Surveys and questionnaires, Women

## INTRODUCTION

Tobacco addiction is an important public health problem in India. According to the Global Adult Tobacco Survey (GATS), 2016-17, 42.4% of the men and 14.2% of the women in India currently use some form of tobacco [1]. While the use of tobacco in males have been given more focus in research and public health programs, female tobacco users are an often neglected cohort. However, analysis of the Indian GATS data has shown that smoking is quite common among young adult females [2]. Unfortunately, the GATS data is not specifically disaggregated according to age groups. However, data from another Indian cross-sectional household survey showed that for both men and women, the prevalence of tobacco consumption increases with age [3]. For men, the Odds Ratio (OR) of tobacco consumption for the 60+ age group was 3.71 as compared to the 15-24 year age group. For females, this OR for the 60+ age group was 8.47 [3]. The aforementioned GATS atlas mentions that, in contrast to other parts of the world (where tobacco use prevalence decreases in older age groups), in South Asian countries like India and Bangladesh, tobacco use rises and stays at that high level in the older population [2]. While smoking as a whole has decreased all over the world, the difference in smoking habits between men and women have diminished in recent times [4]. In a recent UK survey, it was seen that women of birth cohort 1935-39 started smoking at a later age compared to those of birth cohort 1965-69 [4]. Thus, women initiate smoking or tobacco use at a younger age now compared to older times. Also, their pack-years of smoking is similar to the males [4].

A recent WHO report on smoking trends all over the world have also surmised that the rate of smoking in women may increase in

the near future in developing countries like Bahrain and Croatia and in other countries like Germany, the rate of decline of smoking in females will be very slow [5]. While smoking is the predominant form of tobacco use in high-income countries, for other areas of the world like Sub-Saharan Africa and South-East Asia, smokeless tobacco is equally, or sometimes, more popular among both genders [6]. Common varieties of smokeless tobacco used in India include Khaini, Zarda, Gutkha and Guraku (see **Annexure 1** for more details). Other variations like waterpipe smoking are popular in India and the Middle-East [6]. It has been scientifically proven that tobacco use in any form is harmful and the myths about safety of some forms like water-pipe are untrue [6]. In parts of Southern India, another harmful form of tobacco use, reverse smoking, is popular.

In India, analysis of surveys has shown that there is a rising trend of tobacco use among women over the last three decades [7]. There has been almost doubling of the prevalence of female smoking between 1990 and 2009 [7]. According to the National family health survey (2015-16), 6.8% of women in India use tobacco now [8]. However, such data does not include institutionalised persons like prisoners, regimented groups like soldiers or marginalised persons like sex workers, where the rate of use is likely to be much higher. It was also observed that the states with lower per capita Gross Domestic Product (GDP) had higher rates of female tobacco use [7]. Also, females who were illiterate had higher levels of tobacco use, compared to their more educated counterparts [7]. To summarise, females who were disadvantaged and marginalised, either by education or by poverty, were more likely to be tobacco users. However, this only adds to the health burden of these marginalised and vulnerable people. The adverse health effects of tobacco use

in women are similar and often greater than, men [9]. Cancer, cardiovascular disease and urinary incontinence are some of the effects of tobacco use in both men and women; women suffer from pregnancy-related morbidities in addition [9]. The significantly high incidence of oral cancer in both male and female in India is attributed to chewable tobacco use. Lung cancer is also a direct consequence of smoking in most cases. Coronary artery disease in female smokers is said to be more common than among male counterparts. Peripheral arterial disease, often leading to amputation, is also attributed to tobacco.

These rising trends have been variously attributed to changes in cultural sensitivity, increase in female spending power and economic transitions [7]. This increasing trend of tobacco use among females is not unique to India. Similar trends have also been observed in other Asian countries like Vietnam, China and Japan [7]. But despite this rising trend, tobacco control policies and programs are not gender-sensitive [10]. Often, such programs focus only on male tobacco users [10]. Thus, research into the epidemiological characteristics of female tobacco users is urgently needed in order to understand their tobacco use behaviour. This will help inform policymakers about appropriate intervention measures.

There is a wide literature gap in the research on female tobacco use in India. Some studies have been conducted in urban centres [7,8]. The marginalised populations in remote rural areas are often outside the ambit of such epidemiological survey. But, as past research has shown, females in such areas are more likely to use tobacco and thus, suffer the health effects of this addiction [8,10]. Thus, the present study was conducted in both urban and rural centres. The factors associated with female tobacco use in Eastern India have not been studied adequately. There is very scarce data [11]. But before planning health prevention programs, robust data is essential. This study was done to fill this literature gap.

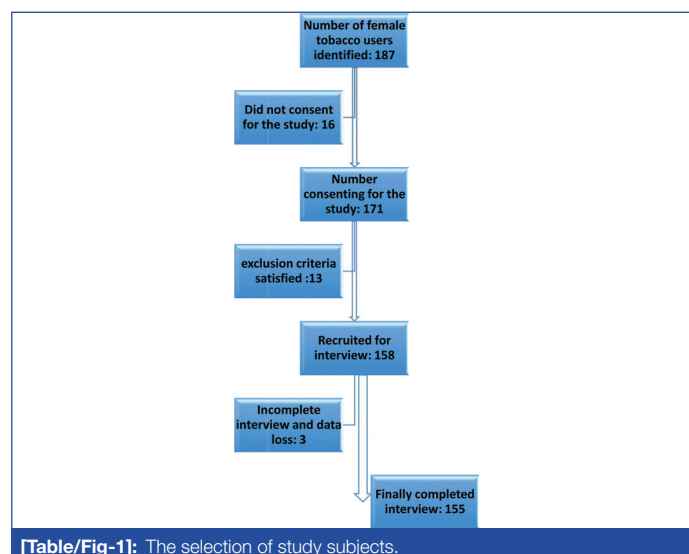
In this cross-sectional study, we aimed to document some of the socioeconomic and demographic factors associated with tobacco use in females from both urban and rural backgrounds. The types and patterns of tobacco product usage were also studied.

## MATERIALS AND METHODS

This was a hospital-based cross-sectional survey involving adult ( $\geq 12$  years) female tobacco users. The estimated sample size was obtained from a similar study [11]. The study was conducted for seven months (from 1 January 2018 to 31 July 2018) in a Tertiary Medical College of Eastern India and also a remote rural Hospital. Institutional Ethics Clearance was obtained from the medical college Institutional Ethics Committee (document number: MC/Kol/IEC/Non-Spon/685/11-2017). For the rural hospital, separate informed permission was also obtained from the regional health administrator, the block medical officer of health. This rural hospital is situated in Salboni block, a remote area of West Midnapore district. According to the 2011 census of India, 17.4% of the population here belongs to tribal community. Santal community is the biggest population group among them.

Adult ( $\geq 12$  years) female patients visiting the medicine Outpatient Department of these institutions were asked about their tobacco use habit as a part of routine medical history. Subjects using tobacco in any form (smoking or smokeless) were potential study recruits. "Tobacco user" was defined as anyone using any tobacco product at least once in the last 30 days. A purposive sampling technique was used because it suited the work schedule of the researchers. Those who were tobacco users were then enlisted ( $n=187$ ). The selection process is shown in [Table/Fig-1]. Initial screening was done after selection, as mentioned. Any adult ( $\geq 12$  years) female tobacco user who consented for the study was included ( $n=171$ ). The rest (16) did not consent to the study. Exclusion criteria included anyone connected to the tobacco industry (like bidi worker or shop owner) ( $n=8$ ) and anyone with communication problem (like dementia),

who would be unable to answer the questions ( $n=5$ ) (altogether 13 excluded). The chosen subjects were fully informed about the study and informed consent was obtained. For the present study, authors only considered current tobacco users, not individuals who had quit tobacco for a long time.



[Table/Fig-1]: The selection of study subjects.

Since a major part of the study was done in an area with tribal population (mainly Mahato and Santal tribes), the data on that population is highlighted. According to the Office of the Registrar General and Census Commissioner, India, tribal population is given a separate demographic status, different from other dominant religions [12]. They are categorised separately in the census document of India [12]. In the present study also, authors have maintained this distinction (under category: religion/ethnicity) during reporting of data.

Since this was not a prevalence study, but rather a survey among tobacco users, usual methods of sample size calculation were not applicable. The sample size was obtained from a similar Indian survey which had been done recently by Dasgupta A et al., [11]. The estimated sample size was 137. A margin of 10% was added for data loss or corrupt data. Thus, the target sample size was 151.

The study subjects were interviewed based on a pre-tested questionnaire. The questionnaire had three parts: the first part was for patient identification data and demographic data (age, religion/ethnicity, educational level, occupation, marital status, number of children, average monthly family income); the second part was about the tobacco products used (pattern and types); the third part was about tobacco use habits of parents and husbands (see [Annexure 2]). The questionnaire was based on the WHO-STEPS model of survey for non-communicable diseases. The questionnaire, made in the local Bengali language, was first validated in a small pilot survey and cross-checked with an expert in clinical research. Cronbach's Alpha from this pilot project came as 0.74. All the subjects were interviewed by the same person.

## STATISTICAL ANALYSIS

The data from patient response sheets were entered into Microsoft Excel worksheet. Data entry was done by one researcher and cross-checked by another researcher. Suitable statistical tests were done using statistical software, SPSS Version 16.0. Chi-square test was used for comparing proportions and student's t-test for means of continuous variables.  $p < 0.05$  was considered statistically significant.

## RESULTS

The authors had a total of 155 female tobacco users in the present study. The mean age of the study subjects was  $27.6 \pm 7.3$  years with age range of 14-47-years. Out of the 155 subjects, 30 (19.4%) were

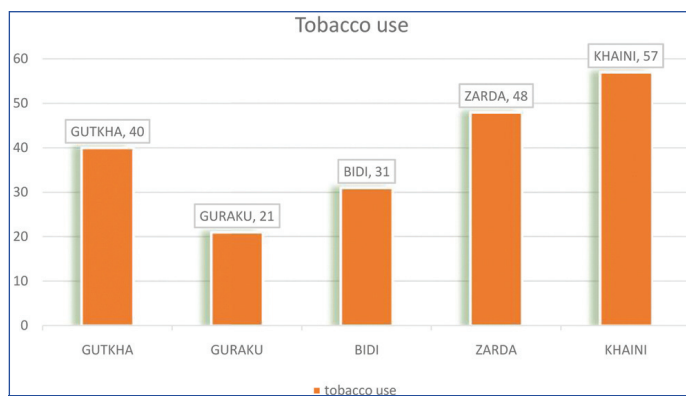
Hindu and the rest belonged to the different tribal religious groups. The other demographic characteristics of the subjects are shown in [Table/Fig-2]. It is seen that 57.4% of the subjects were illiterate and only 5% (n=8) had secondary level education. The majority (61.3%) of the subjects were homemakers. Most of the subjects belonged to the lower socioeconomic status with only 27.7% having average monthly household income above Rs 10,000.

Parameter		Number	Percentage
Age (in years)	≤20	31	20
	21-30	72	46.5
	31-40	44	28.4
	≥41	8	5.2
Education level	Uneducated	89	57.4
	Primary only	58	37.4
	Secondary	8	5.2
Occupation	Home maker	95	61.3
	Labourer	25	16.1
	Farmer	13	8.4
	Others	22	14.2
Married	Yes	134	86.5
	No	21	13.5
Number of children	0	21	13.5
	1	33	21.3
	2	78	50.3
	3	23	14.8
Monthly household income (in Rs)	≤8000	55	35.5
	8000-10000	57	36.8
	>10000	43	27.7
Religion/ethnicity	Hindu	30	19.4
	Tribal	125	80.6

[Table/Fig-2]: Table showing the demographic characteristics of the study subjects (n=155).

The study subjects used various forms of tobacco, as shown in [Table/Fig-3]. Khaini was the most commonly used form with 57 subjects (36.8%; 95% CI: 29.2-44.9%) using it. It was closely followed by Zarda (31%). The average age of Zarda users (26.8 years) was less than Khaini users (28.3-years). However, the difference was not statistically significant ( $p=0.28$  by Students' t-test). The patterns of tobacco use in different demographic groups are shown in [Table/Fig-4]. Among khaini users, 89.5% were homemakers while among Zarda users, 72.9% were homemakers ( $p=0.04$  by chi-square test). Thus, housewives preferred khaini among tobacco products. The preference for a tobacco product varied with occupation. Among bidi smokers, 29% and among the Gutkha users, 30% were either labourers or farmers. While bidi smoking was found in 21% of home makers, it was present in 38.5% of farmers ( $p=0.17$  by Fisher's-Exact test). The preference for a tobacco product also varied by educational status. Among the illiterate subgroup ( $n=89$ ), khaini was the most popular product (42.7%) while among the literate group (primary or secondary), Zarda was the most popular (36.4%). Bidi smoking was most common in the over-40 age group (37.5%). Smoking was more common among married females (21.6%) compared to unmarried ones (9.5%). However, the difference was not statistically significant ( $p=0.25$ ). On the other hand, Zarda use was more common (43% vs 29%) among unmarried subjects ( $p=0.21$ ).

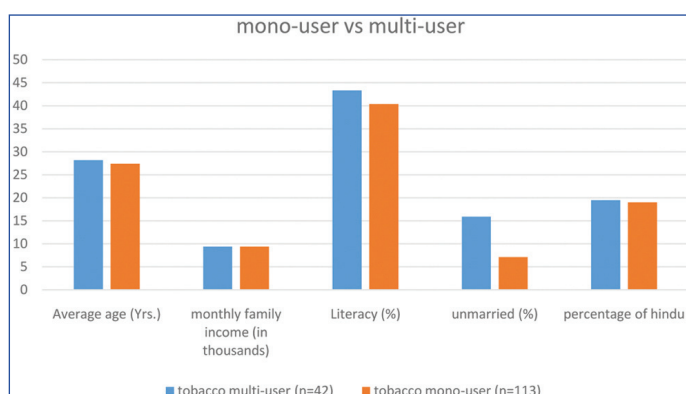
Out of 155 subjects, 42 (27.1%; 95% CI: 20.3-34.8%) used more than one form of tobacco simultaneously (multi-user). Comparison of mono-user and multi-user sub-sets are shown in [Table/Fig-5]. There was no difference in average age (27.4 vs 28.2 years;  $p=0.54$  by Students' t-test), average monthly income (Rs 9451 vs Rs 9381) or educational status between those who used single form of tobacco



[Table/Fig-3]: Bar diagram showing the forms of tobacco used by study subjects.

Demographic variables		Smoking	Smokeless tobacco			
		Bidi	Gutkha	Guraku	Zarda	Khaini
Religion/ethnicity	Hindu (n=30)	13.3	26.7	16.7	33.3	36.7
	Other (n=125)	21.6	25.6	12.8	30.4	36.8
Age (years)	≤20 (n=31)	9.7	25.8	12.9	38.7	29
	21-30 (n=72)	25	30.6	11.1	29.1	37.5
	31-40 (n=44)	15.9	22.7	15.9	27.3	40.9
	≥41 (n=8)	37.5	0	25	37.5	37.5
Education level	Illiterate (n=89)	21.3	23.6	13.5	27	42.7
	Literate (n=66)	18.2	28.8	13.6	36.4	28.8
Married or not	Yes (n=134)	21.6	26.1	13.4	29.1	38.8
	No (n=21)	9.5	23.8	14.3	42.9	23.8
Monthly income	≤10000(n=112)	20.5	25	14.3	30.4	36.6
	>10000 (n=43)	18.6	27.9	11.6	32.6	37.2
Occupation	Homemaker (n=95)	21	21	10.5	36.8	43.2
	Labourer (n=25)	16	28	28	16	28
	Farmer (n=13)	38.5	38.5	15.4	7.7	30.8

[Table/Fig-4]: Table showing tobacco use patterns by demographic parameters (in %).



[Table/Fig-5]: Bar diagram showing comparison of mono-user vs multi-user of tobacco.

and those who were multi-users. Also, there was no significant difference between single user and multi-users based on marital status. Among the multi-users ( $n=42$ ), 7.1% were unmarried, while among single product users, 15.9% were unmarried. However, the difference was not statistically significant ( $p=0.19$ ). There was also no difference between the Hindu and other tribal religious groups.

Out of 155 subjects, 114 (73.5%) used tobacco products daily and the rest used them 2-3 times/week. Only 20.6% ( $n=32$ ) had tried stopping tobacco in the past one year. Also, only 25.8% have been advised to quit tobacco by a healthcare professional.

Out of the present study subjects, only 31 (20%) were smokers (Bidi). The rest used SLT. There was no statistical difference between the average age of smokers ( $28.5\pm 6.8$  years) vs. SLT



users (27.4±7.4 years) ( $p=0.46$ ). The preference for smoking and SLT was the same among tribals and non-tribals. Smoking was reported by 13.3% of Hindus and 21.6% of other tribals religious groups ( $p=0.44$ ) [Table/Fig-4].

Data was also collected on tobacco use habits of close family members [Table/Fig-6]. Out of 155 subjects, 112 (72.3%) had their partners using some form of tobacco. Also, 81.9% of the subjects had their father using tobacco while 39.4% had mothers using tobacco.

Family member		Number	Percentage
Partner using tobacco?	Yes	112	72.3
	No	43	27.7
Mother using tobacco?	Yes	61	39.4
	No	94	60.6
Father using tobacco?	Yes	127	81.9
	No	28	18.1
Both parents using tobacco?	Yes	58	37.4
	No	97	62.6

[Table/Fig-6]: Table showing the tobacco use habit of family members.

## DISCUSSION

In this short survey involving 155 subjects, it was seen that among the female tobacco users, 57% were uneducated, >60% were homemakers and >70% had a monthly household income below Rs 10000. Average age of the tobacco users was 27.6±7.3 years. SLT was the predominant form used with only 20% of the study subjects reporting smoking. Khaini and Zarda were the two most commonly used forms of tobacco. A 27% of the subjects used two forms of tobacco simultaneously.

In a recent study from India involving female tobacco users, it was seen that higher age, lower socioeconomic status and illiteracy were associated with tobacco use [12]. However in the present study, the female tobacco users were younger, with the average age around 27 years. This was true for both smokers and users of SLT. However, the other two factors related to tobacco use in females, that is illiteracy and poverty, were concordant with the present data. More than two-thirds of our subjects had monthly income below Rs 10,000 and almost 60% of them were illiterate. In another study from Mumbai, India, it was also seen that illiteracy was an important factor in tobacco use among females [13]. Other important risk factors for tobacco use in females were divorced relationship status (OR=2.46 compared to single women, by multivariate analysis), being a housewife or manual labourer and advancing age [13]. In the present study, 61% of the subjects were homemakers and 16% were manual labourers [Table/Fig-1]. Thus, more than three-fourths of the female tobacco users documented in the present study were either homemaker or manual labourers. However, the exact psychosocial relationship between occupation and tobacco use is a matter of debate.

The relationship between tobacco use and the vicious cycle of poverty-illiteracy was also depicted in another national household survey of India [3]. While both men and women caught in the poverty-illiteracy trap were more likely to be tobacco users compared to their richer, educated counterparts, this gradient was steeper for women [3]. Illiterate women were 41 times more likely to smoke and 13 times more likely to use SLT compared to the richer, well-educated women [3]. The present study was not a comparative survey. Authors did not compare users and non-users of tobacco. However, in the current coterie of female tobacco users, the extremely poor and the illiterate are over-represented. This somewhat corroborates the link between tobacco use in females and these socioeconomic factors. In the abovementioned Indian household survey, it was also shown that people of tribal population were more likely to be tobacco users (OR=1.53 for men and OR=2.37 for women belonging to tribal

population, compared to non-tribals) [3]. In the present study, out of 155 tobacco users, 80% belonged to some tribal group.

Different studies in India have consistently shown that SLT is the predominant form of tobacco used by the women in this country [14]. In our study also, it is seen that 80% of female tobacco users preferred chewable forms like Khaini. This is not unique to India and other neighbouring countries like Bangladesh and Sri Lanka have also a similar trend [13]. A study from Bangladesh found that 24.5% of the females used smokeless tobacco, while only 0.9% smoked [15]. Dual tobacco use among females varied by country in Asia. While in Myanmar, it was around 13%, in Bangladesh it was 2.6% and in Thailand, 3.3% [16]. In the present study, dual tobacco product use was found in 27%. The use of SLT by women is socially acceptable in these societies and a study from Maharashtra, India, found that women continue using such products even during pregnancy [17]. The scenario is completely different from developed countries like USA, where SLT use among females is consistently very low [18]. Thus, tobacco prevention programs for India, especially those focussing on the female population, must have messages specifically concerning SLT.

The specific tobacco products used by both men and women vary widely by region. For example, in a study from Maharashtra, the commonest forms of tobacco used by urban women were Masher and chewable leaves [13]. In another study from an urban colony of Chandigarh, it was seen that Zarda was the main smokeless tobacco used by females [19]. In contrast, a study around Chennai city found that raw tobacco leaves and pan-masala were the commonest forms of smokeless tobacco [20]. In a study from Bangladesh, it was seen that among the women using tobacco, 87% used Zarda, while only 3% used khaini [21]. However, in the present study, 37% used Khaini while 31% used Zarda. Thus, the preference for a product is often determined by regional culture, especially among the tribal communities. In Cachar district of Assam, tobacco chewing in the form of Zarda with betel leaves and gutkha was found to be quite common among the Naga people [22]. In another survey, it was seen that pan-masala was the most popular SLT among women in Tripura [23]. The main message from these data is that region-specific local tobacco usage patterns must be documented in order to formulate effective culturally appropriate tobacco prevention programs. For example, a prevention program mentioning Masher would be useless in West Bengal but it would be vital for Maharashtra. The present study is a small step in such local documentation.

A worldwide survey has revealed that SLT use is the commonest in India and Bangladesh [24]. Especially, among the female population in these countries, SLT use enjoys a certain degree of social and familial acceptance. Its use as dentifrice is often a familial norm [25]. Also, quit ratios were very low in this population [24]. In the present study, it was also seen that only 20% of users had tried to quit in the past year.

A qualitative study done in Mumbai, India documented that many women started using tobacco after seeing close family and friends [25]. Thus, while addressing the problem of female tobacco use, such influencing factors must also be taken into account. In the present study, it was seen that in the female tobacco users, 72% had their partners using tobacco and 37% had both parents using tobacco [Table/Fig-6]. This creates a permissive environment for tobacco use in the household.

The main strength of the present study is the documentation of socioeconomic variables in female tobacco users, especially among tribal and ethnic minority group. Since the majority of the subjects (80%) belonged to the tribal population, this data gives an idea of the demographic characteristics of tribal female tobacco consumers. Such data is rare from Eastern India.

## LIMITATION

The sample size of the study was small. To assess the generalisability of such a survey in the population, a bigger study population is preferable. Secondly, this study records the self-reported tobacco use behaviour in the subjects. Such reports may be subject to answering bias. Thirdly, this was a hospital-based study. A community based survey would be ideal to better document the vagaries of tobacco use.

## CONCLUSION

Illiteracy, poverty and being a homemaker are some of the factors associated with tobacco use in females. Among the female tobacco users, persons from the tribal community are over represented. In the present survey, most female users preferred smokeless tobacco products like Khaini and Zarda. Most of the subjects had either their partners and/or parents using tobacco. Thus, the authors recommend that Improvement in literacy and socioeconomic status of women is a powerful tool to combat the problem of tobacco use Involvement of family members is an important strategy to curb tobacco use in females Tobacco cessation programs should be gender-sensitive In India, regional patterns and preferences for tobacco use (especially the smokeless forms) must be known before formulating anti-tobacco campaigns

## REFERENCES

- [1] GATS-2. Global Adult tobacco survey: Fact Sheet India 2016-17. Ministry of Health and Family Welfare: Government of India. New Delhi: 2017.
- [2] Singh A, Ladusingh L. Prevalence and determinants of tobacco use in india: evidence from recent global adult tobacco survey data. PLoS One. 2014;9:e114073.
- [3] 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. Tobacco Control. 2003;12:e4.
- [4] Peters SAE, Huxley RR, Woodward M. Do smoking habits differ between women and men in contemporary Western populations? Evidence from half a million people in the UK Biobank study. BMJ Open. 2014;4:e005663.
- [5] WHO global report on trends in prevalence of tobacco smoking 2015. World Health Organization: 2015; Geneva.
- [6] The Tobacco Atlas. 2018. American Cancer Society, Inc and Vital Strategies. Available online from <https://tobaccoatlas.org/topic/waterpipe/>
- [7] Goel S, Tripathy JP, Singh RJ, Lal P. Smoking trends among women in India: Analysis of nationally representative surveys (1993–2009). South Asian J Cancer. 2014;3:200-02.

- [8] International Institute for Population Studies. India Fact Sheet. National Family Health Survey (NFHS-4): 2015-16. Ministry of Health and Family Welfare, Government of India. [Cited 2018 Nov 16]. Available online from <http://rchiips.org/nfhs/pdf/NFHS4/India.pdf>
- [9] Allen AM, Oncken C, Hatsukami D. Women and smoking: the effect of gender on the epidemiology, health effects, and cessation of smoking. Curr Addict Rep. 2014;1:53-60.
- [10] Morrow M, Barraclough S. Tobacco control and gender in south-east Asia. Part II: Singapore and Vietnam. Health Promot Int. 2003;18:373-80.
- [11] Dasgupta A, Pal M, Paul B, Bandyopadhyay L. Predictors of smokeless tobacco consumption among women: a community based study in a slum of Kolkata. Int J Community Med Public Health. 2018;5:1812-16.
- [12] Scheduled Castes & Scheduled Tribes Population. Office of the Registrar General & Census Commissioner, India. [Cited 2018 Aug 18]. Available online from [http://censusindia.gov.in/Census\\_Data\\_2001/India\\_at\\_glance/scst.aspx](http://censusindia.gov.in/Census_Data_2001/India_at_glance/scst.aspx)
- [13] 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.
- [14] Women and tobacco – The facts and not so pretty figures. Institute of Public Health. [Cited 2018 Nov 15]. Available online from <http://iphindia.org/women-and-tobacco-the-facts-and-not-so-pretty-figures/>
- [15] Nargis N, Thompson ME, Fong GT, Driezen P, Hussain AKMG, Ruthbah UH, et al. (2015) Prevalence and Patterns of Tobacco Use in Bangladesh from 2009 to 2012: Evidence from International Tobacco Control (ITC) Study. PLoS ONE. 2015;10:e0141135.
- [16] Sinha DN, Gupta PC, Ray CS, Singh PK. Prevalence of smokeless tobacco use among adults in WHO South-East Asia. Indian J Cancer. 2012;49:342-46.
- [17] Pratinidhi A, Gandham S, Shrotri A, Patil A, Pardeshi S. Use of 'Mishri' A smokeless form of tobacco during pregnancy and its perinatal outcome. Indian J Community Med. 2010;35:14-18.
- [18] Smokeless Tobacco Use in the United States. Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion. Atlanta: 2016
- [19] Kathirvel S, Thakur JS, Sharma S. Women and tobacco: A cross sectional study from North India. Indian J Cancer. 2014;51(Suppl S1):78-82.
- [20] Chockalingam K, Vedhachalam C, Rangasamy S, Sekar G, Adinarayanan S, Swaminathan S, et al. Prevalence of tobacco use in urban, semi urban and rural areas in and around Chennai City, India. PLoS One. 2013;8:e76005.
- [21] Hossain MS, Kypri K, Rahman B, Arslan I, Akter S, Milton AH. Prevalence and correlates of smokeless tobacco consumption among married women in rural Bangladesh. PLoS One. 2014;9:e84470.
- [22] Das A, Roy G. A pilot study on patterns of Tobacco, Alcohol, and other Associated habits between Naga and Muslim communities in Cachar district of Assam, India. Int Res J Social Sci. 2016;5:10-15.
- [23] Rooban T, Joshua E, Rao UK, Ranganathan K. Prevalence of chewable smokeless tobacco in Indian women: Secondary data analysis from national family health survey 2005-06. J NTR Univ Health Sci. 2013;2:29-35.
- [24] Giovino GA, Mirza SA, Samet JM, Gupta PC, Jarvis MJ, Bhala N, et al. Tobacco use in 3 billion individuals from 16 countries: an analysis of nationally representative cross-sectional household surveys. The Lancet. 2012;380(9842):668-79.
- [25] Nair S, Schensul JJ, Begum S, Pednekar MS, Oncken C, Bilgi SM, et al. Use of smokeless tobacco by Indian women aged 18-40 years during pregnancy and reproductive years. PLoS One. 2015;10:e0119814.

### PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Medicine, Midnapore Medical College, Midnapore, West Bengal, India.
2. Specialist Medical Officer, Department of Medicine, Salboni Rural Hospital, Salboni, West Bengal, India.
3. Assistant Professor, Department of Critical Care Medicine, SSKM Hospital, Kolkata, West Bengal, India.
4. Associate Professor, Department of Medicine, Midnapore Medical College, Midnapore, West Bengal, India.

### NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Rudrajit Paul,  
Associate Professor, Department of Medicine, Midnapore Medical College, Midnapore-721101, West Bengal, India.  
E-mail: doer89@gmail.com

Date of Submission: **Aug 28, 2018**

Date of Peer Review: **Oct 04, 2018**

Date of Acceptance: **Dec 21, 2018**

Date of Publishing: **Feb 01, 2019**

FINANCIAL OR OTHER COMPETING INTERESTS: None.

### [Annexure 1]

Glossary of tobacco products mentioned in the article:

Khaini: dried tobacco mixed with slaked lime, to be kept in mouth vestibule

Bidi: a form of indigenous cigarette where tobacco flakes are rolled inside dried plant leaves

Zarda: scented tobacco flakes. Sometimes also contains ingredients like musk and saffron

Masheri (also called mishri): roasted powdered tobacco, applied to teeth and gums

Gutkha: mixture of tobacco powder, areca nut, sweet flavour and other ingredients

Guraku: paste of tobacco powder and molasses, applied to gums  
For further information: [http://www.aftcindia.org/tob\\_pro\\_india.htm](http://www.aftcindia.org/tob_pro_india.htm)

### [Annexure 2]

The questionnaire used in the survey (modelled after WHO-STEPs)

PART-I: Demographic information

Name:

Age:

Address:

Contact number:

How do you describe your religion/ethnicity?.....

What is your main occupation now? .....

What is the highest level of education you completed?.....  
 Are you married?  
 Y/N. if yes, no. of children.....  
 What is the average monthly income of your family in the past year?  
 Rs.....  
 PART-II: tobacco use  
 Which tobacco products do you use now or have used at least once in the last one month (Tick all that apply)  
 Cigarette/Bidi/Khaini/Gutkha/Zarda/Gul/Mishri/Snuff/Panmasala/Guraku/dried raw tobacco leaf/any other.....please mention any other.....  
 Do you use them daily?

Y/N. if N, what is the frequency?.....  
 In the past 12 months, have you ever tried stopping tobacco use?  
 Y/N. if Y, what was the influencing factor?.....  
 When you visited any healthcare facility in past 12 months, were you advised to stop tobacco?  
 Y/N  
 PART-III: familial tobacco use  
 Do/did your father use tobacco in any form?  
 Y/N  
 Do/did your mother use tobacco in any form?  
 Y/N  
 Do/did your partner use tobacco in any form?  
 Y/N