Tobacco use and dependence among adults residing in an urbanized village, Delhi, India

Yukti Bhandari[1], Jugal Kishore[2], Abhilasha Yadav[3]

[1]Department of Community Medicine and School of Public Health, Post Graduate Institute of Medical Education and Research, Chandigarh, India, [2]Department of Community Medicine, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, Delhi, India, [3]Department of Psychiatry, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, Delhi, India

ABSTRACT

Introduction: Tobacco use is one of the most significant public health concerns globally as it is a risk factor for chronic illnesses. GATS-2 concluded that 28.6% of all adults currently use Tobacco in India and 17.8% in Delhi. It is important to conduct such surveys in local areas to make specific and effective action plans. **Materials and Methods:** Community-based cross-sectional study conducted between January 2020–June 2021 in Aliganj, an urbanized village in South Delhi. Four hundred ninety participants were enrolled using simple random sampling. The first author conducted the interview using GATS and Fagerstrom nicotine dependence test. Data was analyzed using SPSS-21. **Results:** Median age-35 (26.75–75.00), range-15–84 years. Of the 490 participants, 20.0% were current tobacco users (10.6% smokeless, 7.3% smoked, and 2.2% both). Among current smokers, 78.3% had low, 17.4% moderate, and 4.3% had high dependence on nicotine dependence. Among current smokeless tobacco users, 52.4% had, low, 36.5% moderate, and 11.1% had high dependence. Males had significantly higher odds [6.6 (2.9-15.1)] of tobacco use than females. Higher education [0.3 (0.2-0.8)] compared to no formal education had significantly lower odds of using tobacco. Students [0.1 (0.04-0.4)] and homemakers [0.1 (0.01-0.5)] had significantly lower odds of using tobacco as compared to those employed. **Conclusions:** One in every five adults is a tobacco user in Aliganj. Manufactured cigarettes, bidi, and water pipes were the most common products among smokers. Among smokeless tobacco users, the most common products were chewing tobacco gutka, and khaini. A larger proportion of smokeless tobacco users had high nicotine dependence than smoked tobacco users.

Keywords: Adults, nicotine dependence, smokeless tobacco, smoking, tobacco

Introduction

Tobacco use is among one of the greatest problems of public health concern around the globe. Nicotine is the chemical substance present in tobacco that causes dependency. Its use is risk factor for chronic illness like stroke, cardiovascular diseases, respiratory diseases, cancers, and other health conditions causing high morbidity and mortality. Every year, more than 8 million people across the globe have lost their lives to tobacco.[1]

The burden of deaths and illness attributable to tobacco is heaviest in low-income and middle-income countries. These countries are often targets of concentrated interference and marketing by tobacco companies, contributing to 80% of 1.3 billion smokers worldwide.[2]

According to the GATS Atlas, largely, tobacco is consumed in smoked form. The overwhelming use of smokeless tobacco globally is in India and Bangladesh.[3]

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India contributes to the maximum of the world's health burdens attributable to tobacco use, with nearly 0.9 million deaths annually. India is identified third-biggest producer and second as the largest consumer of tobacco, globally. A large range of tobacco products are available in India with ease and at very low cost.

During August 2016 to February 2017, GATS-2 was carried out in the country.[4] About 42.4% of men, 14.2% of women, and 28.6% among all adults used tobacco in India. India has 199.4 million smokeless tobacco users. Tobacco use was more frequently seen in men. A total of 99.5 million people in India smoke tobacco.[4]

In Delhi, 28.9% men, 4.8% women, and 17.8% of all adults were current tobacco users.[5]

From 2009-10 (GATS-1) to 2016-17 (GATS-2), the prevalence of smoking has decreased by 6.1%. The prevalence of smokeless tobacco products use has reduced by 1.7%.[4]

National Health and Family Survey-5 (NFHS-5) was conducted from 2019 to 2021 under the stewardship of the Ministry of Health and Family Welfare (MoHFW) and International Institute of Population Sciences (IIPS) was the nodal agency.[6] The survey concluded that the prevalence of tobacco use among women as 8.9% (5.5% in urban, 10.5% in rural areas) and among men as 38.0% (28.8% in urban, 42.7% in rural areas). In Delhi, the prevalence of tobacco use was estimated to be 2.2% among women and 26.2% among men.[6]

Comparing the NFHS-5 data to GATS-2, the prevalence of tobacco use has decreased nationally but increased in Delhi.

Data on the prevalence of tobacco use among adults is available at national and regional levels. The community of current study area has a heterogenous population with residents belonging to different states and communities, thus differing in their socio-cultural practices. There is paucity of literature on prevalence and patterns of tobacco use in such a community. The present study is an attempt to assess the prevalence, patterns of use, and nicotine dependence among users in an urbanized village of Delhi to device effective and population-specific plans for decreasing tobacco use, localized data is of utmost importance.

Materials and Methods

This was a community-based cross-sectional study, conducted in Aliganj, an urbanized village, in Kotla Mubarakpur ward, of South Delhi district, which is the field practice area of the Department of Community Medicine, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi. The map of the study area is marked in [Figure 1]. Total adult population of Aliganj is 6228 in 1668 households. Majority of the native population earn their livelihood by renting properties. Other common occupations in community are shop-keeping, street-vending, daily
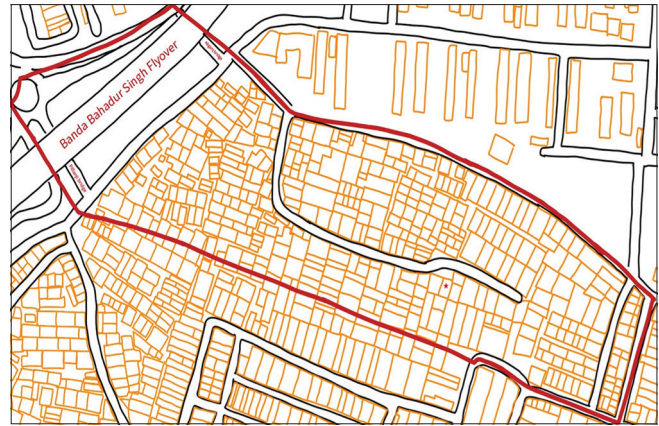

Figure 1: Map of the study area

wagers, etc.[7] Majority of population is contributed by migrants from different parts of the country. The study duration was 18 months (January'20 to June'21).

Study population

It included all those aged 15 years or older and had been residing in Aliganj for more than one year.

Sample size

Using the formula for proportion calculation, taking prevalence of adult tobacco use in Delhi as 17.8%, as found in GATS 2,[5] a relative error of 20% and a 10% non-response rate, the sample size was calculated to be about 490.

Sampling technique

Sampling was done using simple random sampling technique. Sampling unit was an individual. A number was assigned to every individual. By system generated random numbers 490 individuals were chosen. Three attempts were made on different days and time for unavailable participants. If the participant was unavailable even after three attempts, then another participant was chosen by the same method.

Study tool

1. Global Adult Tobacco Survey was developed by Centers for Disease Control and Prevention, Johns Hopkins Bloomberg School of Public Health, RTI International, CDC Foundation, University of North Carolina, Gillings School of Public Health, and WHO. It is a standardized tool for systematic monitoring of adult tobacco use globally. It was designed to be a population-based assessment tool for resident of the area under study who are older than 15 years of age and produce estimates related to tobacco use at national as well as subnational levels.[8]
2. The Fagerström Tolerance Questionnaire was created by Karl-Olov Fagerström, and modified by Todd Heatherton, *et al.* in 1991 and renamed as Fagerström Test for Nicotine Dependence. It is a standardized instrument for assessing the level of physical dependence to nicotine. The test was

adjusted for Indian population under National Tobacco Control Programme, DGHS, MoHFW, GoI, to provide an ordinal measure of nicotine dependence related to cigarette smoking.[9]

Operational definitions

1. Smokeless tobacco products are those that are not burned and smoked, but are sniffed through the nose, held in the mouth, chewed, or applied orally.
2. Daily smokers/smokeless tobacco user are those who smoke at least one smoked/smokeless tobacco product every day or nearly every day over a period of one month or more.
3. Less than daily smoker/smokeless tobacco user means who smokes/smokeless tobacco products but not every day.
4. Rare instances of smoking/smokeless tobacco use or experimental smoking/smokeless tobacco use such as trying once or twice in one's lifetime were counted in the NOT AT ALL category.
5. Stopped smoking/former smoker are those respondents who have stopped smoking tobacco on a regular basis. Instances where the respondent might have smoked a tobacco product on a rare occasion or special occasion have been discounted.
6. Dual users are those who use both smoked and smokeless tobacco products.

Ethical consideration

Each subject enrolled in the study was explicitly explained about the purpose of the study by the investigator, and an informed written consent was obtained, prior to inclusion. The study didn't involve any approach or method that puts the study subjects, their family members, or the investigator at risk. Ethical clearance was obtained from the Institute Ethics Committee of Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi. Data collected during the study was used for the academic purposes alone, and no personal information of the study subjects was disclosed, maintaining the privacy of subjects and confidentiality of information, and this was also explained to the subjects, prior to inclusion. At the end of the study, the study subjects were given health education about the harmful effects of tobacco use to help in creating awareness in the community. Appropriate help and support were provided to tobacco users for quitting tobacco.

Data analysis and statistical methods

Data was entered and checked for errors in Microsoft Excel. Data analysis was done using SPSS-21. All factors of the study population have been appropriately grouped and described using frequencies and percentages. Appropriate tests of significance have been used to study the association between the variables of interest and their potential predictors and *P* values of < 0.05 was taken as significant. *P* value of < 0.2 was used to include the variables in logistic regression models for calculating adjusted odds ratio.

Results

Age of the study participants was not normally distributed. Median age was 35 (26.75–75.00) years, ranging between 15 and 84 years.

| Table 1: Socio-demographic profile of study participants (*n*=490)		
	Frequency	**Percentage**
Gender		
Male	241	49.2
Female	249	50.8
Age		
15-24	94	19.2
25-44	246	50.2
45-64	128	26.1
≥65	22	4.5
Level of formal education*		
No formal education	92	18.9
Primary school completed or less	70	14.3
High school completed or less	278	56.8
College and above	49	10.0
Employment status*		
Employed	227	46.4
Homemaker	168	34.4
Student	52	10.6
Retired/Unemployed	42	8.6
Religion*		
Hindu	443	90.6
Muslim/Christian/Buddhism	46	9.4
Marital status*		
Single/divorced/separated/widowed	133	27.2
Married	356	72.8
Can read/write*		
Yes	371	75.9
No	118	24.1
Socio-economic status		
Upper lower/Lower	172	35.1
Lower middle	209	42.7
Upper/Upper middle class	109	22.2

*One participant refused to answer
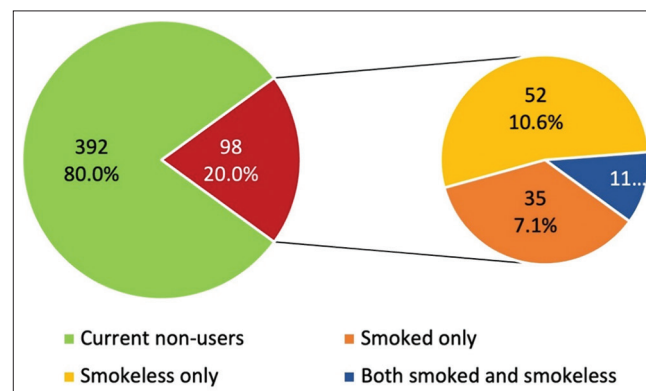
Figure 2: Prevalence of tobacco use among study participants

Table 1 reflects the socio-demographic details. Socio-economic status was assessed using modified Kuppuswamy scale-2019.

Figure 2 shows the prevalence of tobacco.

Table 2 shows the status of tobacco products use and nicotine dependence. Among dual users, four participants used both on

daily basis, three used both on less than daily basis, two used smoked tobacco on daily and smokeless tobacco on less than daily basis, and two used smoked tobacco on less than daily and smokeless tobacco on daily basis. Among smokers, 78.3% had low nicotine, 17.4% moderate, and 4.3% high dependence. Among smokeless tobacco users, 52.4% had low nicotine, 36.5% moderate, and 11.1% high dependence.

Figure 3 shows the median age of starting daily tobacco use among current and former daily tobacco users.

Table 3 shows, among current smokers, manufactured cigarettes, bidi, and water pipe are the preferred smoked tobacco products. Among current smokeless tobacco users, chewing tobacco, *gutka,* and *khaini* are the preferred smokeless tobacco products.

Of the 46 current tobacco smokers, 25 (54.3%) had attempted to quit in last one year. Median duration of last quit attempts was 15 days (3–60 days), ranging between <24 hours and eight

months. Of them one participant tried quitting smoking tobacco by switching to smokeless tobacco.

Of the 46, 24 (52.2%) had visited a doctor or healthcare provider in last one year, of which 12 (50%) visited 1–2 times in last one year, 4 (16.7%) visited 3–5 times in last one year and 8 (33.3%) participants visited more than 6 times in last one year. Of these 24, 16 (66.7%) were asked about their smoking status and suggested to quit.

Of the 63 participants currently using smokeless tobacco, 42 (66.7%) had attempted to quit in last one year. Median duration of last quit attempts was 30 days (IQR = 10-98 days), ranging between <24 hours to five years. Of the two tried quitting smokeless tobacco use with the help of tobacco cessation counseling only, one participant tried only nicotine replacement therapy, and one participant took cessation counselling, nicotine replacement therapy, prescription, and traditional medicines, and quitline support.

Of the 63, 47 (74.6%) had visited a doctor or healthcare provider in last one year, 17 (36.2%) of them visited 1–2 times in last one year, 13 (27.6%) of them visited 3–5 times in last one year and
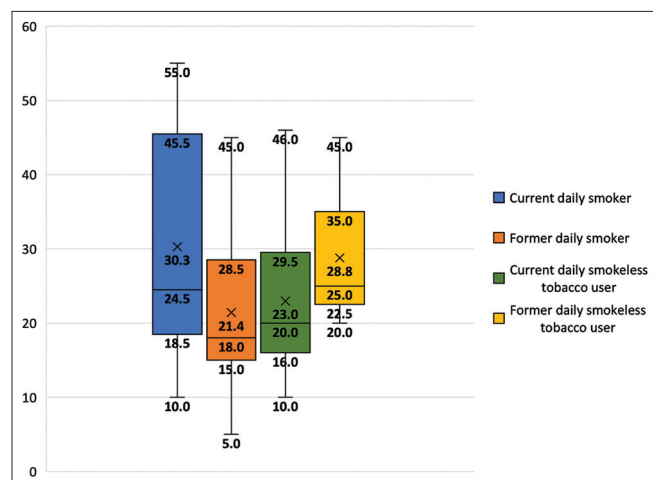
Figure 3: Age of starting daily tobacco use–current daily and former daily tobacco

Table 2: Status of tobacco products use and nicotine dependence (*n*=490)

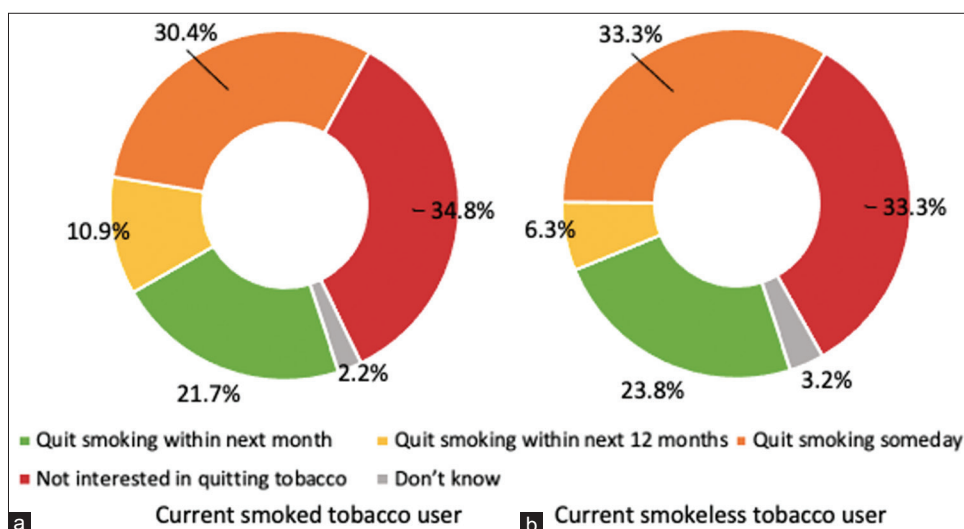|	Smoked	Smokeless
Current daily	33 (6.7)	45 (9.2)
Current less than daily, former daily	1 (0.2)	6 (1.2)
Current less than daily, never daily	12 (2.4)	12 (2.4)
Former daily	29 (5.9)	12 (2.4)
Former less than daily	13 (2.7)	7 (1.4)
Never user	401 (81.8)	407 (83.2)
Refused	1 (0.2)	1 (0.2)
Nicotine dependence		
Low dependence (<4)	36 (78.3)	33 (52.4)
Moderate dependence (4-6)	8 (17.4)	23 (36.5)
High dependence (>6)	2 (4.3)	7 (11.1)

Figure 4: (a-b) Intention to quit tobacco use among current tobacco users
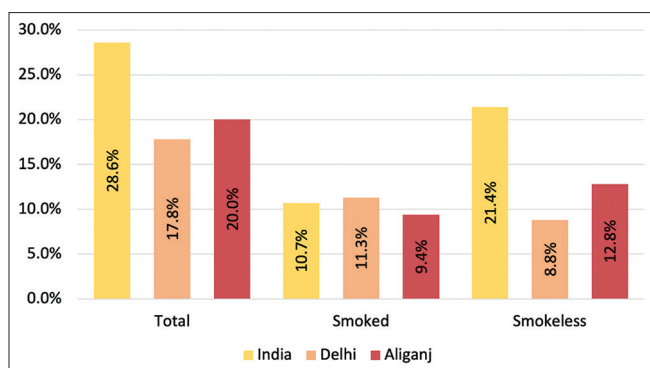
Figure 5: Comparison of prevalence of tobacco use in Aliganj with national and regional average

17 (36.2%) of them visited more than six times in last one year. Of these 47, 25 (53.2%) were asked about their smokeless tobacco use status. Of these 25, 23 (92%) of them were suggested to quit.

Figure 4 shows intention to quit tobacco among current tobacco users with less than a quarter users willing to quit within a month.

Table 4 shows the association between tobacco use and socio-demographic characteristics of study participants. Males had significantly higher odds of tobacco use. Higher education had significantly lower odds of using tobacco. Students and homemakers had significantly lower odds of using tobacco.

Table 5 shows the association between smoked tobacco use and socio-demographic characteristics of study participants. Males had significantly higher odds of smoked tobacco use. Students and homemakers had significantly lower odds of using smoked tobacco.

Table 6 shows th,e association between smokeless tobacco use and socio-demographic characteristics of study participants. Males had significantly higher odds of smokeless tobacco use. None of the students used smokeless tobacco and homemakers had significantly lower odds of using smokeless tobacco. Participants belonging to lower socio-economic strata had significantly higher prevalence of tobacco use.

Discussion

In a study conducted by Rakesh Kumar *et al.*[10], the prevalence of tobacco use was 20.8%. The prevalence of smoked tobacco and smokeless tobacco use was 15% and 7.2%, respectively. This pattern was inverse of our findings, which could be because of difference in socio-demographic composition of the populations. Smokeless tobacco products are cheaper as compared to smoked tobacco products such as cigarettes. Most of the population in study area belongs to middle or lower socio-economic status which could account for higher prevalence of smokeless tobacco which is also inverse of what is seen in the rest of Delhi. Difference in patterns of smoked and smokeless tobacco usage was also observed in studies conducted in the USA by Mattingly *et al.*,[11] Kypriotakis *et al.*[12], and Johnson *et al.*[13] for similar reasons.

Table 3: Pattern of use of smoked tobacco products among current smokers		
	Frequency	Percentage
Current daily smoked tobacco users (*n*=33)		
Only daily manufactured cigarette users	10	30.3
Only daily bidi users	16	48.5
Only daily water pipe users	4	12.1
Manufactured cigarette and bidi users	2	6.1
Manufactured cigarette and Water pipe users	1	3.0
Current less than daily smoked tobacco users (*n*=13)		
Only manufactured cigarette users	5	38.5
Only bidi users	5	38.5
Only water pipe users	1	7.6
Manufactured cigarette and bidi users	2	15.4
Pattern of smokeless tobacco (*n*=45)		
Only daily chewing tobacco	17	37.9%
Only daily *khaini*	15	33.3%
Only daily *gutka*	3	6.7%
Only daily gul	1	2.2%
Daily chewing tobacco and *gutka*	4	8.9%
Daily chewing tobacco and *khaini*	1	2.2%
Daily chewing tobacco and *pan masala* with tobacco	1	2.2%
Daily chewing tobacco and less than daily betel quid with tobacco	1	2.2%
Daily chewing tobacco, betel quid with tobacco and gutka	1	2.2%
Daily snuff by mouth, chewing tobacco, betel quid with tobacco and less than daily *gutka*	1	2.2%
Pattern of smokeless tobacco use (*n*=18)		
Only chewing tobacco	7	38.8
Only *gutka* users	6	33.3
Only *khaini* users	3	16.7

In the present study, daily smoked tobacco users were comparable to those reported by Delhi and nationally [Figure 5].[4,5]

Most of the current smokers in Delhi used bidi and cigarette[5], whereas in Aliganj, water-pipe use was also frequently seen. This could be because of the difference in cultural factors of the study population where water-pipe use is socially acceptable and used as representation of belonging to upper class.

In our study, daily smokeless tobacco use was higher than that in Delhi,[5] but lower than the national average.[4]

Among smokeless tobacco products, such as *khaini, gutkha, betel quid* with tobacco, and *paan masala* with tobacco, were commonly used in Aliganj as well as in Delhi.[5]

Studies conducted by Rath *et al.*[14] and Villanti *et al.*[15] on young adults aged between 18 and 34 years found that 23% were current tobacco users as compared to 20% in the present study, more than half of which are from the 15 and 44-year age group. Among current tobacco users in the Rath *et al.* study,[14] 30% reported dual use which is higher compared to our study. Villanti *et al.*[15] found 76% non-users which is comparable to

Table 4: Socio-demographic profile and tobacco use				
	User *n* (%)	cOR (95% CI)	*P*	aOR* (95% CI)
Gender				
Male (*n*=241)	85 (35.3)	9.9 (5.3-18.3)	<0.001	6.6 (2.9-15.1)
Female (*n*=249)	13 (5.2)	Ref	-	-
Age				
15-24 (*n*=94)	8 (8.5)	0.4 (0.2-0.8)	0.015	1.1 (0.4-3.2)
25-44 (*n*=246)	49 (19.9)	Ref	-	-
45-64 (*n*=128)	35 (27.3)	1.5 (0.9-2.5)	0.104	1.0 (0.6-1.8)
≥65 (*n*=22)	6 (27.3)	1.5 (0.6-4.1)	0.416	0.6 (0.1-2.2)
Level of formal education				
No formal education (*n*=92)	17 (18.5)	Ref	-	-
Primary school or less (*n*=70)	19 (27.1)	1.6 (0.8-3.5)	0.191	0.7 (0.3-1.9)
High school or less (*n*=278)	55 (19.8)	1.1 (0.6-2.0)	0.784	0.3 (0.2-0.8)
College and above (*n*=49)	7 (14.3)	0.7 (0.3-1.9)	0.529	0.2 (0.1-0.5)
Employment status				
Employed (*n*=227)	80 (35.2)	Ref	-	-
Homemaker (*n*=168)	4 (2.4)	0.04 (0.0-0.1)	<0.001	0.1 (0.04-0.4)
Student (*n*=52)	1 (1.9)	0.03 (0.0-0.3)	0.001	0.1 (0.01-0.5)
Retired/Unemployed (*n*=42)	13 (31)	0.8 (0.4-1.6)	0.592	1.2 (0.5-3.0)
Religion				
Hindu (*n*=443)	86 (19.4)	Ref	-	-
Muslim/Christian/Buddhism (*n*=46)	12 (26.1)	1.5 (0.7-2.9)	0.284	-
Marital status				
Single/divorced/separated/widowed (*n*=133)	17 (12.8)	Ref	-	-
Married (*n*=356)	81 (22.8)	2.0 (1.1-3.5)	0.016	1.4 (0.7-3.1)
Socio-economic status				
Upper lower/Lower (*n*=172)	40 (23.3)	1.4 (0.8-2.6)	0.244	-
Lower middle (*n*=209)	39 (18.7)	1.1 (0.6-2.0)	0.788	-
Upper/Upper middle class (*n*=109)	19 (17.4)	Ref	-	-

*$P<0.2$ were entered into model for calculating adjusted odds ratio

our study. The Villanti *et al.* study[15] also found prevalence of daily and non-daily smokers as 11% and 9%, respectively. Bidi and hookah use were higher in our study. The prevalence of usage of tobacco in the two settings is comparable despite being vastly different communities and only having somewhat overlapping age categories. The differences in patterns of usage may be attributed to variations in accessibility and socio-cultural differences in terms of acceptability, preferences, and traditions. Rath *et al.*[14] and Tan *et al.*[16] found that among ever tobacco users, majority reported tobacco product initiation before the age of 18 years. Similar pattern of early initiation of tobacco use was observed in the present study. In addition, among those who used smokeless tobacco less than daily showed the pattern of early initiation of tobacco use. The present study setting also has higher prevalence of tobacco use in the older age groups compared to findings from the study conducted by Blazer *et al.*[17] It needs to be explored if this is due to poorer cessation in the present study setting, or due to a lower level of healthcare seeking and awareness among the population because of which the elderly continue to put themselves at risk of complications of prolonged years of tobacco use.

From the study conducted by Kumar *et al.* in Ballabgarh, India,[18] moderate-to-high nicotine dependence was found among 59.7% of tobacco users. Another study conducted by Kumar *et al.*[10] observed that 86.2% of the smokers and 69.6% smokeless tobacco products users had moderate to high level of nicotine dependence. A study conducted by K J Divinakumar *et al.* in western India[19] observed about 34% of the users of both smokeless tobacco and smoking were highly dependent on nicotine. The differences may be due to the former studies recruiting only patients with diabetes, hypertension, tuberculosis, males, or an industrial organization which would lead to inclusion of an older population or a population that does not represent the community. The difference may be linked to employment as in the present study, smoked and smokeless tobacco use have been found to have significantly lower odds among homemakers and students as compared to those who are employed.

In the study by Kumar *et al.*[18] high level of nicotine dependence and inability to quit despite making an attempt were significantly associated. In the present study, the findings suggest that despite most of the smokeless tobacco users attempting to quit in the past one year, almost half of them had moderate to high dependence on smokeless tobacco. The relation of nicotine dependence and chances of successfully quitting tobacco needs to be studied in detail to help identify those that can be targeted for a successful quit attempt.

	User; n (%)	cOR (95% CI)	P	aOR* (95% CI)
Table 5: Socio-demographic profile and smoked tobacco use				
Gender				
Male (*n*=240)	39 (16.3)	6.7 (2.9-15.3)	<0.001	3.0 (1.2-8.0)
Female (*n*=249)	7 (2.8)	Ref	-	-
Age				
15-24 (*n*=94)	6 (6.4)	0.6 (0.2-1.7)	0.379	-
25-44 (*n*=245)	23 (9.4%)	Ref	-	-
45-64 (*n*=128)	14 (10.9)	1.2 (0.6-2.4)	0.635	-
≥65 (*n*=22)	3 (13.6)	1.5 (0.4-5.5)	0.522	-
Level of formal education				
No formal education (*n*=92)	8 (8.7)	Ref	-	-
Primary school or less (*n*=70)	5 (7.1)	0.8 (0.2-2.6)	0.719	-
High school or less (*n*=278)	30 (10.8)	1.3 (0.6-2.9)	0.567	-
College and above (*n*=49)	3 (6.1)	0.7 (0.2-2.7)	0.589	-
Employment status				
Employed (*n*=227)	35 (15.4)	Ref	-	-
Homemaker (*n*=168)	2 (1.2)	0.1 (0.01-0.3)	<0.001	0.2 (0.03-0.8)
Student (*n*=52)	1 (1.9)	0.1 (0.01-0.8)	0.030	0.1 (0.01-0.9)
Retired/Unemployed (*n*=42)	8 (19.0)	1.3 (0.6-3.0)	0.556	1.6 (0.7-3.9)
Religion				
Hindu (*n*=443)	43 (9.7)	Ref	-	-
Muslim/Christian/Buddhism (*n*=46)	3 (6.5)	0.5 (0.2-2.2)	0.484	-
Marital status				
Single/divorced/separated/widowed (*n*=133)	13 (9.3)	Ref	-	-
Married (*n*=356)	33 (9.3)	0.9 (0.5-1.8)	0.865	-
Socio-economic status				
Upper lower/Lower (*n*=172)	15 (8.7)	0.8 (0.3-1.7)	0.527	-
Lower middle (*n*=209)	19 (9.1)	0.8 (0.4-1.7)	0.594	-
Upper/Upper middle class (*n*=109)	12 (11.0)	Ref	-	-

*$P<0.2$ were entered into model for calculating adjusted odds ratio

The present study had several strengths. It used a standardized, validated questionnaire, and scientific methodology for participant recruitment. Recall bias was minimized by limiting the history-based questions to within one month, and within one year only for significant events. This study was conducted in a community-based setting of unique and heterogenous socio-demography. Appropriate counselling of users was done to encourage cessation of tobacco. Participants identified with high nicotine dependence were referred to the Department of Psychiatry, VMMC, and SJH.

The study also had some limitations. It was a questionnaire-based study, and information related to tobacco use was self-reported. No confirmatory tests such as cotinine tests were conducted. Social desirability bias could have led to under-estimation of the prevalence of tobacco use in the community.

The data was collected during the COVID-19 pandemic which could have led to under or over estimation of the prevalence of tobacco use due to migration, loss of wages, closure of tobacco selling shops, and strict implementation of COVID appropriate behavior in public areas such as wearing of masks and prohibition of spitting. During the pandemic, public awareness sessions were conducted in the study area regarding possible association between smoking and severity of COVID-19 illness.

Conclusions

One in every five adults is a tobacco user in Aliganj. Gender, education level, employment, and socio-economic status were significantly associated with tobacco use. Based on the findings, it is recommended to screen adults for tobacco use at the first contact with family medicine and primary care physicians and provide appropriate counselling for cessation of tobacco use. Majority of users have some intention of quitting tobacco use. Many have made quit attempts in the past and failed. Behavioral change counselling along with social support and encouragement can help cessation of tobacco use among these participants. Participants with high nicotine dependence need medical support for tobacco cessation such as nicotine replacement therapy and drugs. Deaddiction centers which provide appropriate care at an affordable cost need to be identified and promoted. Existing laws on tobacco use and sale need to be strictly implemented and adhered to. This may help in reducing exposure to second-hand smoke in public areas and prevent the use of tobacco products in younger individuals. Measures to improve the education and socio-economic status along with increased awareness about harmful effects of tobacco among school and college students will help in reducing the prevalence of tobacco use in the long run.

Table 6: Socio-demographic profile and smokeless tobacco use				
	User; *n* (%)	cOR (95% CI)	*P*	aOR* (95% CI)
Gender				
Male (*n*=240)	57 (23.8)	12.6 (5.3-29.9)	<0.001	9.5 (3.2-28.5)
Female (*n*=249)	6 (2.4)	Ref	-	-
Age				
15-24 (*n*=94)	3 (3.2)	0.2 (0.1-0.7)	0.010	0.9 (0.2-4.0)
25-44 (*n*=245)	34 (13.9)	Ref	-	-
45-64 (*n*=128)	23 (18.0)	1.4 (0.8-2.4)	0.298	0.9 (0.5-1.8)
≥65 (*n*=22)	3 (13.6)	1.0 (0.3-3.5)	0.975	0.5 (0.1-2.3)
Level of formal education				
No formal education (*n*=92)	11 (12.0)	Ref	-	-
Primary school or less (*n*=70)	15 (21.4)	2.0 (0.9-4.7)	0.108	0.9 (0.3-2.6)
High school or less (*n*=278)	33 (11.5)	0.9 (0.5-1.9)	0.908	0.4 (0.1-1.0)
College and above (*n*=49)	5 (10.2)	0.8 (0.3-2.6)	0.755	0.4 (0.1-1.5)
Employment status				
Employed (*n*=227)	55 (24.2)	Ref	-	-
Homemaker (*n*=168)	2 (1.2)	0.04 (0.01-0.2)	<0.001	0.1 (0.02-0.6)
Student (*n*=52)	0	N/A**	-	-
Retired/Unemployed (*n*=42)	6 (4.3)	0.5 (0.2-1.3)	0.163	0.7 (0.2-2.2)
Religion				
Hindu (*n*=443)	54 (12.2)	Ref	-	-
Muslim/Christian/Buddhism (*n*=46)	9 (19.6)	1.8 (0.8-3.8)	0.160	0.9 (0.3-2.5)
Marital status				
Single/divorced/separated/widowed (*n*=133)	7 (5.3)	Ref	-	-
Married (*n*=356)	56 (15.7)	3.4 (1.5-7.6)	0.003	2.1 (0.8-5.7)
Socio-economic status				
Upper lower/Lower (*n*=172)	30 (17.4)	2.3 (1.1-5.2)	0.034	2.8 (1.1-7.5)
Lower middle (*n*=209)	24 (11.5)	1.4 (0.6-3.2)	0.366	1.7 (0.7-4.2)
Upper/Upper middle class (*n*=109)	9 (8.3)	Ref	-	-

*P<0.2 were entered into model for calculating adjusted odds ratio. **There were no participants in reference category

Conflicts of interest

There are no conflicts of interest.

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