

Smokeless Tobacco use among Male and Female in Northeast State, India

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Abstract

Smokeless tobacco has been found as harmful as smoke tobacco. Smokeless tobacco associated with the various oral diseases including mouth cancer and adverse reproductive outcome. Objective of this study is to examine the prevalence of smokeless tobacco consumption in Northeast state, India and to study the socioeconomic, demographic correlates of tobacco use in the form of smokeless tobacco only. We used the cross sectional survey DLHS-4 (2012-2013) data of northeast state, India. All men and women living in the study area, aged 15 years and above were included. Information on socio demographic characteristics and smokeless tobacco consumption was administered. Smokeless tobacco consumption was categorized as 'Current consumers' and 'non consumers'. Associations between smokeless tobacco consumption and the explanatory variables were examine using bivariate and multivariate statistical technique. 67,930 individual men and 75,799 individual women were the unit of analysis in the study. The prevalence of 'Current consumption' among men 65

Index terms— cross sectional study, men, women, smokeless tobacco and Northeast state.

1 I. Introduction and Review of Literatures

consumption of tobacco kills approx six million people each year moreover, it is the measure threat of disease and death [1,2]. Tobacco is the most important oral cavity and pharyngeal cancer risk factors. Approximately 90% of people with mouth cancer are tobacco users. Some 7.5% of the world's (53.9 million) deaths were attributable to tobacco use in 1998 and if same smoking patterns continue, that number will rise to 10 million deaths annually by 2030 [3]. Tobacco can be consumed both in smoke and smokeless form.

Smokeless tobacco is tobacco that is not burned; it is also known as chewing tobacco, oral tobacco, spit or spitting tobacco, dip, chew, and snuff. Harmful health effects of smokeless tobacco include: mouth, tongue, cheek, gum, and throat cancer. Smokeless tobacco also causes nicotine addiction. South Asian people consume smokeless tobacco the most. More than one third of total tobacco consumption in this region is in the form of smokeless tobacco [4][5][6]. Smokeless tobacco consumption in south Asia is a major public health threat, in India (prevalence: 18.4%), Bangladesh (32.6%), Sri Lanka (6.9%) and Nepal (6%) by the estimation of WHO [7].

India is the second most populous country and one of the world's largest producers and consumers of tobacco. Here, tobacco is available in a variety of different types and brands e.g. bidi, gutkka, khaini, pan masala, hookah, cigarettes etc [3] and also the form of consumption varies from place to place like smoke cheroot in Odisha and Andhra Pradesh, dry snuff in western part, while creamy snuff in northeast part of India. Mostly the tobacco is consumed in smokeless form in northeast states. The prevalence of tobacco consumption in India, either smoked or smokeless tobacco, in the population aged 15 year and above was 47 per cent among men and 14 per cent among women while overall prevalence was 37 percent [8,9]. Consumption of smokeless tobacco products in India is increasing rapidly [10,11], which is showing a negative effects for both male and female. As smokeless tobacco is

6 B) FACTORS ASSOCIATED WITH SMOKELESS TOBACCO CONSUMPTION

quite famous among women, affecting their oral morbidity and perinatal health, including premature delivery, low birth weight and shortened length [12][13][14][15][16][17]. In northeast states of the India, smokeless tobacco is a part of the socio cultural [18]. They have different customs, food habits, life-style, diverse ethnic groups, type and pattern of tobacco consumption as compared to the rest of the country. Research have shown that in northeast states, betel quid (55.4%), is the most popular smokeless tobacco followed by tuibur (13.1%), gul (12.0%) and khaini (9.1%), Gul and tubur are primarily used by women and recent study shows that the prevalence of smokeless tobacco in northern, eastern and northeast states is 8.4%, 31.8% and 23.8% [18][19][20]. Betel quid is a combination of betel leaf, areca nut, and slaked lime. Like other smokeless tobacco products, betel quid and gutka are known to cause Esophageal cancer, Lip cancer, Mouth cancer, Pharynx cancer, Tongue cancer. The most harmful cancercausing substances in smokeless tobacco are tobacco-specific nitrosamines (TSNAs). TSNA levels vary by product, but the higher the level the greater the cancer risk.

2 Table 1 : Prevalence of smokeless tobacco use in northeast States India by sex

Table ?? shows the prevalence of smokeless tobacco, Meghalaya, Tripura and Mizoram was higher in women while in Arunachal Pradesh, Manipur, Nagaland and Sikkim males are consuming more smokeless tobacco in GATS (2009-2010), while in DLHS (2012-2013) Meghalaya, Manipur and Tripura have the highest prevalence of smokeless tobacco among both male and female in DLHS (2012-2013). Hence, the objective of this study is to examine the prevalence of smokeless tobacco consumption among male and female in northeast state, India and to study the socioeconomic demographic characteristics correlates with tobacco use in the form of smokeless tobacco only.

3 II. Data and Methods

characteristics (result not shown). For computation of age-adjusted prevalence rate, we use 2011 census data, RGI, Govt. of India as the standard population structure. We computed the standard age proportion by dividing the age-specific census population by the total census population number and standardizing proportion sum to 1. Then, age-adjusted factors for 6 (six) age grouping (10 year intervals each) were used for computation of age-adjusted prevalence. Binary logistic regression was applied to measure the association and to check the net effect of factors on the current consumers for males and females. Variance inflation factor (VIF) of all the variables were computed to check collinearity prior to inclusion in multivariate logistic regression problem of collinearity among independent variables not found (highest VIF, 2.36). The results of logistic regression, are presented in the form of estimated odds-ratios with 95% CI. The whole analysis was performed using STATA version 13.0 with survey commands and R software. Ethical statement: This study is based on data available in public domain, therefore no ethical issue is involved. Data for this study was taken from the fourth round of the District Level Household Survey (DLHS-4) conducted during 2012-13. DLHS-4 adopted a multistage stratified systematic sampling design. Detailed information about sampling employed in this survey can be obtained from the DLHS-4 report. All seven states, namely, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim separate CAB (Clinical Anthropometric and Biochemical) data files (excluding Assam) were merged together for this study. The outcome variable included in the analysis is "personal habit of age 15 and above using smokeless tobacco". Where the response was further divided into two categories like "Current Consumption" and "No Consumption" the household members was considered current consumers if they had responded that they were consuming (smokeless tobacco) and they coded as 1, while the never consumers, ex-consumers and don't know (0.3%) are coded as 0. To measure level of prevalence and association of smokeless tobacco with factors, this study used both bivariate and multivariate analyses. Chi-square test is used to check the association of the current users with selected characteristics like age, literacy, occupation etc Table 2 presents the unweighted count of sampled respondents and population estimates classified by selected socio demographic and occupational background. The estimated population of person age 15 year and above in northeast state in DLHS (2012-2013) was 143,729 where 67,930 were male and 75,799 were female respondent were taken as unit of analysis.

4 III. Results and Discussion

5 a) Differentials in current smokeless tobacco consumption

(70.1%) having the highest adjusted prevalence than female (55.8%). We have also found that the wide variation in adjusted and unadjusted age prevalence especially non working male and unmarried male, female. Among states, Meghalaya have the highest prevalence followed by Mizoram.

6 b) Factors associated with smokeless tobacco consumption

Table 4 presents odds ratio among male and female after performing logistic regression models which examine the effect of individuals household and The prevalence of smokeless tobacco consumption among male and female in our study is 69.6% and 50.8%. Present study reveals that education is significantly associated with smokeless

tobacco consumption. This is consistent with observations that those with lower level of education are more likely to consume smokeless tobacco [23,24]. In this study, the age wise prevalence of smokeless tobacco consumption is higher as the age advanced and the highest rate is found in the age group of 20-34 and 35-59 years and then declined after 60 years in both the sexes, similar finding was also reported [23,25]. Those who are married have a higher rate of smokeless tobacco consumption as compared to the unmarried respondents. This may be due to influences of the spouses consuming smokeless tobacco. Similar association between smokeless tobacco consumption and marital status was also reported [25].

7 IV. Conclusion

In northeast states, India smokeless tobacco consumption is strongly associated with the level of education, religion, caste, marital status, occupation and place of residence. A comprehensive ban on tobacco advertising, promotion and sponsorship needs to be implemented according to the standard outlined in 'Article 13' in the WHO Framework Convention on Tobacco Control. Display and visibility of smokeless tobacco products at points of sale constitutes advertising and promotion and should therefore be banned [22]. In addition to proper enforcement of the new law, there is a need for a nationwide campaign educating people in both rural and urban areas about the law and health risks of smokeless tobacco.

8 V. Acknowledgments

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Figure 1: 5)Figure 1 . 1 :

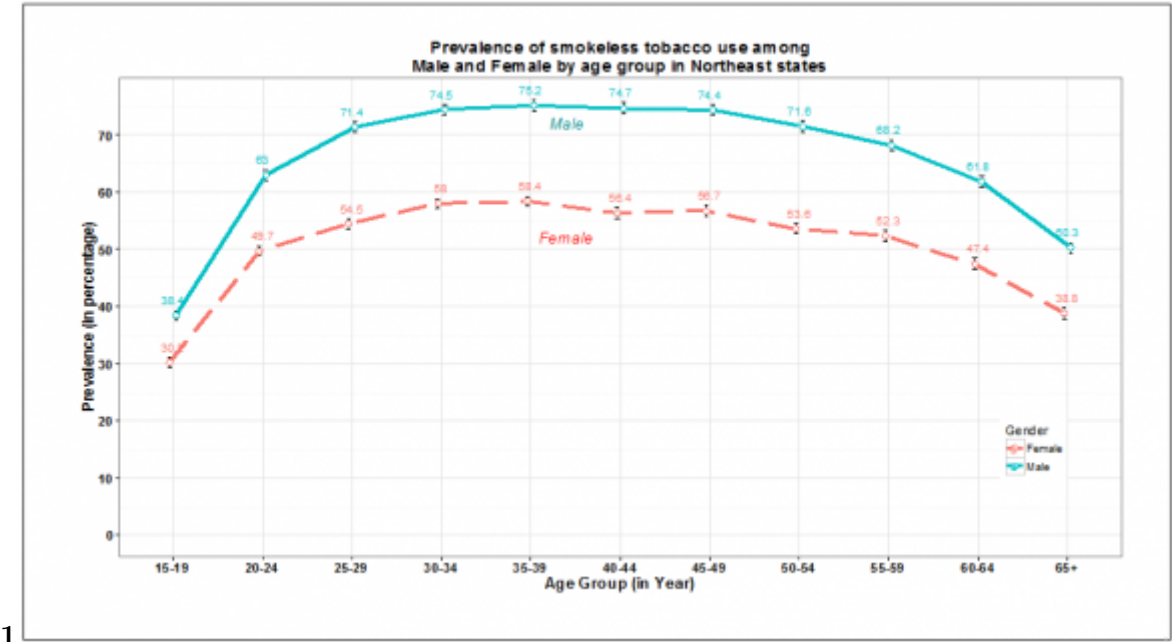


Figure 2: Figure 1 .

	AR	MN	MG	TR	NG	SK	MZ
Smokeless tobacco, GATS(2009-2010)							
Male	44.9	52.1	20.7	39.4	53.1	27.6	32.6
Female	27.7	37.0	35.9	43.5	36.6	23.3	49.1
Smokeless tobacco, DLHS-4 (2012-2013)							
Male	56.8	65.6	86.7	66.6	64.2	39.3	79.3
Female	33.7	51.4	87.2	65.8	34.5	23.6	77.4
Source: GATS 2009-2010 and DLHS 2012-2013							
AR : Arunachal Pradesh, MN: Manipur, MG: Meghalaya, TR: Tripura, NG: Nagaland, SK: Sikkim, MZ: Mizoram							
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Figure 3:

Smokeless Tobacco use among Male and Female in Northeast State, India

community characteristics on current smokeless tobacco consumption in northeast states, India. The results show that age group, social group, sex and education are significantly associated with current smokeless tobacco consumptions in both sexes. In table 4 the male in age group (20-34 and 35-59) are 3 times more consuming smokeless tobacco than the males in age group (15-19). Non ST, non Christian and the males who are unmarried are consuming less smokeless tobacco than ST, Christian and married males.

Background characteristics	Male (n=67,930)		Female (n=75,799)		Total (N=143,729)
	Percent	Sample size	Percent		Sample size
Age					
15-19	47.6	7,512	52.4		8,263
20-34	42.9	21,552	57.1		28,628
35-59	48.1	28,578	51.9		30,860
60+	56.1	10,288	43.9		8,048
Level of education					
Illiterate	35.0	11,196	65.0		20,753
Below Middle	46.8	16,066	53.2		18,229
Middle	50.2	16,636	49.8		16,473
Secondary	54.2	24,049	45.8		20,359
Religion					
Christian	47.1	39667	52.9		44520
Non Christian	47.5	28280	52.5		31294
Caste					
Scheduled tribe	47.2	51243	52.8		57390
Nonscheduled tribe	47.6	16704	52.4		18424
Occupation	69.5	41,633	30.5		18,302
Working					
Not working	31.4	26,314	68.6	48.6 54.1 53.6 52.4	57,512
Marital status					
Unmarried	51.4	18,634			17,653
Married	45.9	49,311			58,159
Place of residence					
Urban	46.4	16,832			19,442
Rural	47.6	51,115			56,372
States					
Arunachal Pradesh	47.8	17643	52.2 53.9 60.8 51.2 50.0 51.7		19272
Manipur	46.1	10678	53.2 52.8		12473
Meghalaya	39.2	5429			8407
Nagaland	48.8	11720			12309
Tripura	50.0	14456			14460
Sikkim	48.3	3260			3486
Total	46.8	4761			5407
	47.2	67,930			75,799

Source: Based on authors' computation.

3

Background characteristics	Male (n=67,930)		Female (n=75,799)	
	Crude	Age adjusted	Crude	Age adjusted
Level of education				
Illiterate	65.2 (0.4)	66.7 (1.0)	47.2 (0.7)	46.9 (0.8)
Below Middle	68.1 (0.7)	66.9 (0.7)	54.5 (0.7)	52.7 (0.7)
Middle	65.4 (0.7)	64.6 (0.7)	52.6 (0.7)	51.9 (0.7)
Secondary	63.8 (0.7)	62.6 (0.4)	49.7 (0.7)	50.4 (0.8)
Religion				
Hindu	61.7 (0.7)	59.2 (0.6)	48.6 (0.9)	46.9 (0.9)
Christian	69.8 (0.6)	70.1 (0.6)	56.0 (0.7)	55.8 (0.7)
Others	56.3 (0.7)	54.7 (0.7)	37.0 (0.8)	36.2 (0.9)
Caste				
Scheduled tribe	66.9 (0.5)	66.4 (0.5)	51.9 (0.6)	51.3 (0.6)
Scheduled caste	62.8 (1.6)	60.3 (1.4)	48.7 (1.9)	47.2 (1.2)
OBC	55.1 (1.2)	53.5 (1.2)	42.4 (1.1)	41.3 (1.1)
Others	63.1 (0.9)	60.7 (0.9)	49.7 (1.1)	47.5 (1.1)
Occupation				
Working status	71.7 (0.4)	71.3 (0.5)	57.5 (0.7)	56.2 (0.7)
Not working	55.7 (0.5)	61.2 (0.5)	48.7 (0.6)	48.6 (0.6)
Marital status				
Unmarried	54.5 (0.6)	61.4 (0.9)	43.0 (0.7)	51.4 (0.7)
Married	69.6 (0.4)	70.7 (0.5)	53.3 (0.6)	52.8 (0.6)
Place of residence				
Urban	65.7 (0.7)	65.0 (0.7)	53.9 (1.3)	52.9 (1.2)
Rural	65.3 (0.5)	64.1 (0.5)	49.3 (0.5)	48.5 (0.5)
States				
Arunachal Pradesh	57.0 (0.7)	55.4 (0.6)	33.8 (0.8)	33.4 (0.7)
Manipur	65.4 (1.2)	64.1 (1.2)	51.9 (1.2)	50.5 (1.1)
Meghalaya	86.8 (1.2)	86.9 (1.2)	87.2 (1.1)	86.3 (1.1)
Mizoram	79.4 (0.6)	78.7 (0.6)	77.4 (0.6)	76.5 (0.6)
Nagaland	64.3 (1.1)	65.9 (1.2)	34.5 (0.9)	36.1 (0.9)
Tripura	66.6 (1.8)	64.4 (1.		

Figure 5: Table 3 :

4

Background characteristics	Male (n=67,930)			Female (n=75,799)		
	Odds ratio	Ra-	p value	Odds ratio	Ra-	p value
Age						
15-19 #	1			1		
20-34	3.18		0.00	2.56		0.00
35-59	3.05		0.00	2.64		0.00
60+	1.19		0.00	1.50		0.00
Level of education						
Illiterate	1.24		0.00	0.97		0.56
Below Middle	1.28		0.00	1.14		0.00
Middle	1.16		0.00	1.15		0.00
Secondary #	1			1		
Religion						
Non Christian #	1			1		
Christian	1.78		0.00	1.87		0.00
Caste						
Non Scheduled tribe #	1			1		
Scheduled tribe	0.92		0.08	0.81		0.00
Occupation						
Working #	1			1		
Not working	2.45		0.00	2.3		0.00
Marital status						
Unmarried #	1			1		
Married	1.50		0.00	1.17		0.00
Place of residence						
Rural #	1			1		
Urban	1.07		0.103	1.20		0.00

Source: Based on authors' computation. # : reference category

Figure 6: Table 4 :

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