

Prevalence and Dependency of Tobacco Use in an Indigenous Population of Kerala, India

Janakiram C^{1*}, Joseph J¹, Vasudevan S², Taha F¹, Deepan Kumar CV¹, Venkitachalam R¹, Antony B¹, Sanjeevan V¹ and Varghese NJ¹

¹Department of Public Health Dentistry, Amrita Vishwa Vidyapeetham, Kerala, India

²AmritaKripa Charitable Hospital, Kerala, India

Abstract

Background: Kerala has a large number of tribal communities where the prevalence of tobacco related oral mucosal lesions is alarmingly high. This coupled with ignorance regarding harmful effects of tobacco use is an emerging public health problem.

Purpose: To find out dependency of tobacco use in an indigenous population of Wayanad, India.

Methods: A cross-sectional study was designed in the tribal colonies of Kalpetta, Kerala. A multi-stage cluster sampling design was adopted to select the indigenous people living in colonies. A structured close-ended interview was conducted using a 27-item questionnaire, modified and adapted from the National Institute for Mental Health and Neurosciences, India (NIMHANS). The questionnaire consisted of five domains. To assess the dependency of tobacco habit, Fagerstrom Nicotine Dependency Scale for both smoking and smokeless forms of tobacco were used.

Results: Of the 103 responses obtained, 41.7% were males. Participants were in the age group of 14-70 years with a mean age of 43 years. Almost half of the respondents cleaned their teeth twice daily. About 53% of people cleaned their teeth using fingers. Toothpowder and rice husks were the commonly used materials for cleaning teeth (64%) followed by toothpaste (35.9%). It was observed that the prevalence of tobacco use in this population was 73.8%. Majority of the respondents (92%) used smokeless forms of tobacco. The mean scores of nicotine dependency for smoked tobacco was 3.85 (± 2.7) and that for smokeless form was 4.61 (± 2.17). Both these scores denote moderate dependency of tobacco use. The average age of onset of tobacco use was 16.41 years for smoked and 17.53 years for smokeless forms.

Conclusions: The prevalence of tobacco consumption was found to be high among both males and females in the tribal population. Majority of them consumed different forms of smokeless tobacco.

Keywords: Fagerstrom tobacco dependence scale; Oral hygiene; Smoking and smokeless tobacco; Tobacco dependence; Tribal

Case Report

The indigenous population throughout the world suffers from a higher burden of diseases [1] and also their tobacco abuse is often double than that of their non-Indigenous counterparts [2]. A disproportionate burden of substance-related morbidity and mortality exists as a result.

India is the land of many diversities, home to more than 1.2 billion of the world's population, a colossal assortment of various cultures and diversities. This beautiful pluralistic, multi-ethnic, multi-linguistic land of billions contains one of the largest tribal populations in the world, constituting roughly one-quarter of all indigenous people [3]. This group accounts for 8.2% of the total population in the country [4]. Like many such disadvantaged groups, the indigenous population or the 'adivasis' of India have their fair share of misfortunes. Most times, they are obscured from 'mainstream' India [5]. Among the *adivasis*; the mortality, morbidity and malnutrition rates are higher compared to the average Indian population at large [6].

At present, an estimated 1.2 billion people use tobacco in different forms worldwide, which is expected to rise to 1.6 billion by 2020 [7]. By 2010, India had approximately 120 million smokers [7]. Studies also show that tobacco prevalence is higher among the tribes compared to their rural and urban counterparts [2, 7-10]. Although India has a large number of tribal communities, the state of Kerala accounts for 0.4% [11] of the *adivasis* in India. Literature has also shown that the *adivasis* of Wayanad district in Kerala are heavily dependent on smoking as well as smokeless forms of tobacco. There is high prevalence of tobacco related oral mucosal lesions among the Paniya tribe of Wayanad [12].

Their ignorance about the adverse effects of tobacco is highly alarming and special attention is required for improving the health awareness and welfare of this tribal community. In India, the community education programs and awareness regarding the health hazards of tobacco use seems to have increased during recent times, but scaling up the anti-tobacco initiatives to cover the entire country, especially the tribal areas is an essential and challenging task. Thus, this study was aimed to find out the prevalence, pattern and dependency of tobacco use among the tribes of Wayanad, in order to obtain baseline data which can be used in the planning, implementation and evaluation of tobacco cessation programs in the region.

Methodology

Study setting

This study was conducted in the tribal colonies of Kalpetta,

***Corresponding author:** Chandrashekar Janakiram, Department of Public Health Dentistry, Amrita School of Dentistry, Kochi, Kerala 682041, India, Tel: +9104842801234; Fax: +9104842802011; E-mail: sekarcandra@gmail.com

Received January 02, 2016; **Accepted** January 30, 2016; **Published** February 07, 2016

Citation: Janakiram C, Joseph J, Vasudevan S, Taha F, Deepan Kumar CV, et al. (2016) Prevalence and Dependency of Tobacco Use in an Indigenous Population of Kerala, India. J Oral Hyg Health 4: 198. doi: [10.4172/2332-0702.1000198](http://dx.doi.org/10.4172/2332-0702.1000198)

Copyright: © 2016 Janakiram C, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Wayanad district of Kerala state.

Study design

Cross-sectional study.

Study population

The indigenous population residing in four randomly selected colonies in Kalpetta block panchayat (viz. Gramathvellu colony, Edapatti colony, Madankunnu colony and Vallakunnu colony) were selected for the study. The study participants were individuals in the aged 15 and above, and included both males and females.

Selection of study population

All the *adivasis* residing in the selected colonies were included in the study.

Study sample

A multi-stage cluster sampling design was adopted. The Wayanad district constituted the primary or the first stage of the sampling, the Kalpetta block panchayat was the second stage. Out of the many colonies in Kalpetta, four colonies were randomly selected which comprised the clusters selected for the study. All the individuals present in the selected colonies, at the time of the study were included. Although, the inclination was to include every individual above the age of 15 years in the selected cluster (colony), some of the residents who were not present at the site during the time of the interview; or people who were unwilling to participate in the study were excluded. Thus, the study comprised of a final sample of 103 individuals.

Questionnaire

A structured close-ended interview was conducted using a questionnaire, modified and adapted from the National Institute for Mental Health and Neurosciences, India (NIHMANS) – the '*Tobacco cessation questionnaire*'. This 27-item questionnaire consisted of five domains. The first part comprised of the demographic details of the individuals. The second part had questions pertaining to their medical status with reference to the presence of persistent cough, gastrointestinal problems, cardiac issues like the presence of hypertension or Myocardial Infarction; and the presence of asthma/breathlessness. The third had details on their oral hygiene practices. The fourth focused on the patterns of alcohol and tobacco usage including the form, frequency and duration of their tobacco habit and the fifth domain assessed the dependency of the tobacco habit based on the Fagerstrom Nicotine Dependency Scale (FTND) [13] and (FTND-ST) for both smoking and smokeless forms of tobacco. This scale for is considered a gold standard for assessing the strength of physical addiction to nicotine. This test provides an ordinal measure of a person's nicotine dependence. It contains six items that evaluate the quantity of cigarette consumption, the compulsion to use, and its dependence [14].

Data collection

The data, for this door to door study in all the households of the selected clusters, was collected by five investigators in the month of September 2015. The interviewers were trained in tobacco cessation counselling prior to the data collection. Verbal consent was obtained, confidentiality of the information was assured and the interview was conducted in the local language.

Statistical analysis

The data obtained from the study sample were coded, edited for

accuracy of data entry, tabulated and analysed using IBM Statistical Package for Social Sciences (SPSS) for Windows version 20. Descriptive statistics were generated, and bivariate analyses using Chi Square test was conducted ($\alpha = 0.05$).

Results

Of the 103 responses obtained, 41.7% were males. All respondents belonged to the age group of 14-70 years with a mean age was 43 years. Demographic details are presented in Table 1.

Oral hygiene practices

With regard to oral hygiene practices, almost half of the respondents cleaned their teeth twice daily. About 53% of people cleaned their teeth using fingers. Toothpowder and rice husks were the commonly used materials for cleaning teeth (64%) followed by toothpaste (35.9%). Among toothbrush users, 50% of respondents changed their toothbrush every 3 months in comparison to people who used a toothbrush for more than 6 months (10%).

Prevalence and form of tobacco use

It was observed that the prevalence of tobacco use in this population was 73.8%. Figure 1 illustrates the form of tobacco use among the study population. The average monthly expenditure by an individual on tobacco was approximately Rs. 530 (approx. USD 8).

On assessing the reasons for initiation of tobacco use, it was observed that family influence was the major factor (40%) followed by peer influence (23%). Other reasons cited were: relief from toothache, as a part of their culture and to suppress nausea. Peculiar reasons like boredom and as a means to ward off leaches by spitting tobacco juice into wound were also mentioned as initiating factors (Table 2).

The study also assessed the alcohol use among the study population and it was seen that around 31% of tobacco users consumed alcohol with majority of them being occasional alcoholics (less than 3 times a week).

Tobacco dependency

The nicotine dependency was assessed using the Fagerstrom Test

Characteristics	n (%)
Age (years) (n=103)	
<25	11 (10.7)
25-49	47 (45.6)
50-74	31 (30.1)
>74	14 (13.6)
X±SD	43± 16.4
Gender (n=103)	
Males	43 (41.7%)
Females	60 (58.3%)
Working status (n=103)	
Employed	57 (55.3%)
Unemployed	44 (42.7%)
No answer	02 (1.9%)
Income (Rs) (n=57)	
< Rs. 5000 (USD 75)	43 (75.4%)
Rs. 5000 – Rs.10000 (USD 75-150)	04 (7.0%)
> Rs.10000 (USD 150)	01 (1.7%)
No answer	09 (15.7%)

Table 1: Demographic details of the study population.

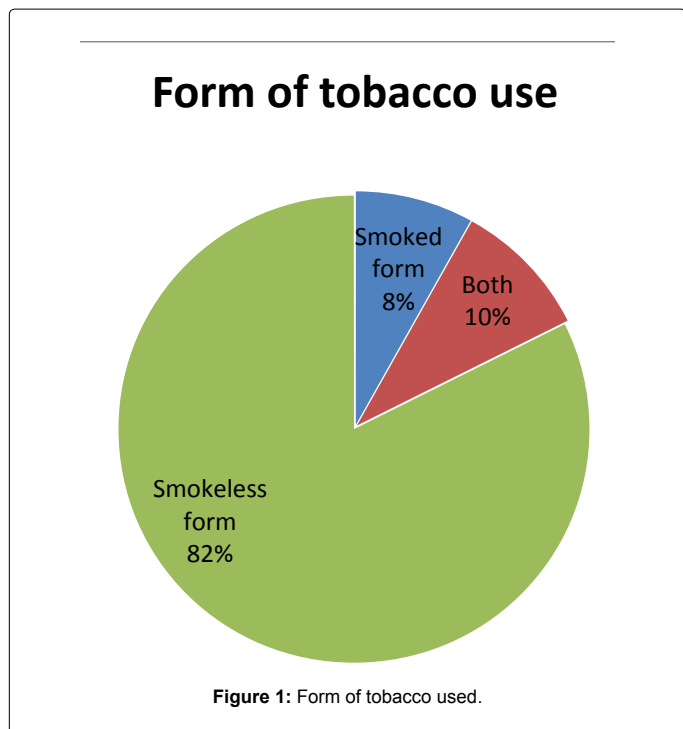


Figure 1: Form of tobacco used.

Reasons (n=84)	%
Family influence	40
Peer influence	23
Relief from toothache	16
As a cultural norm	09
To suppress nausea	12
To ward off insects from their legs while in the fields	
To alleviate bad breath	
No particular reason	

Table 2: Reasons for initiating tobacco habit.

for Nicotine Dependence (for both smoked and smokeless forms). The mean scores of nicotine dependency for smoked tobacco was 3.85 (\pm 2.7) and that for smokeless form was 4.61 (\pm 2.17). Both these scores denote moderate dependency on tobacco use. The average age of onset of tobacco use was 16.41 years for smoked form and for 17.53 years for smokeless form. Figure 2 gives the mean number of smoked and smokeless forms of tobacco used per day. The frequency of smoked tobacco use per day ranged from 2-15 with a mean of 5.3 and that of chewing tobacco ranged from 3-20 with a mean of 6.2.

Effect of tobacco use on general and oral health

On analyzing the tobacco use status with other general health problems like cough, bronchial problems, gastro-intestinal issues (nausea, vomiting) and cardiac related issues; it was found no significant correlation existed ($p > 0.05$).

There was a highly significant difference in tobacco use with respect to the various income groups ($p < 0.001$) with majority of the earning population being tobacco users. There was significantly higher usage of alcohol among males ($p < 0.001$) and the employed ($p = 0.016$).

Among smokers, there was no statistical difference in the age of onset of tobacco use and its dependency. It was also observed that dependency of smokeless tobacco was higher in the employed population ($p = 0.005$).

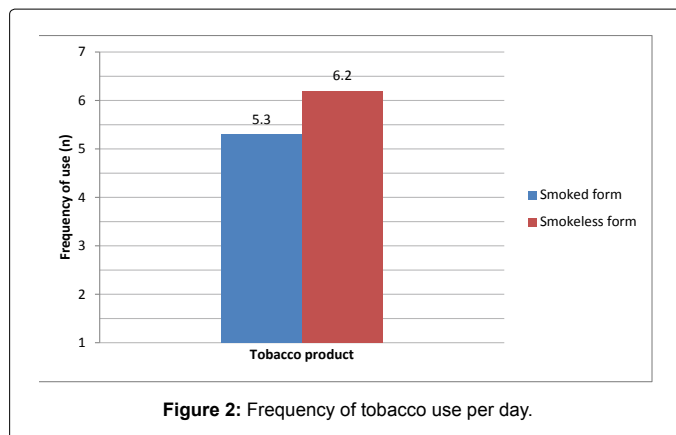


Figure 2: Frequency of tobacco use per day.

Discussion

Both males and females across all ages actively participated in the study. The prevalence of tobacco used near equal among all age group. This was in sharp contrast to a study done by Zahiruddin et al. [7] where the prevalence of tobacco was more in late adolescence period. Furthermore, in another study done by Rani et al. [9] reported that the prevalence of tobacco use generally declines after the age of 50.

In our study, the average age of onset of tobacco use was similar to other socially disadvantaged population groups in India where the initiation was usually in childhood or adolescence [15]. This finding assumes importance as studies have shown that early initiation of tobacco use plays a key role in shaping the tobacco habit and its frequency of usage [16].

In the present study, the prevalence of tobacco usage was high. This was in accordance to other of tobacco prevalence studies among the tribal populations in India and across the world [7,17-19].

Factors for initiation for tobacco use in our study were mainly linked to family and peer influence and societal norms/culture. Family influence could have strong association since they dwell in closed and confined colonies since birth. These findings were similar to a Centers of Disease Control and Prevention (CDC) report on the factors that influence the tobacco usage among the minority groups in the United States of America. Our findings were slightly in contrast to the World Health Organization (WHO) report, where Cambodian women, particularly those in rural areas, tend to start and continue chewing tobacco because of the influence of older relatives, to alleviate morning sickness during pregnancy and to reduce appetite [20,21].

The Fagerstrom Test for Nicotine Dependence (FTND) used had a good reliability for smoking form, though the validity and psychometric properties had short-comings for smokeless form had been discussed in the literature [22-24]. The tobacco dependency in the Native American population was reported to be associated with patterns of familial aggregation as found in our study.

It was observed that the oral hygiene practices of the study population was generally good as majority of the respondents brushed their teeth twice daily and used various oral hygiene aids. Similar results have been observed in various studies done on other tribal groups [25-27]. However, there are also studies which report poor oral hygiene among certain tribal groups [28]. This could be attributed to the vast diversity among the indigenous groups with regard to their cultural values, beliefs and systems.

As the study was carried out in only four randomly chosen colonies, participation was limited only to people who were available at the time of study which resulted in a small sample size. The present study did not show any significant relation between tobacco usage and its effects on general health probably due to the cross-sectional nature of the study design or the ignorance of this marginalized population regarding their medical conditions. This is contrary to the results observed in other similar studies done in India and other parts of the world [29-32]. With this baseline data on tobacco use among the tribes in Kerala, we recommend further studies with a larger sample and other geographical areas to assess the detrimental effect of tobacco use and its consequences on general health.

Conclusion

The prevalence of tobacco consumption was found to be high among both males and females in the tribal population. Majority of them consumed different forms of smokeless tobacco. Early initiation of the habit was also seen. A family history of tobacco use, peer pressure and cultural beliefs were found to be the major contributing factors for early onset of the habit. Given the high prevalence of smoking and smokeless form of tobacco use among people from the tribal areas, efforts to initiate anti-tobacco awareness programs specifically targeting the tribal populations must be strengthened.

Reference

- DiGiacomo M, Davidson PM, Abbott PA, Davison J, Moore L, et al. (2011) Smoking cessation in indigenous populations of Australia, New Zealand, Canada, and the United States: elements of effective interventions. *Int J Environ Res Public Health* 8: 388-410.
- Carson KV, Brinn MP, Peters M, Veale A, Esterman AJ, et al. (2012) Interventions for smoking cessation in Indigenous populations. *Cochrane Database Syst Rev* 1: CD009046.
- Danver SL (2015) *Native Peoples of the World: An Encyclopedia of Groups, Cultures and Contemporary Issues*. Routledge, New York, USA.
- International Work Group for Indigenous Affairs. Indigenous people in India.
- Sharma K (2003) *Adivasis- the forgotten India*. The Hindu. Online edition, India.
- Mohankumar A (2009) Health status of an indigenous population in India receiving preventive and curative health care services. *Association for Health Welfare in the Nilgiris, India*.
- Zahiruddin QS, Gaidhane A, Bawankule S, Nazli K, Zodpey S (2011) Prevalence and pattern of tobacco use among tribal adolescents: Are tobacco prevention messages reaching the tribal people in India? *Ann Trop Med Public Health* 4: 74-80.
- Neufeld KJ, Peters DH, Rani M, Bonu S, Brooner RK (2005) Regular use of alcohol and tobacco in India and its association with age, gender, and poverty. *Drug Alcohol Depend* 77: 283-291.
- Rani M, Bonu S, Jha P, Nguyen SN, Jamjoum L (2003) Tobacco use in India: prevalence and predictors of smoking and chewing in a national cross sectional household survey. *Tob Control* 12: e4.
- Subramanian SV, Nandy S, Kelly M, Gordon D, Smith GD (2004) Patterns and distribution of tobacco consumption in India: cross sectional multilevel evidence from the 1998-9 national family health survey. *BMJ* 328: 801-6.
- Ministry of Tribal Affairs (2011) Demographic status of scheduled tribe population of India. Government of India.
- KC Deepa, Jose M, Prabhu V (2013) Prevalence and Type of Tobacco Habits and Tobacco Related Oral Lesions among Wayanad Tribes, Kerala, India. *Indian J Public Health Res Dev* 4: 63-68.
- Fagerström KO (1978) Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. *Addict Behav* 3: 235-241.
- Heatheron TF, Kozlowski LT, Frecker RC, Fagerström KO (1991) The Fagerström Test for Nicotine Dependence: a revision of the Fagerström Tolerance Questionnaire. *Br J Addict* 86: 1119-1127.
- Chadda R, Sengupta S (2002) Tobacco use by Indian adolescents. *Tob Induc Dis* 1: 111-119.
- Nez Henderson P, Kanekar S, Wen Y, Buchwald D, Goldberg J, et al. (2009) Patterns of cigarette smoking initiation in two culturally distinct American Indian tribes. *Am J Public Health* 99: 2020-2025.
- Narayan DD, Dhonibarao GR, Ghanshyam KC (2011) Prevalence of Tobacco Consumption among the Adolescents of the Tribal Areas in Maharashtra. *J Clin Diagn Res* 5: 1060-1063.
- Kumar S, Muniyandi M (2015) Tobacco use and oral leukoplakia: cross-sectional study among the Gond tribe in Madhya Pradesh. *Asian Pac J Cancer Prev* 16: 1515-1518.
- Spangler JG, Bell RA, Dignan MB, Michielutte R (1997) Prevalence and predictors of tobacco use among Lumbee Indian women in Robeson County, North Carolina. *J Community Health* 22: 115-125.
- Centers for Diseases Control and Prevention (1998) *Factors That Influence Tobacco Use Among Four Racial/Ethnic Minority Groups*. United States of America.
- Singh PN, Yel D, Sin S, Khieng S, Lopez J, et al. (2009) Tobacco use among adults in Cambodia: evidence for a tobacco epidemic among women. *Bull World Health Organ* 87: 905-912.
- Meneses-Gaya IC, Zuairi AW, Loureiro SR, Crippa JA (2009) Psychometric properties of the Fagerström Test for Nicotine Dependence. *J Bras Pneumol* 35: 73-82.
- Weinberger AH, Reutenauer EL, Allen TM, Termine A, Vessicchio JC, et al. (2007) Reliability of the Fagerström Test for Nicotine Dependence, Minnesota Nicotine Withdrawal Scale, and Tiffany Questionnaire for Smoking Urges in smokers with and without schizophrenia. *Drug Alcohol Depend* 86: 278-282.
- Etter JF, Duc TV, Perneger TV (1999) Validity of the Fagerström test for nicotine dependence and of the Heaviness of Smoking Index among relatively light smokers. *Addiction* 94: 269-281.
- Ahmad MS, Al-Mamun MA, Begum S, Islam MS, M. Habib MA, et al. (2015) Knowledge and Practice About Oral Hygiene by Tribal People (Orao) in Rangpur Region, Bangladesh. *Int J Dent Med* 1: 28-32.
- Bhat PK, Kadanakuppe S (2010) Periodontal health status and oral hygiene practices of Iruliga tribal community residing at Ramanagar district, Karnataka, India. *J Int Oral Health* 2.
- Raju PK, Vasanti D, Kumar JR, Niranjani K, Kumar MS (2015) Oral Hygiene Levels in Children of Tribal Population of Eastern Ghats: An Epidemiological Study. *J Int Oral Health* 7: 108-110.
- Kumar TS, Dagli RJ, Mathur A, Jain M, Balasubramanyam G, et al. (2009) Oral health status and practices of dentate Bhil adult tribes of southern Rajasthan, India. *Int Dent J* 59: 133-140.
- Will JC, Galuska DA, Ford ES, Mokdad A, Calle EE (2001) Cigarette smoking and diabetes mellitus: evidence of a positive association from a large prospective cohort study. *Int J Epidemiol* 30: 540-546.
- Misra PJ, Mini GK, Thankappan KR1 (2014) Risk factor profile for non-communicable diseases among Mishing tribes in Assam, India: results from a WHO STEPs survey. *Indian J Med Res* 140: 370-378.
- Zaher C, Halbert R, Dubois R, George D, Nonikov D (2004) Smoking-related diseases: the importance of COPD. *Int J Tuberc Lung Dis* 8: 1423-1428.
- Goel S, Tripathy JP, Singh RJ, Lal P (2014) Smoking trends among women in India: Analysis of nationally representative surveys (1993-2009). *South Asian J Cancer* 3: 200-202.

Citation: Janakiram C, Joseph J, Vasudevan S, Taha F, Deepan Kumar CV, et al. (2016) Prevalence and Dependency of Tobacco Use in an Indigenous Population of Kerala, India. *J Oral Hyg Health* 4: 198. doi: [10.4172/2332-0702.1000198](https://doi.org/10.4172/2332-0702.1000198)