Section: Community Medicine

Original Research Article

PREVELANCE AND PATTERNS OF TOBACCO AND SMOKELESS TOBACCO USAGE AND ASSOCIATED FACTORS AMONG WOMEN IN RURAL KOLAR -A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: The tobacco pandemic has been identified by the World Health Organization (WHO) as one of the biggest hazards to public health and a top priority for decision-makers in the medical field. Globally, smoking causes 71% lung cancer,42% chronic respiratory diseases and about 10% cardiovascular disease. In India, tobacco is smoked as beedi, cheroot or in a pipe. The smokeless forms are chewed as raw tobacco leaves /pan masala or inhaled as snuff. Further, tobacco consumption was found to be higher among the lower socioeconomic groups. Due to the lack of precise estimates regarding the prevalence of tobacco consumption among women in rural settings in India, the policy makers lack adequate evidence and find it difficult to mobilize the existing resources. There is limited data on the social and behavioural factors that influence the use of various forms of tobacco and attitudes of tobacco users towards quitting the habit. Hence there is a need to study the Prevalence and associated factors of tobacco use in the form of smoking only, smokeless tobacco only and dual use among rural women in Kolar. The objective is to determine the prevalence and patterns of tobacco usage among women in rural Kolar. To explore the factors associated with initiation and quitting of tobacco usage among women in rural Kolar.

Materials and Methods: A community-based cross-sectional study was conducted in the field practice area of the Primary Health Center (PHC) Devarayasamudra, Mulbagal Taluk, Kolar District. The study population included rural women aged 18 years and above. Cluster sampling technique was used for sample selection. All the 20 villages in the field practice area of PHC, Devarayasamudra were considered as clusters, and 6 such clusters were selected by Simple Random sampling. Villages were randomly selected using a random number generator. In each of the selected villages, I have allocated samples by probability proportional size accordingly to meet my estimated sample size of 511. Tobacco consumption was assessed by using the (GATS)Global Adult Tobacco Survey questionnaire.

Results: Smokeless tobacco (SLT) use was reported by 70% of rural women in Kolar. The most frequently used items were khaini (47.9%), gutkha (68%), pan/betel quid (63.8%), and betel quid with tobacco (23.19%). The use of SLT was found to be substantially connected with socioeconomic status, age, occupation, education, and family influence. Women with less education and those from poorer socioeconomic backgrounds were more likely to use SLT. Peer pressure and family history also had a substantial impact on tobacco use initiation and continuance.

Conclusion: This study highlights the high incidence of smokeless tobacco use among rural women, which is influenced by a number of behavioural and socioeconomic factors. Women who worked in physically demanding jobs

including farming and daily wage labor were more likely to smoke due to habitual behaviour, peer pressure, and stress relief.
Other important characteristics included age, education, and marital status; women who were older and less educated were more likely to use smokeless tobacco. The study also highlights the ways in which ignorance, social acceptance, and accessibility support tobacco use.
Keywords: initiation, cessation, rural women, smokeless tobacco.

INTRODUCTION

Tobacco use is a major global public health challenge, contributing substantially to morbidity and mortality.[1] It is one of the leading causes of preventable deaths worldwide, claiming nearly nine million lives each year and is a major contributor to cardiovascular diseases, cancer, and chronic respiratory conditions which underlines the critical importance of implementing robust tobacco control policies to reduce its use and in turn its devastating impact.[2-4]

Women's use of smokeless tobacco is linked to adverse reproductive outcomes, such as preterm labour and neonatal fatalities, as well as other adverse effects, such as periodontal disease and oral cancers. Targeted tobacco control initiatives are urgently needed since smokeless tobacco use can increase oral lesions, promote immunological dysfunction, and cause chronic disease. These health hazards are present in both chewable and non-chewable forms.[5]

Studies on tobacco use typically focus on prevalence in general, with little consideration given to the particular behaviours, challenges, and patterns of tobacco use among women living in rural areas.

Men's tobacco use has been extensively studied, but less is known about the social, psychological, and economic factors that influence women to begin smoking. Interventions that directly address the challenges faced by rural women receive less attention, and most smoke cessation programs are primarily designed for men urban groups.

Objectives of study:

1. To determine the prevalence and patterns of tobacco usage among women in rural Kolar.
2. To explore the factors associated with initiation and quitting of tobacco usage among women in rural Kolar.

Review of Literature

There is a serious public health issue about the dangerously high rates of tobacco and smokeless tobacco (SLT) usage among Indian rural women. Research indicates that socioeconomic shifts, cultural tolerance, and a dearth of public health activities are the primary factors of this tendency.

Despite the implementation of measures by the National Tobacco Control Programme (NTCP), women in India remain more vulnerable to the dangers of tobacco use. They are more vulnerable to the negative effects of second-hand smoke (SHS), smoking tobacco, and smokeless tobacco (SLT) since they are regularly exposed to these substances.

Non-chewable tobacco products include a wide range of smoked or inhaled items, each with unique properties and potential health risks. Pipes, cigars, water pipes (narghiles), and electronic nicotine delivery systems (ENDS) are a few examples of these.

Sociodemographic factors such as age, religion, family influence on smoking habits, socioeconomic status, factors related to the workplace, factors related to the neighbourhood, cultural factors, language and ethnic differences and peer pressure plays a vital role in initiation of tobacco use.

Social stigma, knowledge of health risks, visits to medical facilities, medications such as varenicline and nicotine replacement therapy (NRT) can help rural women quit chewing tobacco. The health risks associated with tobacco chewing are not well understood by rural women. Despite its widespread use, many women are unaware of the potential health hazards. This highlights the pressing need for focused educational initiatives in these communities to raise awareness and promote healthy lifestyle choices.

MATERIALS AND METHODS

Study design: community-based, cross-sectional study

Study setting: Primary Health Center (PHC) Devarayasamudra, Mulbagal Taluk, Kolar District, field practice area.

Study population: Women living in rural Devarayasamudra, Mulbagal Taluk, Kolar, who are above 18 years old

Study Duration: The study is conducted for one year and six months, from June 1, 2023, to December 30, 2024

Sample Size Calculation

- Sample size estimated based on prevalence of tobacco usage among rural women in the study by Saurabh Shrivastava and Prateek Shrivastava in 2020.
- Considering the prevalence of 15.2% tobacco usage among rural women, an absolute error of 4% with a design effect of 1.5, 95% confidence level. Estimated sample size is 465 rural women, expecting a 10% non-respond rate, the final sample size is 511
- Zα at 95% confidence interval is 1.96
- Zα-Standard normal variant.
- Prevalence P=15.2%
- q =(1-p) = 84.8
- d- Absolute error 4%
- DE-Design effect 1.5

- Sample Size

Calculation: $Z\ \alpha 2(p)\ (1-p)(DE)$ / $d2$

$= (1.96)2\ (15.2)\ (84.8)\ (1.5)$ / $(4)2$

n = 465 households. (sample size)

- Assuming the 10% of non-response rate, the final sample size was calculated to be 511.

Sampling: Cluster sampling technique was used for sample selection.

- All the 20 villages in the field practice area of PHC, Devarayasamudra were considered as clusters, and 6 such clusters were selected by Simple Random sampling. Villages were randomly selected using a random number generator. In each of the selected villages, I have allocated samples by probability proportional size accordingly to meet my estimated sample size of 511
- If the house is locked during the initial visit, one more visit will be done next day before excluding that house from the study.
- If the selected house does not have an eligible participant, then the subsequent house will be included in the study.

Inclusion criteria:

- Women of 18 years age and above.

Exclusion criteria:

- Women not found in the house at the time of visit.

Study Tool: Written informed consent will be obtained from the participants.

- A semi-structured questionnaire was prepared by modifying the Global Adult Tobacco Survey Questionnaire which is used to collect the information on socio-demographic data such as such as age, religion, social status, education, type of family, socioeconomic status, use of tobacco, alcohol.
- Tobacco consumption was assessed by using the (GATS)Global Adult Tobacco Survey questionnaire.
- Pilot Study: Before beginning the main research project, a pilot study was done involving 15 women residing in Mulbagal taluk, Kolar district. The replies were analysed, and depending on what was learned, appropriate modifications were made to the questionnaire.

Statistical analysis: The data was collected using a self-administered questionnaire and entered into a Microsoft Excel spreadsheet and coded.

- All quantitative measures like age, income will be presented by Standard Deviation/Mean and Interquartile range and categorical data like occupation, socioeconomic status will be represented by frequency and percentages.
- Independent t test, Chi square test and logistic regression will be used to test the association. P value <0.05 will be considered as statistically significant.

Ethical Consideration: This study is approved by the institutional ethical review committee of Sri Devaraj Ur Academy of Higher education and Research, Kolar. (No. SDUMC)

Autonomy

- Participants in the study were given a participant information sheet that explained the study and invited them to participate willingly.
- The participants were requested to provide a written informed consent form if they were willing to participate in the study.

Confidentiality

- The data was collected from the participants using a self-administered questionnaire, which was kept confidential.
- The collected data was accessible only to the study team. The data was entered and stored in a password-protected Excel sheet for analysis.

Beneficiance: The participants who were found to be using Smokeless tobacco were informed regarding the various health hazards and advised to seek medical support.

RESULTS

The study was conducted among rural women in Devarayasamudra, Mulbagal taluk Kolar district to find out the prevalence and various factors associated with Tobacco and Smokeless tobacco use.

The study included 511 participants from Devarayasamudra

Various variables related to the prevalence of Smokeless tobacco use were studied. The following findings were made:

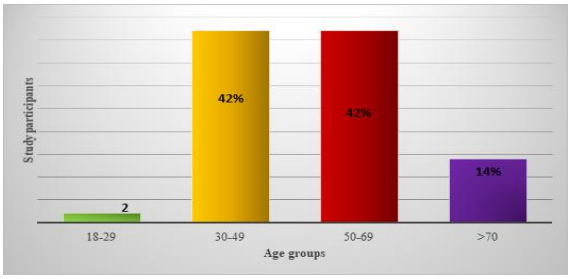

Figure 1: Distribution of Study participants according to Age(n=511)

From the above figure, it is observed that among the 511study participants, majority (42%), were aged 30 to 69 years, followed by 14% in more than 70 years, and 2% around the age of 18 to 29 years.

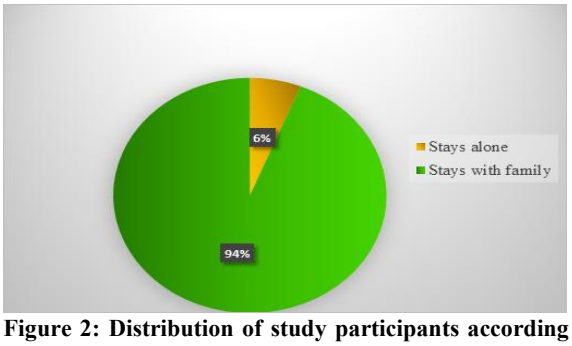

Figure 2: Distribution of study participants according to the living status n=511)

Most participants (94%) live with family which may influence their social and health behaviours, including tobacco use. A small proportion of those living alone (6%) may have different lifestyle factors, potentially affecting their health decisions differently from those in family setups.

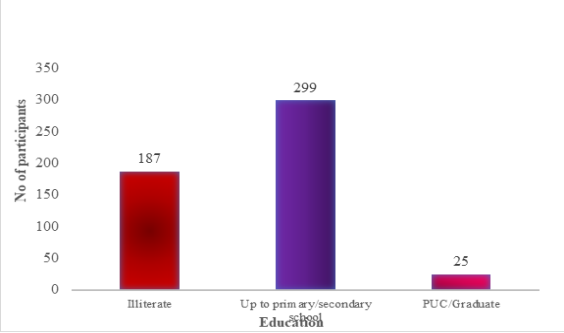

Figure 3: Distribution of study participants according to Education (n=511)

The vast majority of research participants (299 out of 511) had completed primary or secondary education.

There is a sizable percentage of the population without any formal education, as seen by the large number of illiterate people (187). Only a small percentage (25) have sought further education, indicating that access to or continuation of education beyond school levels may be restricted.

A very small percentage of participants are past users (10.8%), but a notably large percentage of participants who have ever used smokeless tobacco are current users (86.5%).

47.9% of the study participants who are currently users utilized khaini, while 23.09% used betel quid with tobacco. Furthermore, the most widely used SLT product was gutkha/areca nut, with a prevalence of 68%, while 63.8% of respondents reported using pan/betel quid without tobacco.

99.6% reported that parental objection was NOT a motivation for quitting, 12.9% cited health problems as a reason for quitting. Only 13.1% said that awareness of health hazards motivated them to quit. 12.1% were motivated by health checkups to consider quitting.

Table 1: Association between Sociodemographic variables and Use of Betel quid with tobacco

		Betel Quid with Tobacco		
		Yes	**No**	**Chi square (p value, df)**
Age group	18-29	0(0.0%)	7(100.0)	
	30-49	53(24.7)	162(75.3)	
	50-69	49(22.7)	167(77.3)	2.47(0.480,3)
	>70	16(21.9)	57(78.1)	
Occupation	Private company	1(100)	0(0.0)	
	Farmer/tailor/domestic worker/shop trader	65(22.2)	228(77.8)	
	Construction worker	8(30.8)	18(69.2)	8.33(0.080,4)
	Housekeeper	18(37.5)	30(62.5)	
	Unemployed	27(18.9)	116(81.1)	
Socioeconomic class	Upper middle class	24(17.3)	115(82.7)	
	Middle class	45(22.6)	154(77.4)	
	Lower middle class	35(31)	78(69)	6.64(0.084,3)
	Lower class	13(22.8)	44(77.2)	
Education	Illiterate	59(31.6)	128(68.4)	
	Up to primary school	28(17.8)	129(82.2)	
	Secondary school	30(21.1)	112(78.9)	15.44(0.004,4)
	PUC	1(4.5)	21(95.5)	
	Graduate	0	3(100.0)	
Living status	Stays alone	17(54.8)	14(45.2)	
	Stays with family	101(23.1)	379(79)	18.72(<0.001,1)

From the above table, among the study participants, education and living status are significantly associated with betel quid use (p value <0.05) and they are significant predictors of betel quid use. Occupation and socioeconomic class show trends but are not statistically significant.

Table 2: Association between sociodemographic variables and habitual behaviour as reason for not quitting Smokeless Tobacco

		Habitual Behaviour		
		yes	**no**	**Chi square (p value, df)**
Age group	18-29	1(14.3)	6(85.7)	
	30-49	186(86.5)	29(13.5)	
	50-69	195(90.3)	21(9.7)	
	>70	64(87.7)	9(12.3)	35.46(<0.001,3)
Occupation	Private company	0(0.0)	1(100.0)	
	Farmer/tailor/domestic worker/shop trader	272(92.8)	21(7.2)	
	Construction worker	21(80.8)	5(19.2)	26.47(<0.001,4)
	Housekeeper	41(85.4)	7(14.6)	
	Unemployed	112(78.3)	31(21.7)	

Education	Illiterate	168(89.8)	19(10.2)	
	Up to primary school	145(92.4)	12(7.6)	
	Secondary school	117(82.4)	25(17.6)	
	PUC	15(68.2)	7(31.8)	22.89(<0.001,4)
	Graduate	1(33.3)	2(66.7)	
Living status	Stays alone	27(87.1)	4(12.9)	
	Stays with family	419(87.3)	61(12.7)	
	Total	446(87.3)	65(12.7)	0.00(0.975,1)

The above table shows habitual behaviour is a major barrier to quitting smokeless tobacco (reported by 87.3% of respondents). Age, occupation, and education significantly influence habitual behaviour as a reason for not quitting ($p < 0.05$). Older individuals, farmers/labourers, and illiterate individuals are the most affected. Living status does not significantly impact habitual behaviour.

Table 3: Association between sociodemographic variables and Awareness on oral cancer affected by Smokeless Tobacco Use by Binary logistic regression.

		Awareness on Oral cancer (Yes, No)				
		B	Sig	Adjusted OR	95% CI	
Age Group	18-29	1.644	0.154	5.174	0.540	49.544
	30-49	0.280	0.390	1.324	0.699	2.507
	50-69	-0.132	0.689	0.877	0.460	1.670
	>70(Reference)		0.128			
Occupation	Private company	20.132	1.000		0.000	
	Farmer/tailor/domestic worker/shop trader	0.528	0.036	1.695	1.036	2.773
	Construction worker	1.176	0.035	3.242	1.084	9.694
	Housekeeper	0.027	0.943	1.027	0.493	2.142
	Unemployed(reference)		0.094			
Socioeconomic status	Upper middle class	1.102	0.002	3.009	1.505	6.019
	Middle class	0.226	0.476	1.254	0.672	2.339
	Lower middle class	-0.497	0.144	0.608	0.312	1.186
	Lower class(reference)		0.000			

The above table shows that age is not a significant predictor of awareness regarding oral cancer risks associated with tobacco. Younger individuals have highest odds of 5.1 times but not statistically significant. Construction workers and farmers have high odds of 3 times more aware than unemployed individuals and is statistically significant. Upper middle class also have highest awareness of odds of 3 times compared to lower class.

Table 4: Association between sociodemographic variables and Awareness on Sources of Information like parents/siblings/friends on Ill Effects of Smokeless Tobacco

		Parents/Siblings/Friends			
		Sig	Adjusted OR	95% CI	
Occupation	Professional	1.000	6.140	0.000	
	Farmer/tailor/domestic worker/shop trader	0.072	1.533	0.963	2.440
	Construction worker	0.265	1.751	0.654	4.689
	Housekeeper	0.108	1.911	0.867	4.212
	Unemployed(reference)	0.347			
Education	Illiterate	0.999	0.000	0.000	
	Up to primary	0.999	0.000	0.000	
	secondary school	0.999	0.000	0.000	
	PUC	0.999	0.000	0.000	
	Graduate(reference)	0.000			

The above table indicates that professionals are significantly more likely to be informed about ill effects of tobacco through their family, siblings or friends. Graduates are significantly more likely to be aware of smokeless tobacco effects through parents, siblings, or friends ($p = 0.000$).

DISCUSSION

A cross-sectional study was conducted to determine the prevalence and patterns of Smokeless tobacco use among rural women which was carried out in Mulbagal taluk of Kolar district.[6]

The prevalence of smokeless tobacco users in our study is 70% in which betel quid with tobacco users account for 23.09% and khaini/tobacco lime users 47.9%.[7]

The present study which involved women in a rural area, discovered that 70% of them used smokeless tobacco (SLT). The higher incidence in our study raises the possibility that SLT usage, which is frequently seen as more acceptable than smoking in rural regions, is more ingrained in cultural and social norms there According to the study by Poorvitha et al which was carried out in a rural area of Nanjangud taluk, Mysuru district, 62.4% of the sample population used smokeless tobacco (SLT).[8]

In our study, the highest proportion of users is in the 30-49 age group (24.7%), possibly due to social and

occupational exposure and declined slightly in older age groups due to health concerns or quitting behaviour and is not statistically significant ($p>0.05$). This is comparable to studies done by Poorvitha et al and Mashru et al.[9]

The present study reported that the highest prevalence was among housekeepers (37.5%) and construction workers (30.8%), suggesting that these occupational groups are more likely to consume betel quid with tobacco. Other occupation like farmers and domestic workers consumes khaini and pan. Our results shows that occupation was significantly associated with the use of gutkha and pan($p<0.05$).

The study by Bharatalekshmi et al examined both males and females aged 15 years among which 65.5% of the participants who consumes SLT were engaged in occupations such as coolie work, farming, clerical jobs, or shopkeeping, while 26% were homemakers and 6.5% were unemployed.[10-15]

The present study shows that majority (85%) belonging to lower class have a very high consumption of smokeless tobacco and is statistically significant($p<0.05$). This due to easy affordability and accessibility of SLT products than other forms of tobacco and lack of awareness regarding the ill effects .The study by Saurabh Srivastava et al and Poorvitha et al shows that that almost 30% belonging to lower class have high consumption of smokeless tobacco use.[16-20]

Our study reported that lower middle-class individuals have a higher odds of citing habitual use as an initiative factor which is statistically significant (OR-3, p-0.026). Compared to study by Shalini singh et al which is a qualitative approach providing insights into the factors which initiated in using smokeless tobacco.[21,22]

CONCLUSION

This study emphasizes how many rural women use smokeless tobacco, a high prevalence that is driven by a variety of behavioural and socioeconomic factors. Lower socioeconomic position, occupational type, illiteracy, and cultural norms were all found to have significant correlations. Due to habitual behaviour, peer pressure, and stress reduction, women who worked in physically demanding occupations like farming and daily wage labor were more likely to smoke.

Age, education, and marital status were also significant factors, with older and less educated women using smokeless tobacco at higher rates. The study also emphasizes how accessibility, social acceptance, and ignorance contribute to the continuation of tobacco use.

Strength of the Study

1. Rural women, a demographic that is frequently underrepresented in tobacco research, are the study's specific goal and provide important insights into their smokeless tobacco usage patterns.
2. It provides a comprehensive picture of tobacco usage by covering a number of topics, such as various smokeless tobacco patterns, frequency, commencement, quitting attempts, and awareness, in accordance with a standard questionnaire like the Global Adult Tobacco Survey.

Limitations

1. Because the study uses self-reported responses, recall bias could result in either an overreporting or underreporting of tobacco usage.
2. The study's exclusive emphasis on rural women restricts the findings' applicability to urban populations or men, whose tobacco use habits may differ.
3. The study did not thoroughly examine psychological variables that may affect tobacco use, such as stress and mental health.

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