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Original Research Article

Prevalence, patterns and socio-demographic correlates of tobacco use in Davangere taluka, Karnataka: a community-based, cross-sectional study

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ABSTRACT

Background: Tobacco use is the single, largest preventable cause of death and disability worldwide. Area-specific community-based epidemiological studies on tobacco use are required to quantify the problem, identify the determinants and their distribution. The objectives were to find out the prevalence, patterns and socio-demographic correlates of tobacco use in Davangere taluka, Karnataka, India.
Methods: This was a community-based, cross-sectional study of 2008 subjects (>10 years of age) in urban and rural areas of Davangere taluka, Karnataka. Interviews were conducted by using a structured, pre-tested questionnaire by house-house visits. Results are presented using percentages, chi-square test, odds ratio and multiple logistic regression analysis.
Results: The prevalence of tobacco use was 30.7%. Among urban males it was 39.5%, rural males 39.6%, rural females 26% and urban females 18.5%. Tobacco use was significantly associated with sex, locality, religion, caste, marital status, family type, occupation, and tobacco use in family or friends. There was direct relationship of tobacco use with age and inverse relationship with education and socio-economic status. Mixed tobacco use was higher in rural areas compared to urban areas. About 73.9% of 10-29 years persons had started before the age of 18 years. Among older participants there was higher frequency of consumption and duration of use.
Conclusions: Tobacco use is common and it is influenced by various local socio-demographic factors. Addressing these factors and providing tobacco cessation services should be included as key strategies in tobacco control.

Keywords: Tobacco use, Prevalence, Smoking, Smokeless, Socio-demographic factors

INTRODUCTION

Tobacco use accounts for the vast majority of preventable death and disability. According to recent estimates, nearly 5 million people die due to tobacco use every year and this figure is expected to increase to 10 million deaths per year by 2020, with 7 million of these deaths to occur in China and India.[1,2] Annually, tobacco use is decreasing in developed countries by 0.2% and increasing in developing countries by 3.4%, showing a contrast trend of immense concern.[3] In India, deaths due to tobacco were estimated to be 8 lakhs in 1996 and recent studies indicate that the risk of deaths due to tobacco may in fact be more than that identified earlier.[4-6] In India, multiple

forms of tobacco use complicate attempts to reduce its overall impact on public health.[7] In order to reverse the rising tobacco epidemic by effective health policies, community-based epidemiological studies on tobacco use are important to reliably estimate the prevalence and assess the role of socio-demographic factors. There is great variation in estimates of tobacco use prevalence and is known to strongly reflect local social and cultural practices.[8] However, no such studies on tobacco use were carried out in Davangere region of Karnataka state. Hence the present study was taken up to provide necessary inputs for evidence-based tobacco control measures in this region and also in other regions for comparison and simulation. Objectives of present study were to estimate the prevalence, identify the patterns and assess socio-demographic correlates of tobacco use in Davangere taluka using representative sample from community.

METHODS

This cross-sectional study was done in rural and urban areas of Davangere taluka, India, between January 2007 to December 2008. The inclusion criteria were household members aged 10 years and above who were residents of Davangere taluka. Visitors above 10 years and over (non-residents) to Davangere present in the household at the time of the survey were excluded from the study. A representative sample size of 2008 was calculated using a formula, based on 95% confidence interval, margin of error of 2%, average prevalence of tobacco consumption in India (30%), and eligible population of Davangere taluka (45982). A multi-stage sampling, probability proportional to size was used to collect data. All the participants in the sample were informed about the purpose of the study. After obtaining the verbal consent, participants were interviewed separately using a structured, pre-tested proforma. The proforma collected information on selected socio-demographic profile.

A modified BG prasad classification was used to classify the socio-economic class of the participants.[9] Tobacco user was classified based on standard WHO definitions as never user, ever user, current user and quitter.[10] Ever user was one who has consumed tobacco at least once in his/her lifetime. Current user was a person with history of consuming any tobacco product within 30 days preceding the survey. Quitter was a person with the history of previous tobacco use and abstinence from tobacco for at least 1 year preceding the survey. Quit rate was calculated by identifying the percentage of quitters from ever users. “Non user’ category for the statistical analysis included never users and Quitters. Current tobacco users were asked about daily use or occasional use (3 or less no. of days in a week), age at onset, frequency of consumption (Mild 1-9/moderate 10-20/heavy 11-20+), duration of regular use in years, attempts to quit tobacco before (attempted/not attempted). The study was conducted after obtaining institutional ethical committee clearance. Descriptive data for prevalence estimates are presented as percentages. Prevalence percentages of male and female are compared using ‘Z’ test for proportions. For bivariate analysis, chi-square (X^2) test was applied to see the significant differences and associations of various parameters with current tobacco use. Odds ratios with 95% CI were calculated where appropriate. Multiple logistic regression analysis was performed to see the interaction effects of independent variables on tobacco use. For all the tests a p value of <0.05 was considered for the statistical significance. Analysis was done using statistical package for social sciences (SPSS), version 16.

RESULTS

In the present study, over all ‘ever use’ prevalence of tobacco use was 35.3%. The ever use prevalence was higher among males compared to females (45.4 vs 24.6%, Z=10.03, p<0.001). An overall quit rate of 12.9% was observed in the study. However, the difference in quit rates by region and gender were not statistically significant. The overall current use in the present study was 30.7%. The current use was higher in rural area than in urban area (32.9 vs 29.3%, X^2=2.94, p=0.09). The current use was higher among males than among females (39.5 vs 21.5%, Z=9.00, p<0.001). A higher prevalence was noted among oldest age-group (52.7%), Christians (43.8%), STs (46.5%), and divorced/widowed (60.4%) groups. The tobacco use showed an inverse relation with SES class (X^2=22.95, p<0.001) and increasing level of education (X^2=24.8, p<0.001). Illiterates and primary school level literates were nearly two times more at risk of using tobacco compared to high school and above (OR-1.6; 95% CI 1.3-2.0) (Table 1).

Overall, with reference to forms of tobacco use, 366 users (59.3%) practiced smokeless tobacco, 209 (33.9%) smoked and 42 (6.8%) practiced mixed use. Smoking cigarettes was more common among urban males (30%) compared to rural males (9.4%) or females in general. Among females, tobacco was chewed mostly with betel quid (paan) or paan masala when compared to gutka, khaini or any other chewing product. Mixed use was highest among rural males 18 (11.3%) followed by rural females, 7 (6.9%), urban males, 12 (4.9%) and urban females, 5 (4.6%).

Smokeless tobacco use was higher than smoking type (18.2 vs 10.4%). Smokeless and mixed tobacco use was higher in rural area (19.8%, 3.1%) than urban area (17.2 vs 1.4%, X^2=9.98, p<0.05). Among males, smoking type was slightly higher compared to smokeless type (19.2 vs 17.4%), and in females, smokeless tobacco use was the predominant form of use (19.1%, X^2=189.61, p<0.001). A person was at 8 times higher odds of using tobacco when he/she had family or friends as tobacco users (OR=6.2; 95% CI 5.0-7.8). Daily use was more common in rural area compared to urban area (90.4 vs 84.8%, X^2=4.21, p<0.05). The mean age at onset was 17.7 years (SD±3.2 years). A higher proportion ‘heavy users’ was seen in 50+ years group compared to in 30-49 years group (69.3 vs 50.6%, X^2=117.95, p<0.001) (Table 2).

Table 1: Prevalence of tobacco use by baseline characteristics (n=2008).

Baseline characteristic	Prevalence n (%)	X^2/Z test, P value	Baseline characteristic	Prevalence n (%)	X^2/Z test, P value
Region			**Marital status**		
Urban (1215)	356 (29.3)	X^2=2.94, P=0.09	Unmarried	199 (26.5)	X^2 = 68.53, P<0.001
Rural (793)	261 (32.9)		Married	328 (29.6)	
Gender			Divorced / Widow	90 (60.4)	
Male (1029)	617 (39.5)	Z=9.00, P<0.001	**Literacy level**		
Female (979)	407 (21.5)		Illiterate	112 (35.1)	X^2=24.8, P<0.001; Upto primary and above primary (Ref). OR-1.6; 95% CI 1.3-2.0
Age group (years)			Primary School	292 (34.3)	
			High School	141 (28.6)	
10-14	40 (13.3)	X^2=122.26, P<0.001	College	60 (21.0)	
15-19	70 (25.6)		Postgraduate	12 (20.0)	
20-29	120 (25.6)		**Occupation**		
30-39	101 (31.2)		Household	133 (28.5)	X^2=15.24, P=0.03
40-49	91 (37.9)		Agriculture	177 (37.0)	
50-59	69 (42.3)		Other labour work	32 (31.4)	
>60	126 (52.7)		Trader	27 (27.0)	
Religion			Professional	21 (27.3)	
Hindu	544 (32.8)	X^2=39.0, P<0.001	Clerical	81 (25.6)	
Muslim	37 (15.7)		Unemployed	33 (29.5)	
Christian	28 (43.8)		Student	113 (31.9)	
Others	8 (15.4)		**SES class (Modified BG prasad classification on monthly income)**		
Caste			Rs 2900 and above	45 (23.6)	X^2=22.95, P<0.001; III, IV and V vs I &II (Ref). OR- 1.6; 95% CI:1.22-2.1
SC	119 (38.9)	X^2=33.6, P<0.001	Rs 2899 to Rs 1450	53 (22.7)	
ST	59 (46.5)		Rs 1449 to Rs 870	123 (29.6)	
OBC	257 (33.7)		Rs 869 to Rs 435	206 (31.1)	
Others	109 (23.7)		<Rs 435	190 (37.5)	
Family type			**Tobacco use in family or friend**		
Nuclear	330 (28.6)	X^2=5.64, P=0.02	Present	426 (69.0)	Present Vs Absent X^2=291.90, P<0.001; Present Vs Absent (Ref). OR- 6.2; 95% CI 5.0-7.8
Non-nuclear (Joint + 3 Generation)	287 (33.6)		Absent	160 (26.0)	
Category by locality and gender			Don't know	31 (5.0)	
Urban males	247 (39.5)	X^2=83.4, P<0.001			
Urban females	109 (18.5)				
Rural males	160 (39.6)				
Rural females	101 (26)				

Table 2: Bivariate analysis of patterns of tobacco use by baseline characteristics (n=2008).

Type of tobacco use	Urban n (%)	Rural n (%)	X^2, P value
Smoking	130 (10.7)	79 (10.0)	X^2=9.98, P<0.05
Smokeless	209 (17.2)	157 (19.8)	
Mixed (>1 form)	17 (1.4)	25 (3.2)	
Non use	859 (70.7)	532 (67.0)	
Regularity of use (617)	Urban n (%)	Rural n (%)	X^2=4.21, P=0.04
Daily users	302 (84.8)	236 (90.4)	
Occasional users	54 (15.2)	25 (9.6)	
Type of tobacco	Male n (%)	Female n (%)	
Smoking	198 (19.2)	11 (1.1)	X^2=189.61, P<0.001
Smokeless	179 (17.4)	187 (19.1)	
Mixed (>1 form)	30 (2.9)	12 (1.2)	
Non use	622 (60.5)	769 (78.6)	
Regularity of use (617)	Male n (%)	Female n (%)	X^2=40.77, P<0.001
Daily users	380 (87.2)	158 (75.2)	

Continued.

Type of tobacco use	Urban n (%)	Rural n (%)	X^2, P value	
Occasional users	27 (12.8)	52 (24.8)		
Age-group (Years) (617)	Previous quit attempts present	Previous quit attempts absent	X^2=47.44, P<0.001	
10-29	72 (65.5)	38 (34.5)		
20-39	201 (91.0)	20 (9)		
>40	274 (95.8)	12 (4.2)		
Age-group (Years) (617)	Age of onset <18 Years n (%)	Age of onset ≥18 Year n (%)	X^2=76.80, P<0.001	
10-29	170 (73.9)	60 (26.1)		
30-49	94 (48.9)	98 (51.1)		
>50	62 (31.8)	133 (68.2)		
Age-group (Years) (617)	Light (Daily 1-10 times) n (%)	Moderate (Daily 11-20 times) n (%)	Heavy (Daily 20+times) n (%)	X^2=117.95, P<0.001
10-29	65 (59.1)	32 (29.1)	13 (11.8)	
30-49	54 (24.4)	55 (25.0)	112 (50.6)	
>50	43 (15.0)	45 (15.7)	198 (69.3)	
Age-group (Years) (617)	Duration of use 1-5 years n (%)	Duration of use 6-10 years n (%)	Duration of use >10 years n (%)	X^2=416.60, P<0.001
10-29	126 (54.8)	99 (43.0)	5 (2.2)	
30-49	8 (4.2)	106 (55.2)	78 (40.6)	
>50	5 (2.6)	19 (9.7)	171 (87.7)	

Table 3: Multiple logistic regression analysis for tobacco use status (Likelihood ratio tests) (N=2008).

Effect	Model fitting criteria	Likelihood ratio tests		
	-2 Log Likelihood of reduced model	(X^2)	(df)	Sig.
Intercept	1607.487**(a)**	0.000	0	
Age (Year)	1678.772	71.285	6	0.001
Sex	1658.834	51.347	1	0.001
Locality	1637.469	29.982	1	0.001
Religion	1629.950	22.464	3	0.001
Marital status	1615.978	8.491	2	0.014
Literacy level	1659.005	51.518	4	0.001
Occupation	1734.108	126.621	7	0.001
Family type	1665.102	57.616	1	0.001
SES	1639.336	31.849	4	0.001
Tobacco use in family/friends	1910.453	302.966	1	0.001

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0. (a) This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

On multivariate analysis, all the independent variables were (age, sex, locality, religion, marital status, education, occupation, family type, socio-economic status, and tobacco use in family/friends) showed high significance with tobacco use status (Table 3). It is interesting to see that results of univariate analysis correlated well with the results of multivariate analysis.

DISCUSSION

The socio-demographic characteristics of the study participants were comparable to that of NFHS-2.[11] When we compare the prevalence it is important to bear in mind the minimum and maximum age of the participants, like, in NFHS-2, the age of participants was 15 years and above, whereas in NSSO 52nd round it was 10 years and above, which may bring down the overall prevalence with the inclusion of younger age-groups.[11,12] The current use prevalence in the present study was 30.7%, comparable to global adult tobacco survey 2016-17 prevalence 28.6%.[13] The current use was higher in rural area (32.9%) than in urban area (29.3%). Our study noted a slightly higher current use among males (49.5%) than NFHS-4 done in 2015-16 (44.8%), but lower than NSSO 52nd round (51.3%).[12,14] However, the prevalence among females (21.5%) was high in our study compared to the NSSO 52nd round (10.3%), and the difference may be because of underreporting because of surrogate response in the NSSO survey. Gupta reported prevalence of tobacco use of 69.3% among men over 35 years of age and 57.5% among women above 35 years.[15] Chaudhry et al reported a prevalence of 50% among men and 9.1% among

women in Uttar Pradesh and prevalence of 41% among men and 14.9% among women in Karnataka, which are higher compared to our study for prevalence in males.[16]

Our study finding of similar prevalence among urban males and rural males differs from other surveys like, NSSO 52 round, NFHS-2 and NFHS-3, both reporting a higher use among rural males compared to urban males.[11,12,17] The present study noted a high current use prevalence for urban females (18.5%) compared to other studies where it ranged from 4.7 to 6.1%.[12,17] Prevalence among rural females was about 20.6%, again high compared to other studies where it ranged from 10.7 to 12.9%. Prevalence of tobacco use among women reduced from 10.8% in NFHS3 to 6.8% in NFHS4.[14] Part of the reasoning for high prevalence difference among females in both urban and rural areas in our study compared to other studies, could be underreporting in other studies or a finding of higher consumption of tobacco with paan or paan masala or increasing tobacco use trend among women or all of these acting together.

Our findings like overall higher smokeless tobacco use (18.2%) than smoking type (10.4%), higher smoking in urban area (10.7%) than rural area (10.0%) and higher smokeless and mixed use in rural area (19.8 and 2.1%) than urban area (17.2 and 1.4%) are similar to other studies NFHS-2, NFHS-3 and NSSO.[11,12,17] Unlike in other parts of the country, especially north and north-east, we did not observe the practice of snuff, hookah or dentifrice. Reverse smoking was also not reported by anyone in this study.

Present study finding of higher prevalence among STs (46.5%), SCs (38.9%), and OBC (33.7%) compared to 'others' (23.7%) is similar to Subramanian et al study.[18] The persons with lower levels of education were nearly two times more at odds of using tobacco than persons with higher literacy levels (reference category) similar to observation of other studies.[7,11,15] Student group showed a prevalence of 31.9% giving some evidence to the notion that tobacco use was increasing among the student group, probably because of the peer pressure and early exposure. The relation between socio-economic markers and tobacco consumption is similar to that observed in developed countries.[19] In our study, a person was nearly 8 times more at risk of using tobacco when he/she has family/friends as tobacco users (OR=6.2; CI 5.0-7.8). Nichter and Pradeepkumar et al share the similar findings in their study.[20,21]

Our study also provides evidence that the age of starting tobacco use is decreasing and these new starters will probably smoke for comparable number of years as present users of tobacco and will in fact succumb to the harmful effects at a much younger age than those who started at a later age. Limitation of the study is recall bias especially in the case of long-term tobacco users.

CONCLUSION

It was evident from this study that the tobacco use is widespread in Davangere taluka. The tobacco use is significantly associated with various local socio-demographic factors like locality, age-group, gender, religion, caste, education, occupation, marital status, family type, socio-economic class and tobacco use in family or friends. Patterns of tobacco use vary widely. This provides evidence that the age of starting tobacco use is decreasing and these new starters will probably use tobacco for longer duration and will in fact succumb to the harmful effects at a much younger age than those who started at a later age and hence, it becomes all the more important to give importance to measures to discourage the youngsters from taking up tobacco use in both the urban and rural areas and both genders. IEC activities to raise the public awareness and overall development of the weaker sections of the community should be given priority as they are more likely to be worst affected by the tobacco use. Advocacy and implementation of tobacco control policies should receive added impetus.

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