Prevalence and Correlates of Tobacco use Among 10-12 Year Old School Students in Patna District, Bihar, India

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In order to assess the prevalence and correlates of tobacco use among school students (10-12 years), information on tobacco use and socio-demographic variables was collected from 1626 students (male 1027) using a questionnaire. Bivariate and multiple regression analysis were done. Ever users in the sample were 16.6% (95% CI 14.8, 18.4) and current users were 5.1% (95% CI 4.1, 61). Current use was significantly associated with male sex (OR 2.3, CI 1.09-5.14), students not participating in sports (OR 2, CI 1.04-4.04), tobacco use among friends (OR 4, CI 2.02-8.25), unaware of harmful effects of tobacco (OR 2.6, CI 1.1-6.14) and students who were used by parents and teachers to buy tobacco for them (OR 2.1, CI 1.4-4.19). Tobacco control programs focusing on male students, those who do not participate in sports, those whose friends use tobacco and those who are used by parents and teachers to buy tobacco are warranted.

Key words : *Prevalence, Smokeless tobacco, Tobacco use.*

TOBACCO use in adolescents has been called a "pediatric epidemic" because of increasing level of its use and dire public health implications(1).

In Bihar, Global Youth Tobacco Survey reported 58.9% current use of any tobacco product (male 61.4%, female 51.2%); 13.7% current smoking and 45.8% current smokeless tobacco use among students aged 13-15 years. In the same report, over 60% of ever users reported initiation at the age of 10 years or earlier(2). This inspired us to probe into the study of a much younger age group (10-12 years) of students to determine, prevalence and correlates of tobacco use among them. This study would help finding the minimal age of initiation at which intervention might prevent children from starting tobacco use.

Subjects and Methods

A cross sectional study was done among middle school students of 10 to 12 years old in Patna district during January-March 2004. Sample size was calculated on the basis of tobacco use prevalence of 58.9% among 13-15 years students in the GYTS Bihar study. Thus sample size came to 1031 ($n = 1.96^2$ - *0.589 * 0.411/0.03). As in the present study, clusters were taken randomly and not the individual student, an additional 50% was added to compensate for design effect. Hence, approximately (n = 1031 + 516 = 1547) 1600 students were targeted for this study. Moreover, this assumed prevalence for calculating the sample size was for slightly older age group children. Therefore expected prevalence in the current study was likely to be smaller.

Details of schools were collected from Directorate of Education, Government of Bihar and District Education Officer (DEO), Patna district. The total number of schools was 2348 including exclusive boys' schools and girls' schools. For uniformity we selected only those schools, which had all the three classes of 5, 6 and 7 (n = 539). Most of these schools were government (95%) and a few (5%) schools were private including both aided and unaided. Private schools were mostly located in urban area.

Two stage cluster sampling design was used to select a representative sample of all students studying in classes 5, 6 and 7. The average number of students in government school classes was 15- 20 whereas in private schools, there were 40 or above. Thus at the first stage, from the list of three sample frames of schools *i.e.*, rural government (364), urban government (155), and private (20), we selected 15, 10 and 5 schools respectively by simple random sampling procedure. In the second stage, class-divisions were selected by random sampling. All students in the selected class divisions were eligible to participate. Non-response was due to absence in the class. Among 30 selected schools, 28 participated in the study (response rate 93.3%) as the school personnel of two schools were busy in election work. Among 2137 sampled students, 1626 responded (response rate 76.1%). This study represents 63,593 students (in 539 schools) in the age group 10-12 years.

Data were collected by pre-tested anonymous self-administered questionnaires in the classroom by one of the investigators (GS). Since these were young children the investigator clarified all doubts during data collection. Tobacco users were classified as: Ever Tobacco Users were those who had used any tobacco products in his/her lifetime even once. Current Tobacco Users were those who used any tobacco products any time in the last 30 days. Never Tobacco users were those who have never used any form of tobacco.

Data collected were entered in Excel spreadsheet and then analyzed with SPSS for Windows version 11.0. Bivariate analysis was done using Chi-square test. For multivariate analysis, multiple logistic regression analyses were done following stepwise method. For all the statistical tests, a 'P' value of <= 0.05 was considered statistically significant.

A written permission from relevant school authorities was taken before initiating the study. A verbal consent of the Principals of the schools selected for the study was taken, prior to starting the study. Informed oral consent was taken from all the participants. All participants were reassured about their anonymity during the administration of the questionnaire.

Results

Socio-demographic characteristics of the students are given in *Table I*. Tobacco use in any form in the study population by age group is given in *Table II*. Among 269 ever users 29.2% have initiated from class 3 when they were approximately 8 years old; among them 49.4% used pan-zarda as the first product. Distribution of ever users and current users by type of tobacco is given in *Table III*.

Among ever users, almost half had received their first tobacco from friends. Among current tobacco users, nearly half spent part or all their pocket money on tobacco. Among those who responded to this question (n = 980) 72.1% fathers and 13.9% friends used some form of tobacco; almost 25% of students were aware of teacher's use of tobacco in school. One-in four (24.7%) students was asked to bring tobacco for parents, relatives and teachers from the shop.

TABLE I–*Socio-demographic Characteristics of the Students.*

Variable	Number of Students	Percent
Age (in completed years) n = 1624		
Less than 10 yrs	111	6.8
10 yrs	307	18.9
11 yrs	474	29.2
12 yrs	489	30.1
More than 12 yrs	243	15.0
Sex (n = 1626)		
Male	1027	63.2
Female	599	36.8
Religion (n = 1626)		
Hindu	1396	85.9
Muslim	187	11.5
Others	43	2.6
Place of residence (n = 1623)		
Village	640	39.4
Town	983	60.6
Place of living (n = 1626)		
Parent's home	1520	93.5
Other places	106	6.5

Over three fourth of students saw actor's use of tobacco and 75% of students saw advertisement of tobacco in TV and print media sometimes or many times in the 30 days preceding the study. More than half of students saw anti-tobacco message, in the 30 days preceding the study, mostly in TV. The majority (80.3%) of students was aware about the harmful effect of tobacco on health.

Ever use of tobacco was associated with sex of students ($p = 0.004$), location of residence ($p < 0.001$), occupation of father/mother ($p < 0.001$), sport activity ($p = 0.007$), tobacco use in the family ($p = 0.013$), by friends ($p < 0.001$), exposure to tobacco advertisement in media ($p = 0.008$), exposure to antitobacco media message ($p = 0.002$), and knowledge of harmful effects of tobacco ($p = 0.026$).

Current use of tobacco exhibited association with sex of students ($p = 0.008$), place of living ($p = 0.032$), sport activity in school ($p = 0.038$), amount of pocket money per day ($p = 0.006$), tobacco use by friends ($p < 0.001$) and teachers ($p = 0.008$), request to bring tobacco for others ($p < 0.001$), exposure to actors' use of tobacco in cinema and TV ($p = 0.043$), media exposure to antitobacco message ($p = 0.006$) and knowledge of harmful effect of tobacco ($p = 0.021$).

Multiple logistic regression analysis included independent variables, which showed statistically significant association with dependent variables. Ever tobacco use

TABLE II–*Tobacco Use in Any Form in the Study Population.*

Age group	Ever use		Current use	
	n	%	n	%
< 10 years	111	21.6	110	5.5
10 years	307	15.3	305	3.6
11 years	473	15.0	471	4.0
12 years	488	17.4	484	6.2
> 12 years	243	17.3	241	6.6
Total	1622	16.6	1611	5.1

TABLE III--*Distribution of Current Users and Ever Users by Type of Tobacco Use.*

Type of tobacco	Current users (n = 80)		Ever users (n = 250)	
	Number	Percent	Number	Percent
Smokeless tobacco	69	86.2	224	89.6
Smoking tobacco	7	8.8	8	3.2
Tobacco in multiple form	4	5.0	18	7.2
Tobacco use byproducts				
Pan-zarda	24	30.0	125	50.0
Gul	22	27.5	26	10.4
Gutkha	13	16.3	52	20.8
Khaini	10	2.5	21	8.4
Bidi & Cigarette	7	8.8	8	3.2
Multiple form	4	5.0	18	7.2

was significantly associated with male sex (OR 2.0; 95% CI 1.2 - 3.4), urban resident (OR 2.3, CI 1.2-4.4), and tobacco use among friends (OR 5.4, CI 3.3-8.8). Current tobacco use was significantly associated with male sex (OR 2.3, CI 1.1-5.1), students not participating in sports (OR 2, CI 1.0-4.0), tobacco use among friends (OR 4, CI 2.0-8.2), unaware of harmful effects of tobacco (OR 2.6 CI 1.1-6.1) and students who were used by parents and teachers to buy tobacco for them (OR 2.1, CI 1.4-4.2).

Discussion

No Indian data are available from a representative district level sample of tobacco use among students aged 10-12 years in Bihar or other parts of India. However, a school based study of tobacco use by older children (13-15 years) in a representative sample of Bihar state(2) and a community based study in rural area of Sitamarhi district of Bihar(3) showed a higher prevalence of tobacco use compared to our study.

Smokeless tobacco use in the present study was much higher than that of smoking, which is consistent with results of other studies(2). The prevalence of current tobacco use was more among boys (6%) than girls (3.2%). This finding is consistent with studies on adolescent's tobacco use in other parts of India(4,5) and abroad(6).

Nearly one third of ever users in the present study turned out to be current users. This is consistent with WHO estimates and international data that among those adolescents who experimented with tobacco, approximately one third to one half continued as regular users(7, 8).

Even though tobacco use by small children is thought to be not culturally acceptable in Indian society, this study shows over 29% participants reported initiation of tobacco use when they were studying in class 3 corresponding to the age of eight years. Initiation at this young age of 8 years and continuing tobacco use would have very

Key Messages

- Nearly 17% of 1626 middle school students aged 10-12 years ever used some form of tobacco and 5.1% were currently using tobacco.
- Among 82 current users one quarter initiated tobacco use from third standard (around 8 years).
- Students who were used by parents and teachers to buy tobacco were twice as likely to be current users.

serious adverse health effects and half of these children will prematurely die in very early middle life(9).

Among ever users, almost half (49.6%) of the students reported that tobacco was introduced by friends. A skill building program to avoid peer pressure is required at very early age.

Students who participated in sports were less likely to use tobacco compared to those who did not take part in sports. Teacher's use of tobacco was also positively associated with current use of tobacco among students(8,10).

Therefore, any tobacco control program in children, to be successful, should involve friends peer groups, and teachers, and target children not participating in sports.

In Bihar, especially in rural areas the parents, relatives and teachers find it easy to use the children to buy tobacco for them. This brings children much closer to tobacco products and inspires them to use tobacco. One-fourth of students in this study were asked by their parents and teachers to buy tobacco for them. This behavior of adults is a strong predictor of tobacco use among children (OR 2.1,95% CI 1.1-4.2).

Lack of knowledge of the harmful effects of tobacco on health was negatively associated with tobacco use by adolescents. This compares with other data, which indicate that awareness of harmful effects does not effectively prevent tobacco use in children(2,7,8,11). Therefore, the current preventive message needs to be modified to make tobacco control and intervention more effective.

Since the study did not cover the students who were absent on the day of study the result could underestimate the magnitude of tobacco use. Absence from school is among the strongest predictors of tobacco use in adolescent. Since this study was done only in children aged 10-12 years who attended school, this may not be representative of all children in this age group. Since the ages of participant students were very small, they might not have understood the questionnaire completely.

The rate of tobacco use was high, considering the very young age group of our sample. Our findings suggest that tobacco use prevention and control measures are warranted and should be started very early preferably at primary education level. To be maximally effective this comprehensive policy on tobacco control, should involve schools, teachers and parents and make them commit to implement and sustain such a program.

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