

TOBACCO CONSUMPTION AMONG TRIBAL ADOLESCENTS OF CENTRAL INDIA: A CROSS SECTIONAL STUDY

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ABSTRACT

BACKGROUND

Tobacco is the most common substance used across the world. DALY's lost due to tobacco consumption is 4.1. Substance use like tobacco and alcohol among adolescents can lead to a variety of detrimental consequences. Recent studies by WHO have found that tobacco use is increasing among school children in India and a sizeable proportion of them experiment with drugs quite early in life.

OBJECTIVES

1. To study the prevalence of tobacco consumption among tribal adolescents. 2. To study the different modes of tobacco consumption. 3. To study the pattern of socioeconomic distribution of tobacco consumption among adolescents.

METHODOLOGY

A cross-sectional study carried out among 510 adolescents in the age group of 10-19 years of randomly selected villages of Narayanganj Block of Mandla Dist. of M.P., from May 2015 to September 2015 using a pre-designed pre-tested questionnaire.

RESULT

Overall prevalence of tobacco consumption in any form was found to be 27.25% in our study area; 33.33% male and 20.9% female adolescents were consuming tobacco products in any form and this difference was found to be statistically significant ($\chi^2=9.3439$, $p=0.0022$, $OR=1.89$); 98.56% adolescents consumed smokeless form of tobacco, while only 1.43% had the habit of smoking tobacco in the form of beedi/cigarettes among the tobacco users. Prevalence of tobacco use was significantly very high in late adolescents (38.95%) as compared to the early adolescent period (16.09%) ($\chi^2=32.45$; $p=0.00$, $OR 3.32$). Prevalence of consumption of tobacco in any form among adolescents who were earning was found to be 38.21%, while among the subjects who were either not earning, unemployed or students was 23.77%, which was statistically highly significant. ($\chi^2=9.100$, $df=1$, $p=0.0026$). The overall average age of initiation of tobacco use in any form was 12.51 years (SD 3.03) with 12.58 years in males (SD 3.03) and 12.38 years in females (SD 3.04). This was not found significantly associated ($t=0.744$, $p=0.457$). The commonest form of smokeless tobacco used by tribal adolescents was tobacco (Khaini), i.e. 60.29% followed by betel quid (21.28%), Gudaku and snuff (16.31%) and smoking (1.42%) among the tobacco users.

CONCLUSION

The prevalence of tobacco use among tribal adolescents is very high (27.25%) as compared to national prevalence of 14.6% according to the global youth tobacco survey India 2009.^[1] There is a need of early intervention for tobacco cessation as the average age of initiation is 12-13 years.

KEYWORDS

Prevalence, Tobacco Use, Tribal Adolescents, Initiation Age for Tobacco.

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INTRODUCTION

The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing around 6 million people a year. More than 5 million of those deaths are the result of direct tobacco use, while more than 6,00,000 are the result of non-smokers being exposed to second-hand smoke.^[2]

Tobacco will cause about 150 million deaths in the first quarter of the century and 300 million in the second quarter.^[3] Nearly 6 million deaths due to tobacco use occur every year, which may increase to 8 million deaths/year by 2030. Of these 70% deaths will occur in the developing countries, mainly China and India.^[3,4] As per report of the Tobacco Control in India (2004), more than 8-9 lakh people die due to tobacco consumption every year in India and the proportion of all deaths that can be attributed to tobacco use is expected to rise from 1.4% in 1990 to 13.3% in 2020, which will result in enormous economic, emotional and societal costs in a population of more than a billion people.^[5] The WHO Global Report on "Tobacco Attributable Mortality" 2012 says, 7% of all deaths (For ages 30 and over) in India are attributable to tobacco.^[6]

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Increased use of tobacco at the population level can often first be recognised by increased use among young people, since most people begin to use tobacco while they are teenagers, become addicted and thereby become adult users, carrying the wave of increased use into the population over time.^[7,8] The World Bank has reported that nearly 82,000–99,000 children and adolescents all over the world begin smoking everyday. About half of them would continue to smoke to adulthood and half of the adult smokers are expected to die prematurely due to smoking related diseases.^[9]

NFHS 3 has also reported a relatively higher prevalence of tobacco use in rural than in urban area.^[10], but in tribal area the prevalence of tobacco use is still very high compared to rural and urban counterpart.^[11,12] According to a study done by Narayan DD et al^[13], the prevalence of tobacco among the adolescents of tribal area of Maharashtra was found to be 45.42%.

There is a paucity of data on pattern and associated factors of alcohol and tobacco use, which may be different in different geographical locations. Therefore, this study was aimed to find out the prevalence and pattern of tobacco use among tribal adolescents of Narayanganj Block of Mandla District, Madhya Pradesh. The present study was carried out with the objectives to estimate the prevalence of tobacco consumption and its different modes among tribal adolescents. This study will fill the gaps in the knowledge about the prevalence of tobacco consumption among tribal adolescents of Central India.

METHODOLOGY

The present study is a cross-sectional observational study carried out in 10 schools of Narayanganj Block of Mandla District in Madhya Pradesh among 510 tribal adolescents belonging to the age group of 10 to 19 years.

Sample size was calculated using formula for determination of sample size for estimating proportions, where:

Sample size (N)=Z²PQ/d² with a prevalence of 45.42%,^[13] and 95% Confidence Interval, Margin of error of 5% of prevalence, we got a sample size of 462. Adding 10% non-respondents we got a minimum sample size of 510.

Sampling Technique

Multistage random sampling was used. In the first stage, all the secondary and higher secondary schools in Narayanganj block of Mandla District were enlisted; 10 schools out of them were selected randomly. In the next stage, all the tribal adolescents of the respective schools were enlisted and 51 tribal adolescents from each school were randomly selected and interviewed. Before starting the study, permission of principal of the respective schools was taken. After explaining the purpose of the study, informed oral consent was taken from all the adolescents aged 18 years and above and from parents in case of minors. The data was collected by using a pre-designed proforma, which was modified after a pilot study on 50 study subjects. The socioeconomic status of the study subjects was determined as per the modified B.G. Prasad’s classification (2014). The statistical analysis was carried out by using Epi Info and appropriate statistical analysis method. Due permission from the Institutional Ethical Committee was taken before conducting the study.

RESULTS

The present study includes 510 tribal adolescents, out of which 261 (51.18%) were males, while 249 (48.82%) were females; 51.18% of the total adolescents belonged to the early adolescents age group, while the 48.82% belonged to the late adolescent (15-19 years’) age group; 77.25% adolescents belonged to nuclear families and 22.75% to joint families; 79.61% of the adolescents were from the Class V socioeconomic status and 16.08% were from Class IV socioeconomic status; 96.86% of the total adolescents were unmarried (Table 1).

| Socio-Demographic Characters | Frequency (n=510) | % |
|--|-------------------|-------|
| Education | | |
| Middle | 183 | 35.88 |
| Secondary | 193 | 37.84 |
| Higher secondary | 134 | 26.28 |
| Religion | | |
| Hindu | 504 | 98.82 |
| Muslim | 6 | 1.18 |
| Family Type | | |
| Nuclear | 394 | 77.25 |
| Joint | 116 | 22.75 |
| Socio-Economic Class as per Prasad Classification | | |
| I | 4 | 0.78 |
| II | 9 | 1.765 |
| III | 9 | 1.765 |
| IV | 82 | 16.08 |
| V | 406 | 79.61 |
| Marital Status | | |
| Unmarried | 494 | 96.86 |
| Married | 16 | 3.14 |

Table 1: Distribution of Adolescents as per Socio-Demographic Characteristics

The overall prevalence of tobacco consumption in any form was found 27.25% in our study area; 33.33% of the males and 20.9% of the female adolescents were found to consume tobacco products and this difference was found to be statistically significant ($\chi^2=9.3439$, $p=0.0022$, $OR=1.89$); 98.56% adolescents consumed smokeless form of tobacco and only 1.43% of the adolescents consumed tobacco in both the smoking and non-smoking forms among the tobacco users. All the females adolescents consumed smokeless form of tobacco and no one had the habit of smoking [Table 2]. Association of any form of tobacco consumption with gender was found to be very significant statistically.

| Tobacco in Different Forms | Males (N=261) | | Females (N=249) | | Total (N=510) | |
|--|---------------|--------------|-----------------|--------------|---------------|------------|
| | No. | % | No. | % | No. | % |
| Smokeless Form of Tobacco | 85 | 97.70 | 52 | 100 | 137 | 98.56 |
| Smoke Form of Tobacco | 0 | 0 | 0 | 0 | 0 | 0 |
| Both Smokeless and Smoking Form of Tobacco | 2 | 2.29 | 0 | 0 | 2 | 1.43 |
| Total | 87 | 62.58 | 52 | 37.41 | 139 | 100 |

Table 2: Pattern of Tobacco Consumption among Adolescents

($\chi^2=9.34$, $df=1$, p value=0.002)

It was observed that the minimum age of initiation of the tobacco chewing was 3 years of age. Out of the 139 adolescents consuming tobacco, majority 77 (55.40%) initiated consuming tobacco at 11-15 years of age, while 36 (25.90%) initiated at 5-10 years of age and 4 (2.88%) initiated stage less than 5 years.

Prevalence of tobacco use was significantly high in late adolescents (38.95%) as compared to early adolescent period (16.09%) ($\chi^2=32.45$; $P=0.00$, OR 3.32). Prevalence of addiction of tobacco in any form was found in earning adolescents (38.21%) and among non-earning unemployed students (23.77%), which is statistically highly significant. ($\chi^2=9.100$, $df=1$, $p=0.0026$). The average age of starting tobacco use in any form was 12.51 years (SD 3.03). Average age of starting the smokeless tobacco or smoking in males (12.58 years; SD 3.03) and females (12.38 years; SD 3.04) was found to be not significantly different ($t=0.7439$, $p=0.4573$).

Commonest smokeless tobacco used by tribal adolescents were tobacco (Khaini), i.e. 60.29% followed by betel quid (21.28%), Gudaku and snuff (16.31%) and smoking (1.42%) [Table 3].

| Type of Tobacco | Number | % |
|------------------------|------------|------------|
| Combination | 1 | 0.71 |
| Others (Snuff, Gudaku) | 23 | 16.31 |
| Betel Quid | 30 | 21.28 |
| Smoke | 2 | 1.42 |
| Tobacco | 85 | 60.28 |
| Total | 139 | 100 |

Table 3: Distribution of Adolescents as per Type of Tobacco Consumption

It was observed that maximum adolescents who were consuming tobacco in any form belonged to socioeconomic class V (68.34%) followed by class IV (28.77%), class III and class I, i.e. 1.43% each. The socioeconomic status of adolescents was statistically associated with tobacco consumption ($\chi^2=26.72$, $df=4$, p value=0.00002) [Table 4].

| Socio-Economic Status | Tobacco Consumption Present | | Tobacco Consumption Absent | | Total | |
|-----------------------|-----------------------------|--------------|----------------------------|--------------|------------|------------|
| | No. | % | No. | % | No. | % |
| I | 2 | 1.43 | 2 | 0.53 | 4 | 0.78 |
| II | 0 | 0 | 9 | 2.42 | 9 | 1.76 |
| III | 2 | 1.43 | 7 | 1.88 | 9 | 1.76 |
| IV | 40 | 28.77 | 42 | 11.32 | 82 | 16.07 |
| V | 95 | 68.34 | 311 | 83.82 | 406 | 79.60 |
| Total | 139 | 27.25 | 371 | 72.74 | 510 | 100 |

Table 4: Distribution of Adolescents as per Modified Prasad Classification and Consumption of Tobacco

DISCUSSION

Our study shows high prevalence of tobacco use among the tribal adolescents of Narayanganj block of Mandla Districts. The prevalence of any form of tobacco consumption in tribal adolescents was 27.25%. Global Youth Tobacco Survey in India, 2009.^[1] reported relatively lower prevalence of 14.6% for any form of tobacco use among 13 to 15 years students as compared to our study. NFHS-4.^[14] reports the prevalence of any forms of tobacco use as 59.5% in men and 10.4% in

women in the age group of 13 to 49 years in Madhya Pradesh, while in our study area it was found to be 33.33% among male and 20.9% among female adolescents. Another study which was conducted in Wardha district of Maharashtra by Quazi S et al reported 52.07% of prevalence, which is double that of our finding.^[15]

As per WHO, in 2012, 21% of the global population aged 15 and above smoked tobacco. Men smoked five times the rate of women; the average rates were 36% and 7% respectively. Smoking among men was highest in the WHO Western Pacific Region with 48% of men smoking some form of tobacco. Smoking among women was highest in the WHO European Region at 19%. In our study, 98.56% adolescents consumed smokeless form of tobacco and only 1.43% smoked tobacco. All the female adolescents consumed smokeless form of tobacco and no one had the habit of smoking. Among those who were consuming tobacco in any form, 62.58% were males and 37.41% females which was statistically very significant. This was very high in comparison with NFHS-4 findings.^[13] This indicates tobacco use in any form is very high among tribal boys and girls of Narayanganj Block of Mandla District of Madhya Pradesh. Another study by Jaykrishnan R et al of Kerala also reports the very high prevalence of 63% for smoking among males and 1.4% among females in the age group of 13 to 80 years.^[11] Study by Quazi S et al found almost 50% adolescents were using smokeless tobacco. Prevalence of smokeless tobacco use was significantly more in adolescent boys (60%) compared to girls (31.17%) in their study.^[15] Another study from tribal area of Kerala also reported a very high prevalence of smokeless tobacco use in tribal people, i.e. 65.0% and 24.7% in male and females respectively, in the age group of 13 to 80 years.^[16]

The higher prevalence of smoking in these studies compared to our study where only 2 males were found to smoke may be due to wider range of age group and different socio-cultural pattern.

Dhekale Dilip Narayan et al in their study in tribal areas of Maharashtra reported that 65.3% males and 26.46% female adolescents were consuming tobacco products. They also found that majority of the male adolescents (85.63%) consumed a smokeless form of tobacco like dry tobacco, gutkha and kharra and 14.38% smoked beedi/cigarettes.^[13] These findings are more or less similar to our findings.

In our study, it was observed that the minimum age of initiation of the tobacco chewing was 3 years of age. Out of the 139 adolescents, majority 77 (55.40%) initiated tobacco consumption at 11-15 years of age, while 36 (25.90%) initiated at 5-10 years of age, while 4 (2.88%) initiated at an age less than 5 years. Dhekale Dilip Narayan et al^[13] found that the minimum initiation of the tobacco chewing in male adolescents of tribal community was also 3 years of age. They also reported that 47.50% male adolescents and it was initiated at 11-15 years of age, 40.63% at 5-10 years of age and 1.87% at less than 5 years of age.^[13], which is lower than our research finding.

The average age of initiating tobacco consumption in any form was 12.51 years (SD 3.03). In our study, the average age of starting the smokeless tobacco or smoking in males (12.58 years; SD 3.03) and females (12.38 years; SD 3.04) was found not to be significantly different ($t=0.7439$, $P=0.4573$), while other study done by Quazi S et al found the average age of

initiation of smokeless tobacco use and smoking was 13.7 years and 14.2 years respectively, which is higher than our findings.^[15] Quazi S et al reported that the adolescent boys start tobacco use at a relatively younger age compared to girls, which was opposite to our study where female adolescents started consuming tobacco at an early age compared to the male adolescents. Chaturvedi H Ketal reported in their study from rural India, the mean age for starting tobacco use was 17.2 years.^[17] Thus, it reflects that adolescents from tribal area start tobacco use at relatively younger age as compared to rural area. Nationwide NFHS 3,^[10] as well as other studies,^{[15],[12]} have clearly documented that the prevalence of tobacco use increases with age. Our study also report prevalence of tobacco use was significantly very high among late adolescents (38.95%) compared to early adolescents (16.09%) ($\chi^2=32.45$; p value=0.0000, OR 3.32), Quazi S et al also reported high prevalence of tobacco use in late adolescent period (65.44%) compared to that in early adolescents (40.57%).^[15] which was quite high as compared to our results. Similarly, adolescents who were earning money were consuming more tobacco (38.21%) as compared to those who were not earning or studying (23.77%). Other studies also reported similar findings. Therefore, increased prevalence in this subgroup could be attributed to having money to purchase tobacco products and more exposure to peers using tobacco. Other reason could be that in tribal area tobacco use is a part of the custom or traditions.^[15,12] and late adolescents are considered to be grownups to use tobacco. A study conducted in rural India has also reported that age and occupation had significant association with tobacco use.^[16]

In our study, it was observed that the tobacco consumption in any form was highest among higher secondary school adolescents (40.29%) followed by high school (30.05%) and middle school (14.75%), which was also found statistically significant ($\chi^2=26.684$, df=2, p-value is <0.00001). The study done by Quazi S et al observed that around 55% adolescents were attending school at the time of survey. Almost 67% adolescents who were out of school at the time of survey were using tobacco in some form. On logistic regression analysis, schooling was found to have significant protective effect on tobacco use, particularly with smokeless form.^[15]

Studies from tribal.^[14] and rural.^[18,19] parts of India also report that tobacco use is inversely related to education. NFHS-3.^[9] also reports that prevalence of tobacco use was more in non-educated men (78%) and women (18%). Late adolescent period and earning adolescents have a significant independent effect on smokeless tobacco use, but for smoking only earning shows the significant independent association on logistic regression analysis.

In the present study the prevalence of consumption of tobacco in any form among earning adolescents was 38.21%, while among non-earning, unemployed and students it was 23.77% which is statistically highly significant. ($\chi^2=9.100$, df=1, P value=0.0026). Other studies also have documented similar findings, which reflect significant independent effect on tobacco use.

In our study it was found that commonest smokeless tobacco used by tribal adolescents were tobacco, i.e. 60.29% followed by betel quid (21.28%), Gudaku and snuff (16.31%) and smoking (1.42%).

CONCLUSION

Tobacco consumption was found to be most prevalent among the late adolescents, males and among the earning adolescents. The prevalence of tobacco consumption among tribal adolescents in our study area was high (27.25%) as compared to the prevalence of Pan India as reported by GYTS (14.6%).

Strengths

This study fills the gaps in the knowledge about the prevalence of tobacco consumption among tribal adolescents of Central India, where there is paucity of data, especially among tribals.

Limitations

The present study was conducted among school going adolescents. The dropouts could not be included in the study.

RECOMMENDATIONS

Tobacco consumption was found to be most prevalent among the late adolescents. Since it is a risk factor for NCDs like Hypertension, Diabetes Mellitus, COPD and Oral Cancer, hence it is the need of the hour to implement a Tobacco prevention programme in the early adolescents.

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