

## RESEARCH ARTICLE

# Prevalence of Tobacco Use Among Adolescents in North Kerala, India

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### Abstract

The present study was conducted to assess the prevalence and type of tobacco use among adolescents and also the reasons for the initiation of tobacco use amongst them. It was conducted in ten randomly selected schools in the Kannur district of Kerala state, India. A total of 3,000 school children participated. The study observed an overall prevalence of 5.5%. The prevalence observed among boys was 12% and none of the girls were tobacco users. Association between father's and friend's tobacco habits were observed.

**Keywords:** Adolescents - prevalence - smoking - India

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### Introduction

Many studies have reported that children smoke their first cigarette while attending primary school, though generally smoking is most likely to begin during adolescence. The smoking trend among adolescents in developed country is more towards females. But in most developing countries, higher prevalence is seen among male adolescents.

A study in United Arab Emirates reported that the smoking prevalence in adolescents was 14.3% among boys and 2.9% among girls (Abi et al., 2003). A study among French adolescents showed the prevalence of smoking habit among males and females almost same, i.e. 15.4% and 15.8% respectively (Botelho et al., 2003). In Canada, a school based survey has reported 27.8% of the school students as regular smokers and observed an increase in the smoking habit over the years, from 1991 to 2001 (Murnaghan et al., 2009). Among Dutch students, 36.5% lifetime smoking prevalence among 12-14 years school students was reported by Otte et al. (2009). Lovato et al. (2010) reported the mean prevalence of smoking among school children in all age groups as 22.0±3.37% and the mean prevalence of smoking among 15-19 years as 20.3±8.30%. In India, a study conducted in Bangalore reported a prevalence of 6.8% smoking among 13-15 years aged students (Shashidhar et al., 2011). A 3% overall prevalence was reported in Punjab during a survey conducted by Siziya et al and also it was noted that smoking was more prevalent among males compared to females (Siziya et al., 2008). A cross sectional study in Noida city reported an overall ever smoking prevalence of 8.8% and also observed no significant difference between the genders regarding the use of other tobacco

items such as hokkah, pipe, cigars and ganja, which was more prevalent among males (Narain et al., 2011). An interventional study conducted in Baltimore and Maryland school children reported that 46% control were regular smokers and the treated school children for smoking was 49% (Joffe et al., 2009).

The aims of the present study are (a) to assess prevalence of tobacco use among adolescents, (b) to ascertain the reasons for initiating tobacco use (c) to study the type of tobacco use among them.

### Materials and Methods

A cross-sectional study was conducted among school children, from ten randomly selected schools in the Kannur district of Kerala state in India. The primary education in Kerala comprises lower primary (Grade I-IV) and Upper Primary (Grade V-VII), approximately 6,726 lower primary and 2,968 upper primary schools are present across Kerala. Among the primary level schools, 36.0% are completely manned by Government, 61.0% are private aided i.e., partially having Government support and 3% are private unaided, i.e., having no Government support. A total of 2,580 secondary schools (Grade VIII-X) are functioning in Kerala which comprises 975 (38%) Government schools, 1,400 (54.1%) private aided schools and 213 (8.2%) private unaided schools. The higher secondary schools (Grade XI-XII) comprise 931 schools, of which 417 are completely under Government sector, 506 private aided and 8 private unaided (Government of Kerala, 2009).

Children between the age groups 14 and 18 years, belonging to both genders were approached to participate in the study from randomly selected schools. The study was

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conducted according to World Helsinki Declaration and verbal consent was obtained from the participants before administering the questionnaire. A self-administered, pre-tested, structured, close-ended questionnaire was used for data collection. The questionnaire comprised information on socio-demographic characteristics such as age, gender, grade etc. Tobacco consumption habit was assessed in detail such as type of tobacco used, mode of consumption, duration of tobacco use, reasons for use etc. Content and face validity of the questionnaire was done by two experts. A pilot run was conducted before finalizing the questionnaire. A detailed description about the study was given to the participants. Students who were present at the time of administration of the questionnaire and willing to participate in the study were included. A second attempt was not made to cover up the absentees. The study was conducted over a period of six months. Anonymity of the participants was maintained by avoiding any information revealing the identity of the participants in the questionnaire.

Collected data was fed into Excel spread sheet and transferred to SPSS 17 for data management and analysis. Students who were currently using any type of tobacco were included in the estimation of prevalence of tobacco users. Type of tobacco use was compared with socio-demographic characteristics. Tests were considered significant when the two-sided p value was less than 0.05.

## Results

The socio-demographic characteristics of the participants are given in Table 1. A total of 3,000 children from ten randomly selected schools participated in this study. Of the total, 1710 were girls, also they were more in each age compared to boys, except in the age of 18 years where boys outnumbered the girls. Among the boys, maximum (36.4%) participants were 15 years of age, followed by 16 and 17 years respectively. A somewhat similar pattern was also observed among the girls.

**Table 1. Age and Gender Distribution of the Participants**

Age in years	Gender				Total
	Boys		Girls		
	No.	%	No.	%	
14	50	3.9	110	6.4	160
15	470	36.4	640	37.4	1110
16	370	28.7	580	33.9	950
17	310	24.0	360	21.1	670
18	90	7.0	20	1.2	110
Total	1290	100.0	1710	100.0	3000

**Table 2. Prevalence of Tobacco Habit vs Age**

Age (Years)	Tobacco habit		Total
	Yes	%	
14	--	--	160
15	73	6.58	1110
16	57	6.00	950
17	27	4.03	670
18	9	8.18	110
Total	166	5.53	3000

Out of 3000 participants, 166 were using tobacco products. The overall prevalence observed was 5.5%. The prevalence rate observed was highest among participants in the age 18 years, followed by 15 and 16 years. In the present study, the least prevalence observed was in the age 17 years. None of the students in the age 14 years were using tobacco products. The overall prevalence among boys was 12.9%. The highest prevalence observed among boys was in the age 15 and 16 years followed by 18 years. The prevalence observed at the age of 17 years was 9.5%. The details are given in Table 2 and 3.

It was observed that the association between Father's tobacco habit and the child's was statistically significant (p<0.01). This shows the influence of parent's habit in developing tobacco habit in their wards. Among the students with tobacco habit around 50% of their father's were tobacco users.

Of the total students with tobacco habit, 33.1% reported that their friends were also tobacco users. So this study shows that friend's tobacco habit also has a significant association (p<0.001) with the initiation of tobacco habit among the habitués.

Majority (40%) of the students started smoking because of compulsion from friends or to follow others whom they considered as role models (38%) followed by 16.8% for fun. Among the habitués, 90% revealed that their family members were ignorant of their tobacco habit.

Among habitués, 61% had used cigarette at least

**Table 3. Prevalence of Tobacco Habit among Boys**

Age (Years)	Tobacco habit		Total
	Yes	%	
14	--	--	50
15	73	18.4	397
16	57	18.2	313
17	27	9.5	283
18	9	11.1	81
Total	166	12.9	1290

**Table 4. Habit of Father vs Habit of Children**

Habit- Father	Habit- child		Total
	Yes	No	
Yes	82	1118	1200
No	84	1716	1800
Total	166	2834	3000

**Table 5. Habit of Friends vs Habitués**

Habit-Friends	Habitués		Total
	Yes	No	
Yes	55	75	130
No	111	2759	2870
Total	166	2834	3000

**Table 6. Reasons for Starting the Habit**

Reasons	Frequency	
	Frequency	%
For Fun	28	16.8
Influence of friends	66	39.8
Due to other's (parents, teachers, relatives etc.)	63	38.0
For inquisitiveness	9	5.4
Total	166	100.0

once. Around 38% of the habituées are current users of panmasala. The use of panmasala is increasing among the young generation.

Among the bidi smoking habituées, the minimum age of initiation of tobacco habit was 8 years and the mean age was  $12.6 \pm 1.9$  years. Among cigarette smoking habituées, the minimum age at start was 11 years and the mean age observed was  $13.4 \pm 1.6$  years. In the case of panmasala, the minimum age observed was 11 years and the mean age observed was  $13.9 \pm 1.5$  years.

## Discussion

Youth tobacco surveillance study by Patna and Gupta reported that 68% of boys and 48% of girls had their first cigarette/tobacco before the age of 10 years. Current use of tobacco product was 57% among boys and 41% among girls with high rates of oral tobacco use, which comes to around 37%. Cigarette smokers and Bidi smokers were reported as 48% and 61% respectively (Patna et al., 2001). In the present study the prevalence is much lower when compared to the study conducted by Patna and Gupta. More over the habit of tobacco smoking started with the bidi smoking and then moved on to cigarette and other tobacco products. Study by Horn et al. showed that among youths 31.8% were current tobacco smokers and 16.1% were current smokeless tobacco users. Among the students who were currently smokeless tobacco users, 63.2% were also current smokers. The study also revealed that the factors significant to the development of smoking habit were smoking among friends, smoking among siblings, favorable attitude towards tobacco use and family problems. The significant determinants for smokeless tobacco use included smokeless tobacco use among siblings, use among close friends and favorable attitude toward tobacco use (Kimberly et al., 2000). Study conducted in India also reported that in 62.3% of users, the source of initiation was friends and among 4.7%, parents (Suryawanshi et al., 2001). The present study also supports these factors. Studies have revealed several primary determinants or risk factors for tobacco use. Some of these include favorable attitudes toward tobacco use, inadequate knowledge about tobacco and health, family tobacco use, tobacco use among friends, family problems and in the school (Chassin et al., 1985).

The same characteristics of our study have also been observed in school students of Canada. Murnaghan et al has reported that with one or more close friends using tobacco, female's students are 40 times more likely to become a smoker than male students which was 36.04. Family members smoking at home has 2.58 times strong association on smoking habit on both male and female students. They also observed there is increase in the prevalence of smoking when the students are moved from 10<sup>th</sup> grade to 12<sup>th</sup> grade (Murnaghan et al., 2009). In Dutch students, the mean prevalence of tobacco use was  $43.94 \pm 20.24$ . This study reported a lifetime smoking habit among the adolescents as significantly higher in the females (OR=1.73) compared to males (OR=1.00). A student with best friend smoker was 1.33 times and parental smoker was 1.29 times associated with risk of developing smoking

and also observed a lifetime prevalence of 55.45% among regular smoking compared non smokers (Otte et al., 2009). The prevalence of adolescent smoking estimated was 13.14% among 3041 smokers of 82 schools, in Canada. As per the study, smokers were more likely to be females (55%) who were all under 16 years. Student's tendency towards smoking (OR=1.25) was reported in students who are attending schools where students smoked in the school premises (Lovato et al., 2010). In our study, the parent and children smoke prevalence was noted as 49.3%, friends vs. habituées smoking was 33.1%. When our study results are compared with Canadian and Dutch studies, it is observed that the prevalence of tobacco users was more in Canada. Parental smoking and moving from lower grade class to higher grade class was the main reason for the high tobacco users among Canadian and Dutch children.

In Gujarat the prevalence of smoking and tobacco chewing was reported to be 14.61% and 66.23% respectively. Addiction to smoking and chewing was more prevalent among the age group of 17-19 years (36.36%) and it is shown that addiction increases with age. Associated factors reported in tobacco use were friends (61.69%), parents (11.03%), siblings (7.79%), creating impression (5.195) and hobby (14.30%) (Makwana N R et al., 2007). A cross sectional study conducted in Bangalore among adolescents reported a prevalence of 6.8%, with boys 9 times more prevalent compared to girls. According to the study, the factors which induced smoking and reasons for continuing smoking among students were style 58.8%, relieves tensions 17.6%, pleasurable 11.8% and 8.8% because of their friends. The study is observed students reporting 35.7% parental smoking (Shashidhar et al., 2011). Here, in our study a parental smoking of 49.3%, which is very high compared to that reported in the Bangalore children. A survey in Gujarat has reported the prevalence of 3.3% smoking in males. Boys (2.74 times) and girls (1.34 times) who have more friends with the habit were at risk of developing smoking habit. 1.35 times risk of smoking habit was reported in adolescents whose parents have smoking habit (Siziya et al., 2008). Our study observed that 33.1% of school children are induced to smoke because of more friends having smoking habit.

In Noida, a study was done by Narain et al. (2011) on the age at initiation and the prevalence of tobacco use among the school children. It was also reported that, 11.2% of them were tobacco users and among them 4.1% were current tobacco users. Ever tobacco users reported by the study was smoking 8.8% and chewing 4.6% and also there is not much difference among boys and girls in smoking habit and that was statistically significant among the genders. Chewing habit was exclusively reported more in boys 5.6%. Use of bidi was more common in girls compared to boys while combination of bidi and cigarette use was more among boys. Other tobacco items such as hookah, cigars, pipe, ganja were more prevalent in boys (6%). Age at initiation of tobacco use reported among the adolescents was  $12.6 \pm 2.0$  years and it was not significantly different between the genders (Narain et al., 2011). The prevalence of tobacco habit in this study was compared with other studies conducted India, the overall prevalence observed in this study was 5.53% among all age groups

in the adolescents, which is slightly closer to the already reported prevalence from Gujarat, Bangalore, Punjab except Noida where they have reported the prevalence of 11.2% tobacco users. The prevalence of other tobacco items observed in this study was 5.4% which is slightly lower in the Noida study (6%).

In conclusion, the study concluded that among adolescents, the tobacco habit usually starts with bidi smoking. The over all prevalence observed was 5.53% and the habit was seen only among boys. The peer group influence was the reason for initiating this habit in majority of the users. The present study suggests the need for school-based tobacco prevention programs and it is better to prevent the initiation of the habit than trying to stop the habit, highlighting the role of primordial prevention.

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