



Epidemiologic Profiling of Tobacco Users Attending A Tobacco Cessation Center in A Dental Institution: A Retrospective Study.

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ABSTRACT:

Objective: This research aimed to assess the epidemiological profile of tobacco users visiting a tobacco cessation center at a teaching Dental institute in Sangli, Maharashtra.

Methods: A retrospective study analyzed records of 322 patients who sought tobacco cessation services from January 2019 to January 2022. A standardized questionnaire collected data on socio-demographic factors and tobacco usage-related variables. Descriptive and inferential statistics were used for analysis using SAS software, version 9.4.

Results: The majority of participants were male (93.48%), with the highest proportion in the 21-30 age group. Smokeless tobacco products were most commonly used (85.40%), followed by smoking tobacco (10.25%) and a combination of both forms (4.35%). Paan, mawa, and cigarettes were the frequently used tobacco products. Daily consumption and duration of tobacco use varied among participants. Peer pressure and stress relief were prominent reasons for tobacco use. Gender differences were observed ($p < 0.05$), with higher rates of smoking and smokeless tobacco use among males.

Conclusion: This study provides insights into the epidemiological profile of tobacco users seeking cessation services in Sangli city, India. The predominance of male participants and the high prevalence of smokeless tobacco use underscore the need for targeted interventions. Understanding socio-demographic factors and reasons for tobacco use can guide the development of effective tobacco control measures. These findings contribute to the formulation of tailored interventions aiming to reduce tobacco use and improve public health outcomes.

Introduction

Tobacco in its various forms remains a substantial public health problem in several regions of the world, predominantly in South Asia. Smoked and smokeless tobacco use patterns differ by demographic, socioeconomic, and cultural characteristics. From a

global perspective, India is among the top 12 countries that have the highest prevalence of tobacco use. The type of tobacco product used in India is mainly the smokeless form as compared to the smoked form of tobacco. In 2019, 273.9 million people used chewing tobacco globally, of which 185.8 million chewing tobacco users



reside in India.¹ The National health policy 2017 of India has set a target of reduction in the prevalence of tobacco use by 30% by the year 2025. The trends in tobacco use in India, according to the GATS-2 survey, showed a decrease in the prevalence by 6% (81 lakh people).

In India, the most commonly used tobacco product is Khaini, Bidi, and Gutka among men and betel quid with tobacco, tobacco for oral application, and Khaini among women. Smoking is most common among men compared to women.² Tobacco addiction is a chronic disorder requiring specific treatment, which is available at the Tobacco cessation centers across India.³ These centers offer behavioral as well as pharmacological methods for tobacco cessation based on the approach by the Ministry of Health and family welfare, Govt. of India, and the WHO regional office for South East Asia.^{4,5} Due to the wide variety of tobacco usage in different forms because of the cultural or socio-economic characteristics, detailed information on tobacco use patterns and trends was needed to tailor interventions that best meet the needs of these different subgroups.⁶ Also, tobacco has enormous psychosocial and health effects on youth; hence was pertinent to understand its burden along with socio-demographic factors for formulating effective tobacco control measures targeting them. Hence the present research was undertaken to assess the epidemiological profile and provide baseline data of tobacco users visiting a tobacco cessation center in a Dental institution in Sangli city.

Material & Methods

This retrospective study utilized the records of patients who sought tobacco cessation services at a dental institution's tobacco cessation center in Sangli city. The study protocol received ethical approval from the Institutional Ethical Committee at a Medical College and Hospital, Sangli. (BV(DU)MCH/Sangli/IEC/D-85/22) Prior to their participation in the tobacco cessation counseling program, written informed consent was obtained from all patients. Data was collected from the tobacco cessation center located within the dental institution in Sangli city. A convenient sampling method was employed to select the patient records from January 2019 to January 2022, encompassing a total of 250 records. The inclusion criteria encompassed patients who visited the tobacco cessation center during the specified period and provided written informed consent for tobacco cessation counseling. Both male and female patients above 18 years of age who reported using

tobacco in either smoked or smokeless forms were included. Patients who did not provide written informed consent were excluded from the study.

A standardized questionnaire, specifically designed for tobacco cessation counseling by the Dental Council of India for the Indian population, was used for data collection. The questionnaire underwent pre-testing and validation before implementation. It captured pertinent epidemiological information, including socio-demographic variables (age, gender, geographic area, marital status, occupation) and tobacco usage-related variables (type of tobacco product, daily consumption, years since initiation, monthly expenses, family history of tobacco use, nicotine dependence severity, previous quit attempts, reasons for tobacco use and relapse, other substance use, presence of intraoral lesions, and motivational stage of the patient).

Data analysis was conducted using Microsoft Excel for compilation and SAS version 9.4 for statistical analysis. Descriptive statistics, such as means, standard deviations, and frequencies, were computed for continuous and categorical variables, respectively. Statistical significance was set at $p < 0.05$.

Results

A total of 322 participants were included in the study. A majority of participants were male (93.48%), while 6.52% were female as indicated in Table 1. In terms of age distribution, the largest proportion of participants fell within the 21-30 age group (47.51%), followed by the 31-40 age group (22.04%). The mean age of the sample was 36.05 years ($SD = 2.67$). The geographic distribution of the participants revealed that 70.72% resided in urban areas, while 29.28% were from rural areas. The majority (55.59%) reported being married, while a significant proportion (43.79%) were unmarried. A small percentage reported being separated or divorced (0.31%), and the same percentage were widowed. Participants represented diverse occupational backgrounds. The largest group consisted of skilled, semi-skilled, or unskilled workers (50.00%), followed by professional or semi-professional individuals (18.01%). Students accounted for 10.87% of the sample, while retirees, housewives, and unemployed individuals constituted smaller proportions (4.04%, 3.11%, and 2.17%, respectively).

Table 2 reports the clinical characteristics of the tobacco users using descriptive analysis. The majority of participants reported using smokeless tobacco products



(85.40%), while 10.25% reported smoking tobacco and 4.35% reported using both smoked and smokeless forms. The most commonly used tobacco product types were paan (35.71%), mawa (31.67%), and cigarettes (13.66%). Participants reported varying quantities of tobacco consumed per day, with the majority reporting consuming less than or equal to 5 units. The duration of tobacco use ranged from less than 10 years (74.53%) to over 50 years (0.31%). Participants reported spending varying amounts on tobacco products per month, with the majority spending less than 500 units of currency. Additionally, 39.13% reported having a family history of tobacco use in first-degree relatives. The severity of nicotine dependence varied, with the majority falling into the moderate range (48.44%). About 42.55% of participants reported having made a previous quit attempt, and the most common reasons for using tobacco products were peer pressure (53.72%) and stress relief (29.50%). Furthermore, approximately 24.53% of participants reported using other substances in addition to tobacco. The presence of intraoral lesions was reported, with submucous fibrosis (22.36%) and leukoplakia (11.18%) being the most common. Lastly, the majority of participants were in the pre-contemplation stage (69.57%) regarding quitting tobacco use.

The association between tobacco use variables and gender was examined using the chi-square test in Table 3. Among males, 10.25% reported smoking tobacco, 78.88% reported using smokeless tobacco, and 4.35% reported using both forms. In comparison, none of the females reported smoking tobacco, 6.52% reported using smokeless tobacco, and none reported using both forms. Regarding the severity of nicotine dependence, among males, 25.46% had a lower dependence (0-2 category), 42.54% had moderate dependence (3-5 category), 24.22% had higher dependence (6-8 category), and 1.24% had severe dependence (9+ category). Among females, 0.93% had a lower dependence, 2.79% had moderate dependence, 1.86% had higher dependence, and 0.93% had severe dependence. The most commonly reported reason for using tobacco products among males was peer pressure (49.68%), followed by stress relief (27.95%). Among females, the most common reason was also peer pressure (4.03%), followed by stress relief (1.55%). For relapse reasons, among males, the prominent factors were social pressure (9.9%), stress (14.28%), and withdrawal symptoms (10.25%). Among

females, stress (0.62%), health issues (0.93%), and withdrawal symptoms (0.31%) were reported as reasons for relapse.

An unpaired t-test was conducted to examine the difference in age between male and female tobacco users ($p < 0.0001$) as shown in Figure 1. Male tobacco users had a mean age of 34.3953 years ($SD = 14.2324$), while female tobacco users had a higher mean age of 48.6667 years ($SD = 15.3080$). This significant age difference was supported by a t-value of 4.42 with 320 degrees of freedom. The 95% confidence interval for the mean age difference ranged from 7.9206 to 20.6221. Additionally, the equality of variances test showed no significant difference in variances between male and female tobacco users ($p = 0.5826$). In conclusion, the analysis indicates that there is a significant age disparity between male and female tobacco users, with females being older on average.

Discussion

The study provides important insights into the demographic characteristics, tobacco use-related history, dependence on tobacco products, and intra-oral lesions among tobacco users in India. The results demonstrate that, a significant proportion of tobacco users are young adults between the ages of 21-30 years (47.51%) and are male (93.48%). This is consistent with previous studies that have reported higher prevalence of tobacco use among younger adults and males in India^{6,7}.

When taken into consideration the place of residence, surprisingly a higher proportion of tobacco users were from urban areas (70.72%) than rural areas (29.28%). This is in discordant with the results of some previous studies that states otherwise^{6,8} but does explain over a dozen of tobacco cessation clinics being operational in urban areas⁷. Regarding marital status, a higher proportion of tobacco users were married (55.59%) than unmarried (43.79%) this lines up with the previous study stating “every eighth tobacco user is married” which is consistent with the GATS India 2016–2017 report where 83.6% of the tobacco users were married as calculated from the data presented in an earlier study.⁹

Regarding occupation, a significant proportion of tobacco users were skilled workers (50%). This is in correspondence with previous studies that have reported that these patterns in occupation may be due to ease of living in particular occupations as compared with hardships in other occupations. It is surprising that stress or hardships in being a daily wage laborer may be even



greater than being unemployed which leads to influence of tobacco consumption.⁹ The study also reported that 82.6% of tobacco users spent less than INR 1000 per month on tobacco products. This is consistent with the low-income status of a significant proportion of tobacco users in India. The study also reported that 39.13% of tobacco users had a family history of tobacco use and 24.5% reported using other substances besides tobacco. This highlights the need for public health interventions that address substance use in the family and promote healthy lifestyle choices.¹⁰ Additionally, the study found that only 42.55% of tobacco users attempted to quit smoking in the past, indicating the need for more effective cessation interventions that address the addiction potential of tobacco products.¹¹

Regarding dependence on nicotine induced tobacco products, the study found that 48.44% of tobacco users had moderate dependence, and 28.25% had severe dependence. This is consistent with previous studies that have reported high levels of dependence on tobacco products among users in India.¹⁰ Finally, the study reported that a significant proportion of tobacco users had intra-oral lesions, with 22.36% having oral submucous fibrosis, 11.18% having leukoplakia, and a small percentage having other lesions. This highlights the potential health consequences of tobacco use and the

need for effective interventions that promote tobacco cessation and prevent tobacco-related diseases.¹²

Strength & Limitations

The current evaluation is consistent with the other hospital centers/community based studies and Nationwide reports and also aids in providing the clues and the scope for future researches. However, there are some limitations too, the participants were mostly the patients accessing the hospital for dental treatments and tobacco cessation was not their primary concern. As this is a hospital based study, the findings cannot be generalized.

Conclusion

In conclusion, the study demonstrates a significant outlook into the demographics and characteristics of tobacco use among users in India. The findings underscore the need for comprehensive public health interventions that address the social, economic, and cultural factors that influence tobacco use and promote healthy lifestyle choices. Also, further studies should be carried out on a broad spectrum of tobacco consumers and additionally, follow up statistics on their cessation results, so one can optimize remedy strategies.

Tables and Figures

Table 1: Demographic profile of tobacco users attending the tobacco cessation center (n=322)

Variables	N (%)	Mean (SD)
Age (years)		
<20	13 (4.04%)	18.53 (0.77)
21-30	153 (47.51%)	24.64 (3.00)
31-40	71 (22.04%)	36.05 (2.67)
41-50	28 (8.69%)	45.82 (3.13)



51-60	30 (9.31%)	55.50 (3.89)
60 and above	27 (8.38%)	18.53 (0.77)
Gender		
Male	301 (93.48%)	
Female	21 (6.52%)	
Geographic Area		
Urban	227 (70.72%)	
Rural	94 (29.28%)	
Marital Status		
Married	179 (55.59%)	
Unmarried	141 (43.79%)	
Separated or Divorced	1 (0.31%)	
Widowed	1 (0.31%)	
Occupation		
Professional or Semi-professional	58 (18.01%)	
Skilled, semi-skilled or unskilled worker	161 (50.00%)	
Retired	13 (4.04%)	
Housewife	10 (3.11%)	
Student	35 (10.87%)	
Other	38 (11.80%)	
Unemployed	7 (2.17%)	

Table 2: Clinical characteristics of tobacco users (n=322)

Variables	N (%)	Mean (SD)
Tobacco Product		
Smoked	33 (10.25%)	



Smokeless	275 (85.40%)	
Both	14 (4.35%)	
Tobacco Product Type		
Areca Nut	1 (0.31%)	
Beedi	4 (1.24%)	
Cigarette	44 (13.66%)	
Gutka	51 (15.83%)	
Khaini	1 (0.31%)	
Mawa	102 (31.67%)	
Misri	14 (4.35%)	
Paan	115 (35.71%)	
Quid	1 (0.31%)	
Tobacco	64 (19.87%)	
Quantity Consumed Per Day		
Areca Nut <=5	1 (0.31%)	
Beedi <=5	2 (0.62%)	
Beedi = 6-10	1 (0.31%)	
Beedi >10	1 (0.31%)	
Cigarette <=5	32 (9.93%)	
Cigarette = 6-10	10 (3.10%)	
Cigarette >10	2 (0.62%)	
Gutka <=5	29 (9.00%)	
Gutka = 6-10	21 (6.52%)	
Gutka >10	1 (0.31%)	
Khaini >10	1 (0.31%)	
Mawa <=5	72 (22.36%)	



Mawa = 6-10	27 (8.38%)	
Mawa >10	3 (0.93%)	
Misri <=5	14 (4.35%)	
Paan <=5	79 (24.53%)	
Paan = 6-10	29 (9.00%)	
Paan >10	7 (2.17%)	
Quid <=5	1 (0.31%)	
Tobacco <=5	46 (14.28%)	
Tobacco = 6-10	13 (4.03%)	
Tobacco >10	5 (1.55%)	
No. of Years Since Initiation of Habit		
<10	240 (74.53%)	4.46 (2.66)
11-20	50 (15.53%)	16.06 (3.27)
21-30	17 (5.27%)	26.70 (2.99)
31-40	11 (3.42%)	38.00 (2.44)
41-50	3 (0.93%)	48.33 (2.88)
51-60	1 (0.31%)	60 (0)
Expenses on Tobacco Products per Month		
<500	183 (56.83%)	337.42 (168.69)
501-1000	83 (25.77%)	910 (151.15)
1001-2000	27 (8.38%)	1462.96 (320.93)
2001-5000	18 (5.59%)	3283.33 (750.88)
>5000	11 (3.42%)	8545.45 (4719.40)
Family History of Use in First-Degree Relatives		
Yes	126 (39.13%)	



No	196 (60.87%)	
Severity of Nicotine Dependence		
0-2	85 (25.46%)	1.37 (0.72)
3-5	146 (48.44%)	4.02 (0.82)
6-8	84 (26.08%)	6.79 (0.75)
9+	7 (2.17%)	9.28 (0.48)
Previous Quit Attempt		
Yes	137 (42.55%)	
No	185 (57.45%)	
Reason for Use of Tobacco Products		
Peer Pressure	173 (53.72%)	
Recreational Purpose	8 (2.48%)	
Stress	95 (29.50%)	
Work Related	12 (3.73%)	
NA	37 (11.49%)	
Reason for Relapse		
Driving	2 (0.62%)	
Health Issues	23 (71.42%)	
Lack of Productive Work or Concentration	5 (1.55%)	
Social Pressure	32 (9.93%)	
Stress	48 (14.90%)	
Withdrawal Symptoms	34 (10.55%)	
NA	184 (57.14%)	
Other Substance Use		
Yes	79 (24.53%)	
No	243 (75.47%)	



Presence of Intraoral Lesions		
Leukoplakia	36 (11.18%)	
Lichenoid Reaction	1 (0.31%)	
Submucous Fibrosis	72 (22.36%)	
Erythroplakia	2 (0.62%)	
NA	223 (69.25%)	
Motivational Stage of the Patient		
Pre-contemplation	224 (69.57%)	
Contemplation	39 (12.11%)	
Preparation	50 (15.53%)	
Action	4 (1.24%)	
Maintenance	5 (1.55%)	

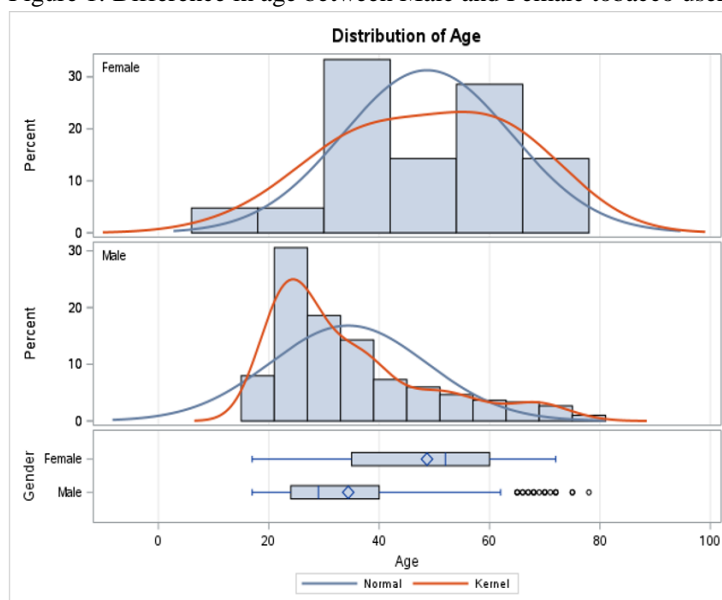
Table 3: Tobacco and substance use profile of tobacco users attending the tobacco cessation center by gender (n=322)

Variables	Male (N=301), N (%)	Female (N=21), N (%)
Tobacco Product		
Smoked	33 (10.25%)	0 (0%)
Smokeless	254 (78.88%)	21 (6.52%)
Both	14 (4.35%)	0 (0%)
Severity of Nicotine Dependence		
0-2	82 (25.46%)	3 (0.93%)
3-5	137 (42.54%)	9 (2.79%)
6-8	78 (24.22%)	6 (1.86%)
9+	4 (1.24%)	3 (0.93%)
Reason for Use of Tobacco Products		
Peer Pressure	160 (49.68%)	13 (4.03%)



Recreational Purpose	8 (2.48%)	0 (0%)
Stress	90 (27.95%)	5 (1.55%)
Work Related	12 (3.72%)	0 (0%)
NA	34 (10.55%)	3 (0.93%)
Reason for Relapse		
Driving	2 (0.62%)	0 (0%)
Health Issues	20 (6.21%)	3 (0.93%)
Lack of Productive Work or Concentration	5 (1.55%)	0 (0%)
Social Pressure	32 (9.9%)	0 (0%)
Stress	46 (14.28%)	2 (0.62%)
Withdrawal Symptoms	33 (10.25%)	1 (0.31%)
NA	169 (52.48%)	15 (4.65%)

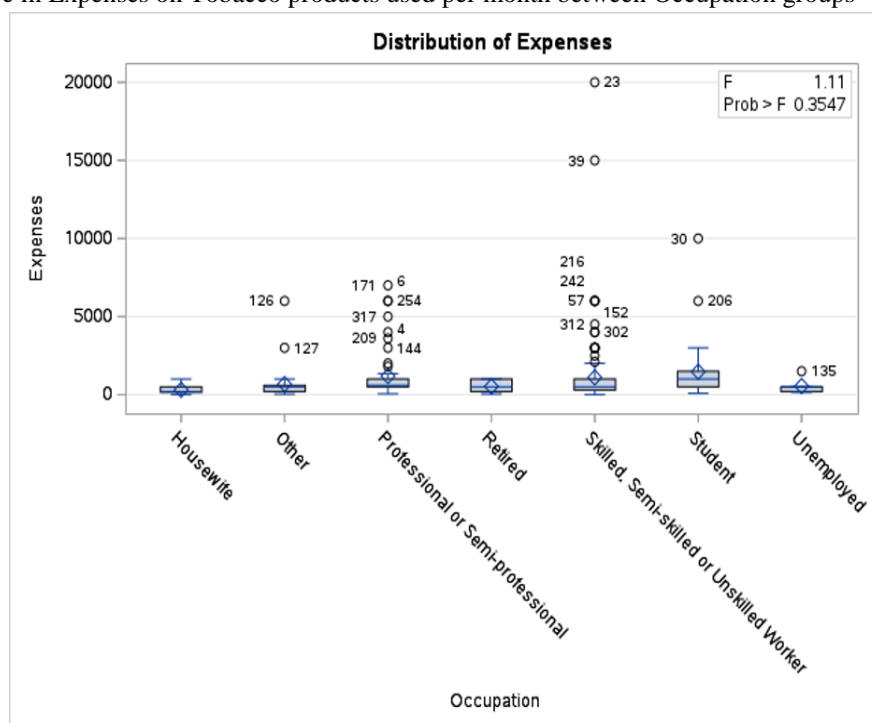
Figure 1: Difference in age between Male and Female tobacco users



$p < 0.0001$ showing highly significant difference.



Figure 2: Difference in Expenses on Tobacco products used per month between Occupation groups



$p = 0.5826$ showing no significant difference.

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