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TOBACCO USE AMONG INDIGENOUS NARIKURAVAR COMMUNITIES IN THIRUVALLUR DISTRICT – A COMMUNITY BASED CROSS SECTIONAL STUDY.

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Abstract

Background: Tobacco use is the leading preventable cause of mortality worldwide, with low- and middle-income countries disproportionately affected. Among indigenous groups, such as the Narikuravars, tobacco consumption, especially smokeless forms, remains pervasive, compounded by early initiation and dual usage patterns.

Objective: This study aimed to assess tobacco consumption patterns and nicotine dependence among the indigenous population in a field practice area, and to evaluate the associated oral health risks.

Methods: A community-based cross-sectional study was conducted over six months among Narikuravar adults (≥18 years) in district. Using a total sampling method, 247 participants were interviewed face-to-face in their local language via a structured questionnaire covering demographics, tobacco use (smoking, smokeless, and dual use), age of initiation, and frequency. Nicotine dependence was measured using the Fagerstrom Test for Nicotine Dependence (FTND). Collected data were entered in Microsoft Excel and analyzed using SPSS version 24 with appropriate descriptive and inferential statistics.

Results: Tobacco use was reported by 71.3% of participants, with 61% smoking, 85.8% using smokeless tobacco, and 56.3% practicing dual use. Notably, 43.7% initiated use before age 18. Oral health assessments indicated significant associations between tobacco use and gingival bleeding (p=0.001) as well as recurrent ulcers (p=0.03). Higher nicotine dependence was observed among males, older participants, and early initiators.

Conclusion: The high burden of tobacco use and associated oral health risks in this indigenous community highlights the need for culturally tailored, community-driven cessation programs, integrated health education, and improved access to cessation support.

Key words: Narikuravar,

INTRODUCTION

Tobacco use remains the leading preventable cause of mortality, responsible for over 8 million deaths annually, with low- and middle-income countries disproportionately affected due to aggressive industry marketing. India, the second-largest tobacco consumer globally, has 253 million users, contributing significantly to both communicable and noncommunicable diseases(1–5). While cigarette consumption declined by 34.1% between 2010 and 2020, smokeless tobacco remains prevalent, with 21.4% of adults as current users. Youth tobacco usage, particularly among those aged 13-15 years, remains a concern, further exacerbating long-term health risks. In 2021, tobacco-related illnesses accounted for 1 million deaths in India, with conditions such as Ischemic Heart

Disease (IHD), Chronic Obstructive Pulmonary Disease (COPD), stroke, and lung cancer significantly linked to its use, resulting in a 28.9 million DALY loss(6–9).

Despite policy advancements, including the WHO Framework Convention on Tobacco Control (FCTC) and the National Tobacco Control Programme (NTCP), challenges remain in enforcement and compliance, particularly in addressing socioeconomic and behavioral factors driving nicotine dependence(10). The Global Adult Tobacco Survey (GATS-2, 2016–17) reports a 17% relative reduction in tobacco use compared to 2009–10, yet consumption remains widespread in rural areas, with a significant preference for smokeless tobacco, notably khaini and bidi(11). While youth tobacco prevalence has declined, the mean age of initiation has risen, underscoring the persistent challenges in controlling nicotine dependency in India. Strengthening cessation programs and regulatory measures is essential to mitigate future health risks and economic burdens.

The success of smoking cessation depends on an individual's motivation and level of nicotine dependence, making targeted interventions crucial, while raising awareness about tobacco's harmful effects ensures equitable access to effective treatment(12). Tribal communities, constituting 8.14% of India's population, remain isolated, relying on local resources due to limited healthcare access, with cultural beliefs shaping health practices and contributing to their social and economic marginalization(13,14).The Narikuravars, a semi-nomadic community primarily in Tamil Nadu, India, face systemic discrimination, resulting in low literacy, poor socio-economic status, and limited healthcare access. Their traditional practices and reliance on self-medication further hinder efforts to address health inequalities, making government interventions and health education challenging(15–17). Tobacco and alcohol use are deeply embedded in tribal culture, often starting young and continuing for life. Passed down through generations, these practices persist due to limited awareness of their health risks(18)

This study examines tobacco habits among indigenous populations in the field practice area, where cultural traditions, socioeconomic barriers, and limited healthcare access contribute to sustained nicotine dependency. By assessing tobacco consumption patterns and associated health risks, it aims to identify gaps in intervention efforts and support targeted, culturally appropriate tobacco control strategies.

METHODOLOGY

This community-based cross-sectional study was conducted among individuals residing in a field practice area associated with a private institution in Thiruvallur district. The study aimed to assess tobacco consumption patterns and nicotine dependence among a vulnerable population (Narikuravars). It was carried out over a period of six months, ensuring adequate data collection and participant engagement. A total sampling method was employed, wherein all eligible individuals within the study area were invited to participate. A total of 253 participants provided informed consent to be included in the study. However, individuals below 18 years of age were excluded, resulting in a final study sample of 247 participants.

Data collection was conducted using a structured questionnaire, which comprised three main sections: Demographic Details – Age, sex, and other relevant background characteristics; Tobacco Consumption Patterns – Information on smoking, smokeless tobacco use, age of initiation, frequency, and dependency indicators; Nicotine Dependence Assessment – The Fagerstrom Test for Nicotine Dependence (FTND) (19) was administered to assess the level of dependence among tobacco users.To ensure clarity and ease of understanding, a face-to-face interview was conducted with participants in their local language. Participants were informed about the study objectives, and written informed consent was obtained before questionnaire administration.

Ethical guidelines were strictly followed throughout the study. Participants were provided with detailed information about the study objectives, their rights, and assurances of confidentiality. Informed consent was obtained prior to participation, ensuring voluntary involvement.

Collected data were systematically recorded in Microsoft Excel before being imported into SPSS version 24 for statistical analysis. The following approaches were utilized:Descriptive statistics (frequency distribution and percentages) to summarize demographic characteristics and tobacco usage patterns.Chi-square tests to assess associations between categorical variables, such as age, sex, and tobacco consumption behaviours.

RESULTS

Of the total 247 participants majority(53%) belong to 18-35 years of age, with nearly equal distribution in gender. Tobacco consumption was found to positive in 176(71.3%) of which 108(61.3%) started using it even before 18 years of age. Among the tobacco users 61% smoked tobacco, 86% used other form of tobacco and 56% used both form of tobacco.

Table 1: Frequency distribution of baseline characteristic of the study participants

Characteristics		Number	Percentage
Age	>60 years	42	17.0
	18-35	131	53.0
	36-60	74	30.0
Gender	Female	119	48.2
	Male	128	51.8
Tobacco usage	Total	176	71.3
	smoking	107	60.8
	smokeless	151	85.8
	both	99	56.3
Age started	<18 years	108	43.7
	18-25 years	56	22.7

Of the total participants smoking, 13(12%) exclusively used only smoking form of tobacco, which contributed to a small proportion of 7.4% of total 176 tobacco users and of 151 those who used smokeless format 64(42%) were exclusive user of smokeless forms which contributed to 36% of the total study participants who used tobacco. Among tobacco users, gingival bleeding was reported in 132 individuals (53.4%), and 109 participants (44.1%) experienced recurrent ulcers. Gingival bleeding was not observed among exclusive smokers, while it was found in 25% of smokeless tobacco users and 75% of dual tobacco users. The difference in gingival bleeding among tobacco users was statistically significant (p=0.001), indicating a strong association with smokeless tobacco use. Similarly, recurrent ulcers were observed in 12% of exclusive smokers, 21% of smokeless tobacco users and 67% of those using both forms of tobacco. The difference in ulcer occurrence was also statistically significant (p=0.03). Using the Fagerstrom Test for Nicotine Dependence (FTND), the study assessed dependency levels among 176 tobacco users. 38% had high nicotine dependence (FTND 6-7), 13% had medium dependence (FTND 5), 49% exhibited very low dependence(FTND 0-2). The mean nicotine dependence score was 3.4±2.8.

Table 2: Association of characteristic of the tobacco users with the nicotine dependency

Basic characteristic		High Dependence	Medium Dependence	Very Low Dependence	Total tobacco users	p value
Age in years	18-35	29	0	54	83	<0.001
	36-60	10	22	30	62	
	>60	28	1	2	31	
Sex	Female	16	10	49	75	<0.001
	Male	51	13	37	101	
Age of initiation of tobacco use	<18 years	54	9	51	114	0.001
	18-25 years	13	14	35	62	
Smoking tobacco	no	67	23	73	163	0.001
	yes	0	0	13	13	
Smokeless tobacco	no	53	23	36	112	<0.001
	yes	14	0	50	64	
Both tobacco	no	14	0	63	77	<0.001
	yes	53	23	23	99	

Statistical analysis revealed significant associations between nicotine dependence and various demographic and behavioural factors. High dependence was most common in older participants (>60 years, 90.3%), followed by the 18-35 age group. The association was significant (p<0.001).Males showed higher nicotine dependence (50.4%) than females (21.3%), and the difference was statistically significant (p<0.001). Age of Tobacco Initiation: Early initiation (before 18 years) was linked to higher dependence (p=0.001).The tobacco users who exclusively used smoking form had minimal dependence while those using Smokeless tobacco showed high dependence (p<0.001). Those using both forms had the highest dependence levels (p<0.001).

DISCUSSION

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Tobacco chewing is prevalent in developing countries, particularly in South East Asia, and is a major risk factor for oral pre-cancerous lesions and cancer in India. Its usage is disproportionately higher among lower socio-economic groups, especially tribal populations and adolescent males(10,18,20). The Tamil Nadu Tobacco Survey (TNTS 2015-2016) reported an overall tobacco use prevalence of 5.2%, with males accounting for 4.3% of users. Among Tamil Nadu's 32 districts, Pudukottai recorded the highest prevalence (19.9%), while Tanjavur had the lowest (1.2%)(21). While the overall decline in tobacco use suggests progress, it fails to capture disparities among marginalized communities, such as the Narikuravars, where socioeconomic barriers and cultural practices may contribute to higher prevalence rates. Our study highlights high tobacco usage rates among the surveyed population, with 71.3% reporting some form of tobacco consumption. The observed prevalence aligns with previous research indicating higher tobacco use in community-based populations exposed to environmental and socio-economic stressors(18,22–24).

Recent studies indicate that tribal communities in Wayanad district, Kerala exhibit high dependency on both smoked and smokeless tobacco, as similar to our study with tobacco-related precancerous lesions being particularly prevalent among the Paniya tribe(25). Our study states that 85.8% of tobacco users prefer smokeless forms underscores a regional preference for smokeless tobacco, which may be driven by cultural factors, accessibility, and perceptions of reduced harm compared to smoking. This analysis confirms the widespread prevalence and high consumption of various tobacco forms among tribal populations. According to the World Health Organization (WHO), excessive tobacco use is a major risk factor driving the rising incidence of oral cancer worldwide(26). Our study also reinforces existing evidence linking smokeless tobacco with gingival bleeding and recurrent ulcers, both significantly more prevalent in dual tobacco users than smokers alone. Our findings support this, showing statistically significant associations between smokeless tobacco use and gingival bleeding (p=0.001) and recurrent ulcers (p=0.03). Notably, exclusive smokers did not report gingival bleeding, reinforcing hypotheses that smokeless tobacco plays a primary role in oral morbidity. Understanding the variability in disease prevalence and risk factors across different global populations requires region-specific studies, particularly focusing on disadvantaged groups, to provide targeted insights for effective health interventions(27).

Though medium nicotine dependency was more both in both smoking and smokeless tobacco users in previous literatures(18,28), in our study, nearly 38% exhibited high nicotine dependence, especially among smokeless tobacco consumers and those using both forms. The observed mean FTND score of 3.4±2.8 suggests moderate dependency overall, but specific subgroups—particularly those initiating tobacco use before 18 years—exhibited stronger dependency.The association between early initiation and high nicotine dependence (p=0.001) supports previous findings that early exposure leads to increased dependence and difficulty in cessation.

Additionally, males demonstrated significantly higher dependence than females (p<0.001), a trend widely observed due to social, behavioral, and physiological differences in nicotine metabolism. Tobacco use triggers a brief pleasurable effect by altering the mesolimbic pathway, with nicotine as the primary addictive component causing both psychological and physical dependence. This dependence leads to severe health consequences, including cardiovascular diseases, cancer, respiratory disorders, reproductive issues, and greater vulnerability to infections, impacting nearly every organ in the body(29,30).

This study highlights critical public health concerns. High prevalence of smokeless tobacco uses and associated oral health complications. Strong nicotine dependence among early initiators, emphasizing the need for early prevention strategies.The need for targeted cessation interventions, particularly for smokeless and dual tobacco users, who exhibit the highest dependency and oral health risks.

CONCLUSION

The findings reveal a high burden of tobacco use and nicotine dependence among the indigenous population, with smokeless tobacco users experiencing significant oral health risks. Early initiation and dual consumption further elevate dependency, emphasizing the need for culturally tailored, community-driven cessation programs. Public health strategies should integrate accessible cessation services, targeted education on the harm of early tobacco use, routine oral health screenings, and enhanced training for local health workers to effectively reduce tobacco-related harm in these communities.

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