

Original Article**Pattern of tobacco use among school going children in Jaipur city, India**

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ABSTRACT

Background: Tobacco use among school children is becoming serious problem in developing countries.

Objectives: To find the prevalence of tobacco consumption among school-children and factors associated with it.

Methodology: 18 schools were selected in Jaipur using simple random sampling. A sample of 3250 students in age group of 14-18 years (grade 9-12) studying in the 18 Government schools of the Jaipur city were studied during August- October 2013 using pretested, closed-ended self-administered questionnaire with prior permission from school authority and verbal consent. All the students of the age group 14-18 years who participated voluntarily were included in the study. The exclusion rate was 9.57%.

Results: In the present study, total of 3250 children were recruited. The age range was 14-18 yrs. The mean age of the children was 15.5 year (SD± 1.08). Of the 18 schools that were recruited for the study 8(44.4%) were urban and 10(55.6%) were rural in location. The proportion of children who were current users of tobacco was 4.1% (Boys: 6.29%, Girls: 1.42%). Among current users, nearly 77.78% of children consumed smokeless form of tobacco (Boys: 54.81% Girls: 22.96%). A small proportion of children, a little over 7% used/consumed both forms of tobacco. Study showed that 41.48% of tobacco users reported tobacco initiation below the age of 12 years.

Conclusion: Consumption of tobacco among adolescents is an emerging health problem in Jaipur city. The findings of this study will help to design, implement and evaluate tobacco control and prevention programs in standard format.

Key words: Tobacco chewing, Prevalence, School children, Smoking, Tobacco use.

INTRODUCTION

Tobacco is the single largest cause of premature death. Since the first Surgeon General's Report in 1964 on the health risks of tobacco use, overwhelming evidence regarding increased tobacco-attributable morbidity and mortality has been reported [1]. Worldwide, tobacco kills 5 million people every year. Developing countries are projected to contribute 70% of tobacco-related deaths by 2020 [2].

Consumption of tobacco is a complex and multidimensional problem faced by the country. It is the main culprit behind oral cancer. The worldwide consumption of tobacco causes maximum health damage. Epidemiological research over the past several years has confirmed the harmful effects of tobacco consumption [3]. Of the 10 million deaths each year by 2025 seven million deaths will occur in

the developing countries, mainly in China and India. In the National Family Health Survey-2 (NFHS-2), the prevalence of consumption of tobacco and smoking was reported to be 4.1% and 1.8 %, respectively amongst adolescent age group [4].

According to the Global Youth Tobacco Survey (GYTS) (2000-2004) including students from grades 8-10 in India 17.5% were current users of tobacco in any form, 14.6% were using smokeless tobacco and 8.3% were current smokers [5]. Like other developing countries, the most susceptible age for initiating tobacco use in India is during adolescence and early adulthood, age's 15-24 year. Most tobacco users start consuming tobacco before the age of 18 year, while some start as young as 10 year [6].

Currently about one-fifth of all world-wide deaths attributed to tobacco occurs in India, more than

8,00,000 people die and 12 million people become ill as a result of tobacco use each year. The deaths attributable to tobacco, in India, are expected to rise from 1.4% of all deaths in 1990 to 13.3% in 2020 [7]. According to the WHO estimates, 194 million men and 45 million women use tobacco in smoked or smokeless forms in India. India also has one of the highest rates of oral cancer in the world, partly attributed to high prevalence of tobacco chewing. Forms of tobacco chewing include pan (piper betel leaf filled with sliced areca nut, lime, catechu and other spices chewed with or without tobacco), pan-masala or gutkha (a chewable tobacco containing areca nut) and mishri (a powdered tobacco rubbed on the gums as tooth paste) [8]. The early age of initiation underscores the urgent need to intervene and protect this vulnerable group from falling prey to this addiction. The most common reasons cited for children to start using tobacco are peer pressure, parental tobacco habits and pocket money given to children [9].

The data available on tobacco use by school children is weak, except in few developing countries. Hence, this study had been undertaken in Jaipur city with following objectives; i) to assess the prevalence of tobacco use among school children, ii) to determine the age of initiation of these habits, iii) to determine reasons for initiation, access, availability, source of funding, knowledge about the dangers of tobacco consumption and cessation behavior.

MATERIALS AND METHODS

The present study was undertaken from August to October 2013 in Jaipur, the capital city of Rajasthan, India. This study was conducted among children in the age group of 14-18 years studying in Government schools in the Jaipur district of Rajasthan. All Government middle and senior secondary schools in Jaipur district were enlisted along with their student enrollment. Prior permission was obtained from the principals of the respective schools for the participation of the students in the study.

Sample size considerations

Of the 42 co-educational Govt. schools, 18 were selected by simple random sampling. The sample size was calculated keeping in mind the least prevalence of tobacco as 6%. Considering allowable error of prevalence as 15% to study the prevalence of tobacco, the minimum sample size at 99% confidence level was 3248. However for the study purpose it was

rounded off to 3250 children. Exact age of the children was verified from the school records.

Survey administration

Survey approval was obtained from the Institutional Review Board and heads of the schools in writing after informing them about the importance of the study. Students were told to participate in the study voluntarily and an informed consent from the students and school authorities was obtained.

Data collection

Data were collected by using a pre-tested, 20-item structured close ended questionnaire during August – October 2013. The Questionnaire was administered individually to each subject. Each selected student was taken into a separate room and was briefed about the objectives of the study. The child was requested to provide information and was reassured about the anonymity and confidentiality of the information. This health questionnaire about tobacco use was prepared based on questionnaire from Global Youth Tobacco Survey (GYTS). No changes were made in questions but some were excluded. All the students of age group 14-18 years who agreed to participate in the study voluntarily were included in the study. Those students who refused to participate in the study were excluded from the study. The exclusion rate was 9.57%.

The data was collected on age, sex, socio-demographic profile of the child. Data was also obtained on use of tobacco, age of initiation, reason of initiation of consumption of tobacco, places of tobacco consumption, money spent on the purchase of tobacco, frequency of consumption etc. "Current user" was defined as 'having used tobacco at least once in the last 30 days preceding the survey' [9]. Tobacco consumption was broadly classified into three categories: smoking, chewing and more than one form of tobacco use. An attitude towards tobacco use was also assessed in the present study.

Statistical analysis

Data were analyzed using the SPSS Version 14.0. Differences in proportions between genders were compared using Chi squared (χ^2) test. A difference was considered to be statistically significant if the P-value was <0.05. The Cronbach's alpha value was calculated using SPSS version 14.0 and it was observed to be 0.82. It showed that higher internal consistency (Reliability) of the outcome that group have high internal consistency reliability.

RESULTS

In the present study, a total of 18 sampled co-educational government schools participated which were selected by simple random sampling. Sample consisted of 3250 children (boys: 50.37% and girls: 49.63%) studying in government schools in Jaipur district. The age range was 14-18 yrs. The mean age of the children was 15.5 year (SD±_1.08). Of the 18 schools that were recruited for the study, 8(44.4%) were urban and 10(55.6%) were rural in location.

Overall 4.1% of students were current users of tobacco or tobacco products irrespective of sexes (Boys: 6.29%, Girls: 1.42%). Current use was more among boys.

Table 1: Distribution based on pattern and frequency of tobacco use

Parameter	Sex of the children using tobacco				Total (N=135)	
	Male (N=103)		Female (N=32)		No.	%
	No.	%	No.	%		
Age of initiation (In Yrs)						
< 7	10	9.71	3	9.36	13	9.63
7-12	32	31.07	11	34.37	43	31.85
≥ 12	61	59.22	18	56.25	79	58.52
Form of Tobacco						
Smoked	19	18.45	1	3.12	20	14.81
Smokeless	74	71.84	31	96.88	105	77.78
Both	10	9.71	0	0	10	7.41
Frequency						
Occasional	51	49.52	18	56.25	69	51.11
Moderate	31	30.09	11	34.37	42	31.11
Regular	21	20.39	3	9.38	24	17.78

Occasional – consumed tobacco occasionally (1 or 2 times in last 30 days)
 Moderate – consumed tobacco at least once per week in last 30 days.
 Regular – consumed tobacco at least twice per week or daily in last 30 days

Table 1 shows that 41.48% children started tobacco consumption before the age of 12 years. The percentage of initiation of the tobacco habit is more among girls (43.73%) before 12 years of age as compared to boys (40.78%) of similar age. A little over 9% (Boys: 9.71%, Girls: 9.36%) of the children reported initiation at the age of 7 or even earlier. The packaged chewable form of tobacco (pan masala with tobacco, “gutka”) was the most preferred form of

tobacco consumed by children. Amongst current users 77.78% (Boys: 71.84%, Girls: 96.88%) of the children used smokeless form of tobacco (gutka). A little over 7% of the children consumed tobacco in both the forms. Nearly 17% (Boys: 20.39%, Girls: 09.38%) of the children were regular users of the tobacco products and 51.11% (Boys: 49.52%, Girls: 56.25 %) were consuming it occasionally (Consumed tobacco 1 or 2 times in last 30 days).

Table 2: Distribution based on access and availability of tobacco and source of funding

Parameter	Sex of the children using tobacco				Total (N=135)	
	Male (N=103)		Female(N=32)		No.	%
	No.	%	No.	%		
I. Place of using tobacco product						
At School	21	20.39	19	59.38	40	29.63
Home	14	13.59	4	12.5	18	13.33
In public place	68	66.02	9	28.12	77	57.04
II. Source of funding						
Purchased	61	59.22	13	40.63	74	54.81
Borrowed	20	19.42	8	25	28	20.74
Offered by someone	22	21.36	11	34.37	33	24.45

Table 2 points out that public places were the major area where tobacco products were consumed by the children followed by school and homes i.e. 57.04%, 29.63% and 13.33% respectively. Nearly 54.81% (Boys: 59.52%, Girls: 40.63 %) children had easy access and freely purchased the tobacco products for consumption from the stores, shop or street vendors despite being prohibited by law for minors in age. Children spent a part or all of their pocket money for purchasing tobacco products. A little over 24% (Boys: 21.36%, Girls: 34.37 %) were offered tobacco products by friends or elderly person to the children’s.

Table 3 has highlighted that nearly half of the children i.e. 49.63% (Boys: 54.37%; girls: 34.37%) under study reported that tobacco was first introduced to them by their friends. Nearly a quarter of the children i.e. 22.11% (Boys: 25.24%; girls: 12.50%) were influenced by various media outlets (TV, videos, and movies). Around 14% (Boys: 14.56%; girls: 12.50%) of the children started the tobacco use due to other factors like peer pressure and for projecting themselves as stylish.

Table 3: Distribution of subjects according to reason for initiation for use of tobacco product

Reason for initiation	Sex of the children using tobacco				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Influence by friends	56	54.37	11	34.37	67	49.63
Influence by family	6	5.83	13	40.63	19	14.07
Peer pressure /Style/Fashion	15	14.56	4	12.5	19	14.07
Influence by media	26	25.24	4	12.5	30	22.22
Total	103	100	32	100	135	100

Table 4: Distribution of subjects according to parental history of tobacco use

Parent smoke	Sex of the children using tobacco				Total	
	Male		Female			
	No.	%	No.	%	No.	%
No	46	44.66	9	28.13	55	40.74
Father only	50	48.54	17	53.12	67	49.63
Father & mother Both	7	6.8	6	18.75	13	9.63
Total	103	100	32	100	135	100

$\chi^2 = 5.390$ d.f.=2 P > 0.05 NS

Table 4 shows that total of 59.26% children's reported tobacco use within their family. 49.63% had given history of tobacco use by father followed by 9.63% children where both parents were using tobacco products.

Table 5: Distribution of children using tobacco according to discussion of dangers of tobacco consumption by family members and school teacher

Dangers of tobacco consumption discussed	Sex of the children using tobacco				Total	
	Male (N=103)		Female (N=32)			
	No.	%	No.	%	No.	%
By family members						
Yes	80	77.67	26	81.25	106	78.52
No	23	22.33	6	18.75	29	21.48
By school teachers						
Yes	99	96.12	23	71.88	122	90.37
No	4	3.88	9	28.12	13	9.63

$\chi^2 = 13.818$ d.f.=1 P < 0.001 HS

Table 5 shows that the parents of over 78.52% study subjects using tobacco had discussed the harmful effects of tobacco consumption with them. The table also shows that 90.37% children who were using tobacco were imparted knowledge by schools regarding side effects of tobacco consumption.

Table 6: Distribution of children using tobacco according to awareness regarding ill effect of tobacco use and attitude regarding quitting the tobacco use

Parameter	Sex of the children using tobacco				Total (N=135)	
	Male (N=103)		Female (N=32)			
	No.	%	No.	%	No.	%
Awareness about the ill effects						
Yes	88	85.44	26	81.25	114	84.44
No	15	14.56	6	18.75	21	15.56
Attitude regarding quitting tobacco product use						
Yes	95	92.23	28	87.5	123	91.11
No	8	7.77	4	12.5	12	8.89
Attempted to quit the tobacco product use in past one year						
Yes	91	88.35	19	59.38	110	81.48
No	12	11.65	13	40.62	25	18.52

Table 6 points out that nearly 84.44% (Boys: 85.44%; girls: 81.25%) of the children using tobacco were aware of the injurious effects of tobacco use. On enquiring regarding their attitude towards quitting tobacco use 92.23% boys and 87.50% girls expressed a desire to quit .Furthermore 88.35% boys and 59.38% girls had tried to quit tobacco use in the previous year.

DISCUSSION

The consumption of tobacco causes maximum health damage, worldwide. Epidemiological research over the past several years has confirmed the harmful effects of tobacco consumption. There is limited data available and documented on tobacco use by youth and related problems, for state of Rajasthan. To provide baseline data on tobacco use and alter this scenario, this study was initiated and focused on representative school going population aged 14-18 years in the Jaipur city of Rajasthan.

An estimated 186 million of the world population are school children with age 13-14 years. Among them approximately 34.8 million are current users. In India,

the most susceptible time for tobacco use is during adolescence and early adulthood (15-24 years) [10,11].

This study demonstrates that among the 14-18 years old school going children in Jaipur city. Current tobacco use is high (4.1%) and 41.48% of school children started consumption before the age of 12 years. The results are along the same line as found in other studies conducted in Chaudhry K, Prabhakaran P.S. [12] and Sinha D.N, Gupta P.C, Pednekar M.S. [13]. Kotwal A, Thakur R, Seth T. [14] in their study in two schools of Delhi found that almost 42% of tobacco users started before the age of 12 year. Initiation of tobacco consumption at 10 or 11 years of age or even earlier in 25.1% of tobacco users in this study was similar to the GYTS survey conducted in Orissa, which showed that, about 30% of the tobacco user consumed tobacco for the first time at the age of ten year or earlier [15]. Consequently, strategies need to be developed to reduce initiation of tobacco use among the less than ten years age group.

The prevalence of current user of tobacco at 4.1% and the smokeless tobacco at 77.78% (Boys: 71.84%, Girls: 96.88%) in the present study are similar to study conducted in national capital territory of Delhi (5.4% and 86.7%) by Singh V, Pal HM, Mehta M, Dwivedi SN [4]. According to GYTS survey conducted in Bihar, the prevalence of smokeless tobacco use was reported as 55.6% (Boys: 57.6%, Girls: 49.2%) [7]. However, at the national level [17], the smokeless tobacco use was reported as only 14.6%. These trends indicate that smokeless tobacco use is increasing among the younger population. The majority of tobacco chewers in the present study reported chewing gutka, confirming the countrywide trend of increasing gutka use. The progressive increase of tobacco consumption in various forms in recent years can be viewed as an emerging epidemic.

In the present study 13.33% and 29.63% reported the tobacco use near homes and schools. The ease of availability of tobacco products played a vital role in determining the place of tobacco consumption. Children preferred to buy tobacco products from vendors at public places away from their homes as there is no fear to be caught by their parents. Public places were the major area where tobacco products were consumed by the children followed by school and homes. Nearly 54.81% children had easy access and freely purchased the tobacco products. Similarly in the study conducted by Sinha DN, Gupta PC, Pednekar MS [13] in Bihar and by Singh V, Pal HM,

Mehta M, Dwivedi SN [4] in their study in Delhi found that 80% and 84% of the current users could freely purchase tobacco products from the store, shop or from street Vendor respectively.

Children spent a part or all of their pocket money for purchasing tobacco products. Similarly Singh V, Pal HM, Mehta M, Dwivedi SN [4] in their Delhi study found that more than a third spent a significant part of their pocket money on tobacco consumption with about 9.6% of the children spending more than 100 rupees in a month for tobacco consumption. Little over 24% were offered tobacco products by friends or elderly person to the children's. Study conducted by Singh V, Pal HM, Mehta M, Dwivedi SN [4] in national capital territory showed high proportions of the children (37.8%) were first introduced to tobacco by their friends followed by their family members/relatives (29.3%).

In this study several factors showed a strong association with tobacco use: parental and closest friends' tobacco use; positive attitude towards tobacco use by others; and viewing of tobacco advertisements. Several of these associations have been reported, for example parental tobacco use[18]. In the present study a total of 59% children's reported tobacco usage within their family. 49.63% had given history of tobacco use by father followed by 9.63% children where both parents were using tobacco products. It indicates that parental tobacco use increases the likelihood that a child adopts the similar habits. Nearly half of the children i.e. 49.63% (Boys: 54.37%; Girls: 34.37%) in this study reported that tobacco was first introduced to them by their friends. Kapil U, Goindi G, Singh V, Kaur S, Singh P [19] in their study in Delhi reported that nearly 52% of the study subjects first introduced to tobacco by their friends and relatives. In the present study nearly a quarter of the children i.e 22.22% (Boys: 25.24%; girls: 12.50%) were influenced by various media outlets (TV, videos, and movies). Similarly Singh V, Pal HM, Mehta M and Kapil U in their study in National Capital Territory found that nearly 23% of the children were influenced by various mass media [3].

It was observed that the parents of over 78.52% study subjects discussed the harmful effects of tobacco consumption in the present study. Sinha DN, Gupta PC, Pednekar M [7] in their study in Bihar found that curricular teaching on tobacco was reported to be virtually nil (3%). On contrary in present study significantly over 90.37% were imparted knowledge by schools regarding threats of tobacco consumption.

In present study nearly 84.44% (Boys: 85.44%; girls: 81.25%) of the children using tobacco were aware of the injurious effects of tobacco use which was similar to the findings of Singh. V, Pal HM, Mehta M, Dwivedi SN [4]. Ezatti M, Lopez AD [20] in their study found that nearly 66% students were aware of the dangers of tobacco use.

In present study 92.23% boys and 87.50% girls expressed a desire to quit and 88.35% boys & 59.38% girls had tried quitting in the previous year. Singh V, Pal HM, Mehta M, Dwivedi SN [4] in their study conducted in national capital territory the proportion of children who wanted to give up the consumption of tobacco was found to be 25.5%. According to GYTS, the proportion of students who wanted to give up smoking varied considerably (10 % to 85%) [5].

The present study highlights the increasing uptake of tobacco products in the school going children ages 14-18 years in the Jaipur city. This study indicates a strong relationship of influence by parents, teachers and social relations of the students, which may play a major role in checking the increasing problem of tobacco consumption at early age. The data that is collected now can be used as baseline data to assess any tobacco control activities among adolescents in Jaipur city. A multi-pronged community based intervention strategy which ensures enforcement of law and awareness of parents and school children about side effects of consumption of tobacco is required to reduce primary uptake of tobacco especially smokeless tobacco among rural adolescents.

The limitations of the present study should also be kept in mind. The study was conducted in a small geographical area. The scope of qualitative data obtained is to offer possible explanations to gaps in information and generate hypothesis for further research. The confirmation of findings at larger scale is recommended.

CONCLUSION

The study has indicated that there is an increase in use of smokeless tobacco products. Special attention for preventing tobacco consumption, intervention in adolescence period is required. Such studies offer states a unique opportunity to develop, implement and evaluate comprehensive tobacco control policies.

REFERENCES

1. Gajalakshmi V, Asma. S, Warren .C.W. Tobacco survey among youth in south India. *Asian pacific journal of cancer prevention*. 2004; 5:273-7.
2. Murray CJL, Lopez AD (eds). *The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*. Cambridge, Massachusetts: Harvard University Press on behalf of the World Bank and WHO; 1996.
3. Singh V, Pal HM, Mehta M and Kapil U. Tobacco Consumption and Awareness of their Health Hazards amongst Lower Income Group School Children in National Capital Territory of Delhi. *Indian Pediatrics*. 2007; 44:293-5.
4. Singh.V, Pal H.M, Mehta .M, Dwivedi .S.N, Kapil.U. Pattern of Tobacco use among school children in National Capital Territory (NCT). *Indian Journal of Pediatrics* 2007; 74:1013-9.
5. Arora M, Reddy KS. Global Youth Tobacco Survey (GYTS) - Delhi. *Indian Pediatrics* 2005; 42: 850-1.
6. Reddy K. S, Arora M. Tobacco use among children in India: A Burgeoning Epidemic. *Indian Pediatrics*. 2005;42:757-61.
7. Sinha D.N, Gupta P.C, Pednekar .M, Tobacco Use among Students in Bihar (INDIA). *Indian Journal of Public Health*. 2004; 48; 3:111-7.
8. Kumar M, Poorni .S, Ramachandran .S. Tobacco use among school children in Chennai city, India. *Indian journal of cancer*. 2006; 43; 3:127-31.
9. Narain .R, Sardana .S, Gupta. S, Seghal. A. Age at initiation & prevalence of tobacco use among school children in Noida, India: A cross-sectional questionnaire based survey. *Indian J Med Res*. 2011; 133:300-30.
10. Dongree A.R, Deshmukh P.R, Murali N, Garg B.S. Tobacco consumption among adolescents in rural Wardha: Where and how tobacco control should focus its attention? *Indian journal of Cancer*.2008; 45; 3:100-6.
11. Shenoy R.P, Shenai P.K, Panchamal G.S, Kotian S.M. Tobacco use among rural schoolchildren of 13-15 years age group: A Cross-Sectional Study. *Indian Journal of Community Medicine*. 2010; 35; 3:433-5.
12. Chaudhry K, Prabhakaran P.S. Prevalence of tobacco use in Karnataka and Uttar Pradesh in India 2001. Survey conducted by the Indian council of medical research with financial support by WHO, South Asian regional office.
13. Sinha D.N, Gupta P.C, Pednekar M.S. Tobacco use among students in the eight north-eastern states of India. *Indian J cancer*. 2003; 40:43-59.
14. Kotwal A, Thakur R, Seth T. Correlates of tobacco-use pattern amongst adolescents in two schools of New Delhi, India. *Ind J Med Sci*. 2005; 59:243-52.
15. Gupta CP, Sinha DN. Tobacco use among students in Orissa and Uttar Pradesh. *Indian Pediatrics*. 2005;42:846-7.

16. Mohan D, Chopra A and Sethi H. A Rapid assessment study on prevalence of substance abuse disorders in metropolis Delhi. Indian J Med Res 2001; 114: 107-14.
17. Reddy KS, Gupta PC, eds. Report on Tobacco Control in India. Ministry of Health and Family Welfare, New Delhi, Government of India, 2004.
18. Pednekar M.S, Gupta P.C. Tobacco use among school students in Goa, India. Indian Journal Of Public Health .2004;48;3:147-52
19. Kapil U, Goindi G, Singh V, Kaur S, Singh P. Consumption of Tobacco, Alcohol and Betel Leaf amongst School Children in Delhi. Indian J Pediatrics. 2005;72:95.
20. Ezatti M, Lopez AD. Estimates of global mortality attributable to smoking in 2000. Lancet. 2003; 362:847-52.

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