

Original Research Article

Prevalence and determinants of tobacco use in a remote rural area of South India: a community based cross sectional study

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Received: 19 June 2020

Revised: 02 August 2020

Accepted: 04 August 2020

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ABSTRACT

Background: Tobacco use is a major public health problem in India. We intended to study the tobacco use and its risk factors from a rural area of South India.

Methods: This study was conducted in 2018, among twenty villages located around a rural health training centre, in South India.

Results: Total population surveyed was 14925. Among them 11995 individuals were in the age group of 15 years and above. In this group 739, 6% (5.7-6.6) of tobacco users, 423, 3.5% (3.2-3.9) of smokers and 369, 3% (2.8-3.4) of tobacco chewers were included in the study. Individuals belonging to lower caste were four to five times more likely to be a tobacco user. Tobacco use increases with age. Illiterates were 1.8 times more likely to be a tobacco user, married and Widows were two times more likely to be a tobacco user. Alcoholics were 13 times and hypertensive patients were 1.5 times, non-vegetarians were 1.4 times, individual preferring open defecation were 1.7 times more likely to be a tobacco user. Smoking was more associated with male gender, lower caste, increase in age, married individuals, alcoholics, hypertension and having semi-pucca house. Tobacco chewing was more associated with female, lower caste, increase in age illiteracy, married and widow, alcoholic, hypertension, non-vegetarian diet, open defecation, having kutcha or semi-pucca house.

Conclusions: Tobacco use in a remote rural area is high among the socially deprived community who are illiterate, belonging to lower caste and those who prefer open defecation.

Keywords: India, Rural, Tobacco

INTRODUCTION

Tobacco use is one of the major public health issues in India. Globally tobacco use alone ranks fourth in terms of contribution to years of life lost; also worldwide smoking causes about 71% of lung cancer, 42% of chronic respiratory diseases, 10% of cardiovascular disease and is responsible for 12% and 6% of male and female deaths respectively.¹ National Family Health Survey (NFHS 4) has concluded that the tobacco use among the males were 31% and among the females were 3%.² Global adult

tobacco survey in 2016-17 (GATS) has concluded that in India tobacco use among male was 42% and among female was 14%, in them smokers were 11% and tobacco chewers were 21%.³ Bidi is the most common form of smoking tobacco in India followed by cigarettes, cigar, hookahs and smokeless tobacco is also consumed in the form of chewing paan, paan masala, or gutkha or through the application of tobacco preparations to the teeth and gums.⁴ There are plenty of prevalence surveys available from India but there is a dearth for risk factors associated with tobacco use in remote rural area and hence there is a

need to have a population based study, so that effective public health policies could be planned in the future. So we aimed to study the prevalence and determinants of tobacco use in a remote rural area covering 20 villages.

METHODS

Pondicherry Institute of Medical Sciences has its Rural Health and Training Centre (RHTC) in a remote rural village called Chunampet, located at Chengalpet District of Tamilnadu. Through this centre, round the clock medical services were provided to the adjoining villages and this centre serves as the main outreach centre for teaching and training of medical students and medical interns. This centre through its community service programme covers 20 adjoining remote rural villages located around this RHTC. In these, most of the villages don't even have public transport facilities.

An extensive population based cross sectional study was planned in March 2018 to October 2018 in these 20 villages.

A data collection proforma and a guide was developed for this survey and training for interviewers were given. Data was collected with the help of Medical interns and Medical Social Workers under the direct supervision of faculty from Community Medicine Department. Hypertension and diabetes data was collected among individual with the age group of 20 and above and smoking and alcohol related data was collected among individuals with age group of 15 and above.

Inclusion criteria

In this study all individuals who were permanent residents and belong to the 20 villages were included in the study.

Exclusion criteria

Those who were not a permanent residents of these villages were excluded from the study.

Universal sampling method was adopted. Sample size was calculated using Openepi.⁵ Keeping 10% prevalence of smoking and 5% relative precision, calculated sample size was 13,641.

The data regarding current smokers and current tobacco chewers are being presented in this paper. The data was entered in the EpiData data entry software version 3.1.⁶ Quality of the data collection was ensured by checking a subset of data in the field by the faculty. Data was analysed with the help of SPSS version 22 and STATA version 14.^{7,8} Ethical clearance for the survey and data dissemination was obtained from the Institute ethical committee (Reference number- RC 100/18).

RESULTS

Total population surveyed was 14925. Among them 11995 individuals were in the age group of 15 years and above. In this group 739 [6% (5.7-6.6)] were tobacco users, 423 [3.5% (3.2-3.9)] were smokers and 369 [3% (2.8-3.4)] were tobacco chewers.

Table 1: Tobacco use and its risk factor from a remote rural area of South India in 2018.

Variables	Total (n=11995)	Tobacco user (n=739)		Current smokers (n=423)		Current tobacco chewer (n=369)	
Risk factors	N (%)	N (%)	aOR (95% CI)#	N (%)	aOR (95% CI)#	N (%)	aOR (95% CI)#
Gender							
Male	5976	523 (09)	1.2 (1.0-1.5)	374 (06)	3.3 (2.3-4.6)	200 (03)	0.6 (0.4-0.8)
Female	6019	216 (04)	Ref	49 (01)	Ref	169 (03)	Ref
Caste							
BC	1591	21 (01)	Ref	12 (01)	Ref	10 (01)	Ref
MBC	4991	316 (06)	4.6 (3.0-7.4)	193 (04)	4.7 (2.6-8.7)	143 (03)	3.6 (1.9-7.0)
SC	5377	400 (07)	5.2 (3.3-8.2)	216 (04)	4.4 (2.4-8.1)	216 (04)	5.2 (2.7-10.0)
ST	17	01 (06)	4.3 (0.4-44.1)	01 (06)	7.6 (0.7-80.2)	0 (0)	-
OC	19	01 (05)	7.0 (0.7-71.1)	01 (05)	10.5 (1.0-110.5)	0 (0)	-
Age mean(SD)	739	40 (39-40)	1.2 (1.0-1.0)	40 (39-40)	1.0 (1.0-1.0)	40 (39-40)	1.0 (1.0-1.0)
Family members mean (SD)	739	4.4 (4-5)	1.0 (0.9-1.0)	4.4 (4-5)	1.0 (0.9-1.0)	4.4 (4-5)	1.0 (0.9-1.0)
Education							
Literate	7985	297 (04)	Ref	220 (03)	Ref	101 (01)	Ref
Illiterate	4010	442 (11)	1.8 (1.5-2.2)	203 (05)	1.2 (1.0-1.6)	268 (07)	2.5 (1.9-3.3)
Marital Status							
Married	7927	621 (08)	2.3 (1.5-3.5)	374 (05)	1.9 (1.2-3.1)	295 (04)	3.5 (1.5-7.9)
Unmarried	3129	30 (01)	Ref	26 (01)	Ref	07 (0)	Ref
Widow	939	88 (09)	2.7 (1.6-4.6)	23 (02)	1.8 (0.9-3.5)	67 (07)	4.5 (1.9-10.9)

Continued.

Variables	Total (n=11995)	Tobacco user (n=739)		Current smokers (n=423)		Current tobacco chewer (n=369)	
Alcoholic							
Never	10990	359 (03)	Ref	150 (01)	Ref	217 (02)	Ref
Current	1005	380 (38)	13.7 (11.1-17.0)	273 (27)	13.2 (10.3-16.9)	152 (15)	10 (7.1-13.3)
Diabetes							
No	10393	686 (07)	Ref	387 (04)	Ref	347 (03)	Ref
Yes	346	47 (14)	1.3 (0.9-1.9)	30 (09)	1.3 (0.8-2.1)	21 (06)	1.2 (0.7-2.0)
Not applicable	1256	06 (01)	-	06 (01)	-	01 (01)	-
Hypertension							
No	10358	677 (07)	Ref	383 (04)	Ref	338 (03)	Ref
Yes	380	56 (15)	1.5 (1.0-2.2)	34 (09)	1.7 (1.0-2.6)	30 (08)	1.5 (1.0-2.4)
Not Applicable	1257	06 (01)	-	06 (01)	-	01 (01)	-
Diet							
Veg	1126	43 (04)	Ref	33 (03)	Ref	14 (01)	Ref
Non-Veg	10869	696 (06)	1.4 (1.0-2.2)	390 (04)	1.0 (0.7-1.5)	355 (03)	2.1 (1.2-3.7)
Type of toilet facilities			-	-		-	
Toilet present	4289	160 (04)	Ref	113 (03)	Ref	55 (01)	Ref
No facility (open defecation)	7706	579 (08)	1.7 (1.4-2.1)	310 (04)	1.2 (1.0-1.6)	314 (04)	2.5 (1.8-3.4)
Type of house							
Kutcha	3017	242 (08)	1.2 (1.0-1.5)	101 (03)	0.8 (0.6-1.1)	164 (05)	1.4 (1.1-1.9)
Pucca	4986	270 (05)	Ref	152 (03)	Ref	140 (03)	Ref
Semi-pucca	3992	227 (06)	0.8 (0.7-1.0)	170 (04)	1.3 (1.0-2.1.7)	65 (02)	0.4 (0.3-0.5)

#-Bold significance $p < 0.05$, @ <20 years, MBC- Most Backward Castes, SC- Scheduled Castes, ST- Scheduled Tribes, OC- Other Castes

Tobacco users: Individuals belonging to lower caste were four to five time more likely to be a tobacco user [MBC aPR 4.6 (3.0-7.4)] and [SC aPR 5.2 (3.3-8.2)]. Tobacco use increases with age [aPR 1.2 (1.0-1.0)]. Illiterates were 1.8 times [aPR 1.8 (1.5-2.2)] more likely to be a tobacco user, Married [aPR 2.3 (1.5-3.5)] and Widows [aPR 2.7 (1.6-4.6)] were more than two times to be a tobacco user. Alcoholics were 13 times [aPR 13.7 (11.1-17.0)] more likely to be a tobacco user. Hypertensive patients were 1.5 times [aPR 1.5 (1.0-2.2)] more likely to be a tobacco user. Non-vegetarians were 1.4 times [aPR 1.4 (1.0-2.2)] more likely to be a tobacco user. Individual prefer open defecation were 70% [aPR 1.7 (1.4-2.1)] and individual who belongs to kutcha house were 20% [aPR 1.2 (1.0-1.5)] more likely to be a tobacco user. Smoking was more associated with male gender, lower caste, increase in age, married individuals, alcoholics, hypertension and having semi-pucca house. Tobacco chewing was more associated with female, lower caste, increase in age illiteracy, married and widow, alcoholic, hypertension, non-vegetarian diet, open defecation, having kutcha or semi-pucca house. Tobacco use, Smoking, Tobacco chewing and its associated risk factors are shown in Table 1.

DISCUSSION

Main finding in our study was tobacco use associated with socio economically weaker section of people. In our study, the people belong to lower caste, practicing open defecation, illiterate and living in kutcha house were more likely to be tobacco users. This reveals the importance of socio economic status and education of tobacco use.^{4,9,10} In concurrence with major studies on tobacco use in

India, our study also showed that alcoholics, hypertensive patients and non-vegetarian were more likely to be tobacco users.^{11,12} Another finding was males were more likely to be smokers and females were more likely to be tobacco chewers, which is a common finding in India, and this practice varies in other countries.^{1,3,10,13-15} Many studies conducted in the rural areas of India showed that the prevalence of tobacco use is higher among individuals with increasing age, low socio-economic status, illiterates, alcoholics and male gender.^{1,4,16} Our study the prevalence of tobacco use was 6%, smoking was 3.5% and tobacco chewing was 3%, which is comparatively less when compared to national prevalence where prevalence of tobacco use was 27% and smoking was 11% and tobacco chewing was 21% and this varies with different regions in the country.^{3,11,15-18}

Main strength in our study was, this is a population based study covering large population of nearly 15,000 individuals and revealed socio economic conditions were the important determinant for tobacco use, more over this survey covered hard to reach remote rural area in south India. Main limitation in our study was, number of individuals identified with tobacco use in our study appears to be low, when comparing to the national prevalence. This could not be considered as an exact prevalence as it appears to be underestimating the national prevalence. In future, a robust study with appropriate sample size for prevalence is planned.

Our study has the following important policy implications. Tobacco use is an important risk factor for important non-communicable diseases (diabetes, hypertension, cardiovascular disease and stroke). But the

low socioeconomic status as an important determinant of tobacco use is less reported and discussed in India, especially there are very limited studies available from remote rural area. Even though Government has strong regulatory approach for tobacco use prevention in India through Cigarettes and Other Tobacco Product Act (COTPA), our study revealed that the prevalence and use of Tobacco is not uniform among the population and apart from regulatory approach, a health education approach among the risk would be more beneficial.¹⁹ National Programme for prevention and control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS) is the programme in place in India which takes care of the treatment and prevention of NCD risk factors in primary care.²⁰ Through NCD clinic in primary care, treatment were offered to the NCD patients, whereas prevention is mainly handled at sub-centre level by the ANM, ASHAS. At present these sub-centres are upgraded as Health and Wellness centres, where a midlevel health care provider is added with the existing manpower. As our study shown prevalence of tobacco use is high among socio economically deprived population in a remote rural area, tobacco use related health education and health promotion need to be planned in this population for better results. Unless otherwise major risk factors (tobacco, alcohol, diet and exercise) for NCDs are studied in detail and targeted at the grass root level (village and population level), rapid progression of NCDs in India could not be contained.²⁰

CONCLUSION

Tobacco use in a remote rural area is high among socially deprived community who are illiterate, belonging to lower caste and those who prefer open defecation. There is a need for some sustained public health interventions to improve their health status through better lifestyle changes.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee (Reference number- RC 100/18)

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Cite this article as: Vinothkumar G, Girija G, Manikandan M, Vincent A, Newtonraj A. Prevalence and determinants of tobacco use in a remote rural area of South India: a community based cross sectional study. *Int J Community Med Public Health* 2020;7:3499-503.