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Original article

Tobacco consumption and its association with education among women residing in a rural area of Maharashtra: A cross-sectional study

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ABSTRACT

Background: Tobacco use is increasing among women and girls across the globe as well as in all parts of India. In India, 8 to 10 lakh people die due to tobacco related diseases every year. This tobacco epidemic among women needs to be prevented.

Objectives: Study was conducted to find the prevalence and pattern of tobacco consumption and its association with education among females (15–49 years) in a rural village of Pune, Maharashtra, India.

Material and Methods: A cross-sectional study was carried out among 313 females (15–49 years) in a rural field practice area of a Medical College in Pune during Feb 11 to May 11. Pre-tested questionnaire was used for collecting data by interview after obtaining informed consent. Statistical analysis was performed (Epiinfo software version 3.5.3.).

Results: Out of 313 female studied, 14.05% (44) and 0.96% (03) were found to be current and former tobacco user respectively while 84.98% (266) never used any form of tobacco in their lifetime. Mishri consumption (45%) was commonest form of smokeless tobacco use followed by quid use (36%). Majority of the tobacco users (54.55%) were illiterate. There was significant association between tobacco consumption and education level ($p = 0.0295$). Tobacco consumption was more with increasing age.

Conclusion: Tobacco consumption was found to be prevalent in 14.05% of women. Almost all of them used smokeless tobacco, mainly mishri. Tobacco consumption was directly associated with age and inversely with educational level. Therefore increasing women's literacy may bring down tobacco use among women.

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Introduction

Tobacco consumption among women and girls across the globe is alarming. It threatens to weaken not only women's physical and mental health but also their economic and social

progress. The rising trend of tobacco consumption especially in developing countries is a cause of concern. According to an estimate, prevalence of smoking among women worldwide will be 20% by 2025, a sharp contrast to the 12% of the world's women who smoke at present.¹

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Tobacco use is the leading cause of preventable death, and is estimated to kill more than 5 million people each year worldwide. Most of these deaths are in low- and middle-income countries.²

Use of smokeless tobacco is widely prevalent in India; the different methods of consumption include chewing, applying tobacco preparations to the teeth and gums (mishri) and sucking tobacco with lime (quid) etc. They cause a broad spectrum of ill effects and diseases. It has been recognized internationally that smokeless tobacco use is associated with oral cancer and adverse reproductive outcomes and premature death.³

India is the second largest consumer of tobacco in the world with an estimated 274.9 million tobacco users. Approximately 8–9 lakh people die due to tobacco related diseases every year.^{4,5}

However, there is a paucity of information about tobacco consumption among women especially those residing in rural areas where it is more prevalent. The present study is an effort to find out prevalence of tobacco consumption, pattern of tobacco consumption and its association with educational status.

Material and methods

A community based cross-sectional study was conducted in the Kasurdi; rural field practice area of a medical college from Feb to May 2011. Kasurdi is located approximately 45 km from Pune in Taluka Daund and covers population of about 5000. Most of them are farmer by occupation.

For the purpose of sample size estimation, prevalence was taken as 18%⁶ and confidence level as 95% (i.e. $\alpha = 0.05$). Precision of the estimate (d) was set at 20% of expected prevalence. Minimum sample size adjusted for the population was estimated to be 304.

The study population comprised of women in the age group of 15–49 years. All permanent resident females of the village in a defined age group and willing to participate were included in study. Visitors and females not willing to participate in the study were excluded. Sampling frame was prepared from records of Gram panchayat Kasurdi. Required sample size was selected by simple random method using random number table.

Data were collected by making house to house visits and interviewing all the eligible subjects using pre-tested questionnaire. In case of absence of selected study subject in the house in first visit, same house was visited two more times. Even then if study subject was not available, then next eligible subject was approached. This methodology was followed till completion of required number of samples. Epiinfo software version 3.5.3 was used for analysis of collected data. Association of education with smoking was determined by using chi square test.

Study population, by enlarge, was homogenous in respect of occupation and income and hence education is thought to be one of the main factor influencing consumption of tobacco. Hence association between tobacco consumption and educational status was studied in this study.

Current tobacco users were defined as those who had been consuming tobacco in any form either daily or occasionally. Former users were those who had been tobacco consumer in the past but had not consumed tobacco in any form in last one year. Never users of tobacco were those who had never consumed tobacco.

Table 1 – Distribution of study subjects according to age and tobacco consumption.

Age group (years)	User ^a (%)	Non-user (%)	Total (%)
15–19	05 (11.9%)	37 (88.1%)	42 (100%)
20–34	15 (9.7%)	140 (90.3%)	155 (100%)
35–49	24 (21.2%)	89 (78.8%)	113 (100%)
Total	44 (14.2%)	266 (85.8%)	310 (100%)

$\chi^2 = 7.38$, $df = 2$, $p = 0.025$.

Mean age (years) = 35.25 $\pm$ 9.8 years.

a Only current users were included.

Bold values was considered significant if p is less than or equal to 0.05.

For the purpose of study, participants were classified according to (Central Board of Secondary education) the highest educational standard up to which they had gone to school i.e. Primary school (up to 5th class), Middle school (up to 8th class), High school (up to 10th class) and above (11th class onwards). As per census 2001, Illiterate were those who could not read and write with understanding any one language.

Results

A total of 313 women in the age group of 15–49 years were included in the study. Out of these, 44 (14.05%) were current tobacco user and 266 (84.98%) never used tobacco (Table 1). 03 (0.95%) study subjects had consumed tobacco earlier, but were currently non-consumers. Out of those who consume tobacco, 42 (95.5%) women used smokeless form of tobacco as seen from Table 2. Commonest smokeless tobacco practice was found to be mishri consumption (45%) followed by quid use (36%) (Fig. 1).

As can be seen from Table 2, among those who consumed tobacco, maximum number 24 (54.5%) were in the 35–49 years age group and minimum 05 (11.4%) were in the 15–19 years age group. It was also observed that proportion of tobacco consumption increased with increasing age i.e. from 11.9% in 15–19 years age group to 21.2% in 35–49 years age group. This association between age and tobacco consumption was found to be statistically significant. Mean age of tobacco consumption was 35.25 year (Table 1).

For the purpose of analysis, the study population was regrouped as illiterate and literate and the table so constructed is shown in Table 3. Majority of the tobacco users (54.5%) were illiterate. Tobacco consumption was found to be

Table 2 – Distribution of tobacco consumers according to age and type of tobacco usage.

Age groups (years)	Number of Smokers (%)	Number of smokeless tobacco users (%)	Total number of tobacco users (%)
15–19	00 (00%)	05 (100%)	05 (100 %)
20–34	01 (06.67%)	14 (93.33%)	15 (100%)
35–49	01 (04.17%)	23 (95.83%)	24 (100%)
Total	02 (04.5%)	42 (95.5%)	44 (100%)

Bold values was considered significant if p is less than or equal to 0.05.

Fig. 1 – Different forms of smokeless tobacco consumption among study subjects.

strongly associated with literacy (OR = 2.02, 95% CI = 1.02–4.04). The association was also found to be statistically significant ($\chi^2 = 4.47$, $df = 1$, $p = 0.0295$). It is clearly visible in Fig. 2 that there is an inverse relationship of education with smoking (Chi sq for trend = 5.75, $p = 0.016$).

Discussion

It was observed in this study that among 313 females studied, 14.05% females were found to be using tobacco. Also tobacco use was most prevalent in the older age group. These findings were comparable with the findings of National Family Health Survey 3 which showed that 11 percent of women used some form of tobacco.⁷ Global Adult Tobacco Survey (GATS) India 2009–10 revealed that more than one-third (35%) of adults in India use tobacco in some form or the other. Amongst adults, 21 percent used only smokeless tobacco, 9 percent only smoke and 5 percent smoke as well as use smokeless tobacco. The prevalence of overall tobacco use among females was 20.3% which was higher than that found in our study. The extent of use of smokeless tobacco products among males (33%) was higher than among females (18%).⁶

In India, there was a large variation in prevalence of tobacco use across different regions and states. Highest prevalence of tobacco use was seen in East (45%) and North-East (44%) and lowest prevalence reported in North (19%) Amongst the states,

Fig. 2 – Percentage distribution of tobacco users according to education level.

highest prevalence of tobacco use was seen in Mizoram (67%) and lowest in Goa (9%).⁶ In Maharashtra, prevalence of tobacco smoking and chewing among 15 years and above was found to be 0.2% and 18% in females.⁸ Our study also shows similar trend in prevalence of tobacco consumption.

We found that, Mishri was most commonly used followed by tobacco with lime (Quid). Study conducted by Jindal et al showed that women mostly use tobacco for oral application in the Central and Western part of India.⁹ In rural and urban surveys in Maharashtra, smokeless tobacco use consisted of the application of mishri (especially among women) and the chewing of tobacco, mainly in paan.¹⁰ In Pune district, Maharashtra, almost no women smoked but 49% of women consumed smokeless tobacco; of which 39% used mishri.¹¹ According to GATS report, Khaini or tobacco lime mixture (12%) was the most commonly used tobacco product in India.⁶

The study revealed association of tobacco use with age as was also found by Jindal et al in their study.⁹ Tobacco consumption in different age groups, as found in our study i.e. 11.9% among 15–19 years old, 9.7% among 20–34 year olds, and 21.2% among 35–49 year olds, was only slightly higher than that reported in NFHS-3 i.e. 3.5%, 9.1% and 18.3% in respective age groups.⁷

Our study also revealed association of tobacco use with education which was similar to the findings of Jindal et al.⁹ This was also consistent with observations of GATS survey i.e. prevalence of tobacco use decreases with increase in education among both males and females.⁶ Report on tobacco control in India by Reddy KS, Gupta PC also showed that the lower level of educational attainment was more likely to be associated with tobacco consumption.⁴

Table 3 – Distribution of study population according to literacy and tobacco usage.

Education level	Current user (%)	Non-user (%)	Total (%)
Illiterate	24 (54.5)	99 (37.2)	123 (39.7)
Literate	20 (45.5)	167 (62.8)	187 (60.3)
Total	44 (100)	266 (100)	310 (100)

$\chi^2 = 4.47$, $df = 1$, $p = 0.0295$.

OR = 2.02, 95%, confidence interval (1.02–4.04).

Bold values was considered significant if p is less than or equal to 0.05.

Conclusions

In the present cross-sectional study, carried out among women (age group 15–49 years) in a rural area of Maharashtra, prevalence of tobacco consumption was 14.05%. Almost all of the study subjects (95.5%) consumed smokeless tobacco. Mishri followed by Quid were the commonest forms of tobacco consumed. Tobacco consumption showed a rising trend with increasing age but a declining trend with

increasing educational level. Both the associations were found to be statistically significant.

The findings of the study are in conformity with the finding of NFHS-3 and other major studies. It calls for an action to prevent or reduce tobacco consumption among women of rural area with special focus on cessation of tobacco use by means of increasing awareness and improving the educational level. The ill effects of tobacco consumption and prevention of its use can be better told to educated women as compared to illiterate. The emphasis on prevention of initiation of tobacco use at earlier years of life and tobacco cessation will go a long way in reducing the morbidity and mortality due to tobacco among rural women.

Intellectual contribution

Study concept: Surg Lt Cdr Sinalkar DR, Ravindra Bagal.

Drafting and manuscript revision: Surg Lt Cdr Sinalkar DR, Col Rajesh Kunwar.

Statistical analysis: Surg Lt Cdr Sinalkar DR, Col Rajesh Kunwar.

Study supervision: Col Rajesh Kunwar.

Conflicts of interest

All authors have none to declare.

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