

## ORIGINAL ARTICLE

## Epidemiological Profile of Tobacco Users Among Reproductive Age-Group Women of Central Rural India

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**Background:** Tobacco-related morbidity and mortality is high in women of the reproductive age. There is a need to find out the status of tobacco use among reproductive age group women and its associated factors to address them more strategically. **Objectives:** To assess the prevalence of tobacco consumption among reproductive age group women and its associated factors including epidemiological profile of users. **Material and Methods:** This was a cross-sectional study using a semi-structured questionnaire; information was collected from 210 reproductive age group women in the rural setting. Data were analyzed using frequencies, bivariate analysis and logistic regression. **Results:** The prevalence of tobacco use among women of reproductive age was found to be 23.33% (49 participants). It was observed that odds of consuming tobacco was significantly (OR= 0.8) lower in employed participants and significantly (OR= 1.3) higher in participants belongs to the Scheduled Tribe caste. The odds of having pregnancy-related complications and comorbidity were significantly (OR=1.61 and 1.21 respectively) higher in those consuming tobacco currently. **Conclusion:** The overall prevalence of tobacco use was high and creating awareness among disadvantaged and pregnant women regarding the hazards should be prioritized..

**Keywords:** Tobacco, current users, past users, reproductive age group women

**Introduction:**

Tobacco smoking was initially adopted by women in industrialized countries and later by women in developing countries. The smokeless tobacco form is widely used among women in developing countries like India, Bangladesh, etc.(1)According to GATS (Global Adult Tobacco Survey), 3.7% women of 15-24 years of age group and 12% women in 25-44 years of age group consume tobacco.(2) To combat the problem of tobacco

use, WHO (World Health Organization) has developed MPOWER, a package of selected demand reduction measures contained in the WHO FCTC (Framework Convention on Tobacco Control) that includes Monitoring tobacco use and prevention policies, Protect people from tobacco smoke, Offer help to quit tobacco. Warn people about danger signs, Enforce the ban on tobacco advertisements or sponsors and Raise taxes on tobacco products.(3) The Government of India launched the National Tobacco Control Programme (NTCP) in the year 2007-08 with the intention of creating awareness and helping to reduce tobacco consumption by reducing the production and supply of tobacco products; effective implementation of the provisions under COTPA (Cigarette and Other Tobacco Product Act, 2003); and strategies for prevention and control of tobacco advocated by the WHO FCTC. There are interdisciplinary services such as Quitlines, adolescent clinics, nicotine replacement therapy, and tobacco cessation strategies such as case management, health education, community mobilization, and empowerment, as well as assessing trends using various surveys in general. Although a scarcity of data on the use of these available quit services prompted the necessity for a study on this particular topic. There is a wide range of data on tobacco use among Indian women, showing that use and perception of tobacco intake vary by region. (4)(5)(6)However, there is a scarcity of data on the profile of tobacco use among women of reproductive age (15-44 years) in central rural India. Therefore, we proposed the given study to find out the prevalence of tobacco consumption as well as epidemiological profile including health outcomes, forms of tobacco consumption, and different modes of cessation among reproductive-age women.

**Material and Methods:**

This cross-sectional study was carried out for duration of 2 months (Jan-Feb 2020) in the field practice area of the Rural Health Training Centering Central India catering

population of 10554. The study includes women of age group 15-44 years. The sample size was calculated by using open Epi version-3(7) by a 2 sided confidence interval of 95%, using an anticipated frequency of 8.1 % prevalence of consumption of tobacco among rural women (according to NFHS-4)(8) and 5% absolute precision value plus 1.5% design effect. This gave us a sample size of 210. The  $30 \times 7$  cluster sampling method include the examination of approximately 210 women, selected randomly as 30 groups of 7 women each.(9) We used  $30 \times 7$  cluster sampling method as cluster sampling enables the formation of clusters with a smaller representation of the population under field practice area with similar characteristics. Our practice area had a total of 10 villages. We arranged the villages in an Excel sheet according to the alphabetical order of the village name, with population in the next column.

Table 1: Villages and clusters

Vil lag es	Popu lation	Cumula tive Populat ion	Product	Clusters
A	970	970	$200*+360**+360=920$	3 (1,2,3)
B	2807	3777	$920+360+360+360+360+360+360=3440$	7 (4,5,6,7,8,9,10)
C	1155	4932	$3440+360+360+360=4880$	4 (11,12,13,14)
D	390	5322	$4880+360=5240$	1 (15)
E	418	5740	$5240+360=5600$	1 (16)
F	1030	6770	$5600+360+360+360=6680$	3 (17,18,19)
G	1060	7830	$6680+360+360+360=7760$	3 (20,21,22)
H	572	8402	$7760+360=8120$	1 (23)
I	868	9270	$8120+360+360+360=9200$	3 (24,25,26)
J	1532	10802	$9200+360+360+360+360=10640$	4 (27,28,29,30)

Then the cumulative population was calculated, which was divided by 30 (the cluster number), yielding the sampling interval. Through the online random number generator, a random number was generated that was

less than the sampling interval. Then we located the first cluster by finding that the cumulative population exceeds that random number. Then the sampling interval was added to the random number, and the product was used to locate the second cluster by finding that the cumulative population exceeded that product. We identified subsequent clusters by adding the sampling interval to the product that located the previous cluster. (Table 1) (\*Random Number= 200) (\*\*Sampling Interval = Total population ÷ Number of clusters =  $10802/30 = 360.06 \approx 360$ ) Based on the projected village wise population cumulative populations, sampling interval and selection of random number, all the 30 clusters were identified. Once the clusters were identified, in every cluster, a landmark (primary school /temple in case school was not present) was used to generate a random starting point to identify the lane for selecting the households. It was pre-defined to take a left turn whenever we reached the end of the lane till the sample of 7 households was completed. Asemi-structured questionnaire was prepared and domains were adopted from the GATS(2) questionnaire. The questionnaire contained five sections- sociodemographic data of respondent, tobacco use, pregnancy-related complication, cessation and co-morbidity. The questionnaire to be used was pre-tested among the women of 15-44 years of age group in different areas among 10% of sample size (21 individuals) and necessary corrections and modifications were made to make it more understandable and validated it by subject experts in the department. Tobacco use was classified as “current users” defined as having used tobacco at least once in the last 30 days preceding the visit, and “past users” defined as having used tobacco in the last one year preceding the visit.(10)(11) The study subject was classified as consuming tobacco in the smoked form if she smoked cigarette or bidi (tobacco hand-rolled in dried tendu leaves) or other forms. Smokeless tobacco use included chewing gutkha or paan masala (industrially manufactured tobacco product containing scented tobacco mixed with lime and areca nut, in powder form),kharra (betel quid with tobacco), khaini (processed or dried tobacco leaf combined with slaked lime paste to keep in the buccal cavity for some time), and, mishri/nas(tooth powder). The data collection form was developed using KoBo Tool box.(12)The accompanying Kobo Collect application was used on a smartphone to fill these forms for each of the participants. The researcher went door-to-door and interviews were taken after receiving informed consent from the participants. The participants were notified that the information would be used for the study purpose, and confidentiality was maintained throughout the data collection. Ethical

clearance was taken from the Institutional Ethical Committee. Statistical analysis was done using Epi-info(13) and R software(14). Frequency distribution, bivariate analysis and multivariate logistic regression were carried out to find out the association of different variables with tobacco consumption were carried out.

### Results:

A total of 210 women participated in the study. The mean age of the participants who consumes tobacco was  $28.32 \pm 8.59$  years.

Table 2:- Socio-demographic profile of study participants

Characteristics		Frequency (N = 210)	Percentage
Age (year)	15 - <25	83	39.52
	25 - <35	57	27.15
	35 - <45	70	32.33
Education	No Formal school	13	6.19
	Primary schooling	35	16.67
	Secondary schooling	100	47.62
	Higher secondary school completed and above	62	29.52
Occupation	Daily wage worker	72	34.28
	Unemployed	57	27.14
	Employed	33	15.72
	Student	48	22.86
Marital status	Single (Separated/ Divorced/ Widowed)	70	33.33
	Married	140	66.67
Caste	Open	15	7.14
	Other Backward Class	108	51.43
	Scheduled Caste	31	14.76
	Scheduled Tribe	56	26.67
Socio-economic status	Lower class	124	59.05
	Lower-middle class	69	32.86
	Middle class	17	8.10
	Upper class	0	0

Majority of the participants were from the age group 15-25 years. 29.52% of the participants had pursued more than higher secondary schooling while 16.67% and 47.62% of participants had completed primary schooling and secondary schooling respectively. Majority (34.28%) of the participants were daily wage workers and 59.05% belonged to lower socioeconomic status according to Modified B.G. Prasad's classification. 66.67% of participants were married while 33.33% of participants were single including married /separated /divorced/ widowed. Majority of our study participants belonged to Other Backward Classes (OBC), followed by 26.67% who belonged to Scheduled Tribes (ST). 14.76% came from Scheduled Castes (SC) while 7.14% belonged to Open. (Table 2) The mean age of onset of tobacco consumption among current users was  $19.04 \pm 6.003$  years. The prevalence of tobacco consumption was found to be 23.33%. The study showed 60 (28.57%) subjects were past tobacco users; 46 (21.9%) subjects continued tobacco use while 14 (6.67%) quit tobacco. Three (1.43%) subjects recently started tobacco, constituting a total of 49 (23.33%) current users. The study found 23 (46.93%) current users had a history of pregnancy related complications while 15 (30.61%) current users had a history of comorbid conditions. The pattern of tobacco use among current users (forms of tobacco and frequency) is showed in Table 3 & 4.

Table3: -Forms of tobacco consumption

Forms of tobacco	Frequency (n=49)	Percentage
Betel quid with tobacco/Kharra	27	55.1
Betel quid with tobacco and Mishri	4	8.16
Khaini or tobacco lime mixture	5	10.20
Mishri	13	26.53

Table 4: -Frequency of tobacco consumption

Frequency Use	Frequency (n=49)	Percentage
Once a day	15	30.61
Once-Twice a day	5	10.20
Once-Twice in a week	1	2.04
Thrice a week	2	4.08
Twice a day	17	34.69
Twice a week	1	2.04
Twice-Thrice a day	7	14.29

Association between tobacco consumption & comorbidity, sociodemographic variables & tobacco consumption are described in table no 5 & Table No. 6 respectively.

Table 5 :- Association of tobacco consumption with a history of pregnancy complications and comorbidity: Bivariate analysis

Current Tobacco Use	Health outcome		Adjusted OR 95%CI (UL-LL)
	<b>Pregnancy-related complications</b>		
	Yes (%) N=31	No (%) N=179	
Yes	23 (74.19%)	26 (14.53%)	1.61 (1.38-1.87)*
No	8 (25.81%)	153 (85.47%)	
	<b>Co-morbidity</b>		
	Yes (%) N=29	No (%) N=181	
Yes	15 (51.72%)	34 (18.78%)	1.21 (1.04-1.41)*
No	14 (48.28%)	147 (81.22%)	

\*significant at 0.05 level, OR= odd ratio and CI= confidence interval. Table 6 reported that caste and occupation were significantly associated with the consumption of tobacco in women of reproductive age.

Table 6 :- Association of socio-demographic variables with the consumption of tobacco in women of reproductive age group- Multivariate analysis

Variables		Tobacco users N(%)	Non-Tobacco users N (%)	Adjusted Or 95% CI(LLUL)
Age	15 - <25	10 (20.41)	73 (45.35)	0.90 (0.75-1.08)
	25 - <35	15 (30.60)	42 (26.08)	0.98 (0.85-1.14)
	35 - <45	24 (48.99)	46 (28.57)	1
Education	No Formal schooling	6 (12.24)	7 (4.35)	1
	Primary schooling	15 (30.61)	20 (12.42)	1.12 (0.86-1.47)

	Secondary schooling	22 (44.90)	78 (48.45)	0.95 (0.74-1.23)
	Higher Secondary and above	6 (12.24)	56 (34.78)	0.94 (0.71-1.24)
	Daily wage worker	31 (63.27)	41 (25.47)	1
	Employed	4 (8.16)	29 (18.01)	0.80 (0.66-0.98)*
Occupation	Unemployed	11 (22.45)	46 (28.57)	0.91 (0.74-1.11)
	Student	3 (6.12)	45 (27.95)	0.92 (0.71-1.19)
Marital Status	Married	40 (81.64)	100 (62.11)	1
	Single (Widowed/ Separated/ Divorced/ Unmarried)	9 (18.36)	61 (37.88)	0.91 (0.74-1.11)
Caste	Scheduled Caste	6 (12.24)	25 (15.53)	1.05 (0.90-1.24)
	Scheduled Tribe	25 (51.03)	31 (19.24)	1.30 (1.13-1.49)*
	Other Backward Class	17 (34.69)	91 (56.53)	1
	Open	1 (2.04)	14 (8.70)	0.84 (0.661-1.06)
Socio-Economic Status	Lower class	37 (75.51)	87 (54.04)	1
	Lower Middle Class	10 (20.41)	59 (36.65)	0.99 (0.87-1.14)
	Middle Class	2 (4.08)	15 (9.32)	1.06 (0.841-1.34)

\*significant at 0.05 level, OR= odd ratio and CI= confidence interval, pseudo R square=0.211, GVIF of all independent variables <5

### Discussion:

In our present study, we found the prevalence of tobacco consumption (23.33%) is nearly double as compared to data that is given by GATS (12.8%). India has the largest smokeless tobacco consumers with annual growth rate 2-3%. (15) Our study (Table 3) showed that Kharra (Betel quid with tobacco) consumption accounted for the largest form (55.10%, 27 participants) of tobacco that is consumed by the study participants, while Mishri/ Nas (tooth powder) was applied by 26.53% (13 participants). However, 4 out of 49 (8.15%) women used both betel quid with tobacco and mishri. A study was conducted in Mumbai slum area on tobacco use among



reproductive age-group women, showed Mishri is the most commonly used form and most of the women were poly-user. (16) According to a study from central India, the largest population consumes kharra, another popular type of tobacco. (17) Gupta, et.al, reported the most commonly used product among smokeless tobacco products, was khaini followed by gutkhain central India. (6) Similarly, a study in north-east India showed the khaini (42.4%) is the most common form of smokeless tobacco consumed by the study participants, followed by kharra (Betel quid with tobacco, 28.2%) and gutka (18.8%). (18) This shows that different communities in the different parts of the country may have varied preferences for the form of smokeless tobacco use. The number of times tobacco was used in a day/week was grouped into once a day, once-twice a day, one-twice a week, twice a day, twice-thrice a day, twice a week and thrice a week. Around 77.08% were consuming tobacco once-twice in a day (Table 4). While similar study carried in reproductive women from urban area showed a few notable differences in the frequency of daily use of different types of tobaccos mentioned the mean frequency of tobacco use among polyusers is approximately twice that of single users. (19) Out of 49 current users, 23 (46.93%) participants reported pregnancy-related complications. The most common pregnancy-related complication was low birth weight baby and others including abortion, preeclampsia, hypothyroidism, infertility. While, 15 (30.61%) of the current users, reported morbid conditions like hypertension, oral disease, diabetes, thyroid disorders, menstrual complaints. An article by the WHO about the impact of tobacco on women's health mentioned the poor health outcomes associated with tobacco, such as cancer, cardiovascular disease, and harm to the fetus. (1) According to Table 5, the odds of having pregnancy-related complications (OR=1.61, 95% CI: 1.38-1.87) and comorbidity was significantly (1.21, 95% CI: 1.04-1.41) higher in those consuming tobacco currently. Similar to the current study, a significant association between tobacco consumption and health outcomes (complications and comorbidities) has been found in other studies also carried on reproductive age-group women. (15)(20) This study (Table 6) showed that odds of consuming tobacco was significantly (OR= 0.8, 95% CI: 0.66-0.98) lower in employed participants as compared to daily wage workers. Further, the study showed odds of consuming tobacco was significantly (OR= 1.3, 95% CI: 1.13-1.49) higher in participants belongs to the Scheduled Tribe caste as compared to the Other Backward Class. Mohan et, al., in their study mentioned, the prevalence of smokeless forms of tobacco to be significantly higher in the rural areas

among the socially disadvantaged castes of Indian society. (15) Further, our study showed, participants who were employed were 20% less likely to consume tobacco as compared to daily wagers. Similarly in other study also, the trend of smokeless tobacco use was reported to be higher in daily wager and unemployed women. (21) The economic burden due to comorbidities and complications during pregnancy would be highest in daily wagers. Tobacco can put more financial strain on such women and may lead to difficulty in getting medical care for themselves and their children. (1)(19)(22) We found a low prevalence of tobacco consumption in the age group 15-<25 years. The reason behind this could be that adolescent girls who participated in the study were aware of the anti-tobacco campaign either in form of the school programme or IEC (Information, Education, and Communication) activities in the village. A study on tobacco consumption among adolescent in Rajasthan showed that 91% of participant have good knowledge of the hazardous effect of tobacco. (23) 6.67% (14 past users) of the study participant quit tobacco either by cessation, counseling or switching methods. Not a single woman who quit using tobacco had taken the help of a health professional or used the quit line. Currently, the Government of India has implemented the "Quit tobacco Program" which emphasize on use of quit line, nicotine replacement therapy, health education and counseling. Cessation programme, -Quit tobacco for life, Tobacco cessation cells at block, district level are different national schemes under the National Tobacco Control Programme emphasizing the tobacco cessation. (24)(25)(26) Integrating the MCH clinics with existing tobacco control program can optimize the utilization of human resources and existing strategies and may alleviate the major barriers in tobacco control. The following are the strength of the study. First, the questionnaire in the study was adopted from a validated GATS scale. Second, cluster sampling method in the study ensured the data representation from the different internal composition. Further study can be proposed to explore the existing cessation service utilization and associated barriers. One of the limitations of the study is that it relies on self-reported data. Second, as our study was a cross-sectional study, the causality cannot be established.

### Conclusion:

The overall prevalence of tobacco use among the reproductive-age group women was 23.3% and the socio-demographic variables, caste and occupation were significantly associated with tobacco use. The overall prevalence of tobacco use was high and creating awareness among disadvantaged and pregnant women

regarding the hazards should be prioritized.

Sources of supports: Nil

Conflicts of Interest: Nil

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