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Differences in prevalence of tobacco use among Indian urban youth: The role of socioeconomic status

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This study examined whether the distribution of tobacco use and related psychosocial risk factors among youth in urban India vary by socioeconomic status (SES). Data were derived from a cross-sectional survey of students enrolled in the 6th and 8th grades in 32 schools in Delhi and Chennai (N=11,642). The survey was conducted in 2004, before the implementation of a program designed to prevent and reduce tobacco use (MYTRI). Mixed-effect regression models were used (a) to determine the prevalence of tobacco use among private (higher SES) and government (lower SES) school students, (b) to investigate whether certain psychosocial factors were associated with increased tobacco use, and (c) to determine how these factors varied by school type. Ever-use of multiple forms of tobacco (e.g., gutkha, bidis, and cigarettes) was more prevalent among government school students than private school students. After adjusting for city, gender, grade, and age, we found the prevalence rate for ever-use of any tobacco product to be 18.9% for government school students, compared with 12.2% for private school students (p<.01). Students in government schools scored lower than private school students on most psychosocial risk factors for tobacco use studied here, indicating higher risk. Government school students scored the lowest for refusal skills, self-efficacy, and reasons not to use tobacco. Social susceptibility to chewing tobacco and social susceptibility to smoking were strong correlates of current tobacco use among government school students. Exposure to tobacco advertising was also a strong correlate of current tobacco use for government school students but not private school students. In two large cities of India, students attending government schools are using many forms of tobacco at higher rates than private school students. The psychosocial risk profile of government school students suggests they are more vulnerable to initiation and use and to outside influences that encourage use.

Introduction

The tobacco epidemic is shifting rapidly from developed to developing countries, such as India (Ezzati & Lopez, 2003; Stewart & Kleihues, 2003). Following current tobacco use trends, 10 million deaths related to tobacco are predicted to occur worldwide by the year 2030, and about 7 in 10 of these deaths will be in low-income countries (Gajalakshmi, Jha, Ranson, & Nguyen, 2001). In most high-income countries, tobacco consumption has fallen since the mid-1980s. Conversely, the consumption rates are increasing in developing nations such as India (Gajalakshmi et al., 2001); 8 out of 10 smokers now reside in low- and middle-income countries (Gajalakshmi et al., 2001), and nearly 17% of the world's smokers reside in India (Shimkhada & Peabody, 2003). The health effects of tobacco use in India are more diverse than in other nations, given the variety of forms in which tobacco is consumed. In India, less than 20% of total tobacco consumption is in the form of cigarettes (John, 2005; Shimkhada & Peabody, 2003), whereas bidis alone account for the largest proportion, at about 40% of

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the total (Shimkhada & Peabody, 2003; Subramanian, Nandy, Kelly, Gordon, & Davey Smith, 2004). The proportion of all deaths that can be attributed to these various forms of tobacco in India is expected to rise from 1.4% in 1990 to 13.3% by 2020 (Reddy & Gupta, 2004).

Globally tobacco consumption is strongly associated with poverty, with those in lower socioeconomic classes using tobacco at higher rates (Jarvis & Wardle, 2006). Several large, cross-sectional studies of adults in India have demonstrated that tobacco consumption is highest among those most marginalized in this country (Neufeld, Peters, Rani, Bonu, & Brooner, 2005; Rani, Bonu, Jha, Nguyen, & Jamjoum, 2003; Sorensen, Gupta, & Pednekar, 2005). With higher tobacco use rates, those most marginalized in this country will bear the brunt of the numerous health hazards associated with tobacco use, which will ultimately translate to added economic burden on them.

Recent studies suggest tobacco consumption is increasing rapidly among urban youth in India. Two studies suggest that tobacco use has almost doubled among youth in big cities like Delhi and Mumbai in less than 3 years (2001–2004; Centers for Disease Control and Prevention [CDC], 2001a, 2001b; S. Sharma, 2005). With more evidence of a decrease in age at initiation (Jha & Chaloupka, 1999; Reddy, Perry, Stigler, & Arora, 2006; Stigler, Perry, Arora, & Reddy, 2006), it is becoming increasingly important to gather more data on youth tobacco consumption rates and patterns. To date, no published studies have explored whether social disparities among youth in India parallel those described above among adults and, if so, why. Trends in tobacco use among young people are important to document because these findings would help inform the development of appropriate preventive intervention programs for youth. They also would help in making projections of future tobacco-related deaths more precise. These projections are based on current patterns of tobacco use in adults, which will change as the tobacco epidemic matures in countries such as India.

The present study examined differentials in tobacco use among urban Indian youth by socioeconomic status (SES) using baseline data from Project MYTRI (Mobilizing Youth for Tobacco Related Initiatives in India), collected in 2004. Project MYTRI is a group-randomized intervention trial being implemented with more than 12,000 students in 32 schools in two large cities (Delhi and Chennai) in India. The study design includes two different types of schools—government and private—which can be used as a proxy for SES in this setting (N. Sharma, 1999). Students from higher SES backgrounds study at the private schools, whereas those from lower SES backgrounds attend the government schools. Private schools generally cost much more than do the government schools, which either have a nominal fee or are offered free of cost.

This study addressed the following research questions: (a) Does the prevalence of tobacco use (chewing tobacco, bidi, and cigarette smoking) among urban Indian youth vary by SES (i.e., does it differ between students attending government schools versus private schools)?; (b) What psychosocial risk factors are associated with increased tobacco use among students attending government schools, compared with those attending private schools?; and (c) Does the distribution of these risk factors for tobacco use vary by SES (i.e., does it differ between students attending government schools versus private school students)? We hypothesized that government school students would score lower than private school students on these psychosocial scales, given our other hypothesis of greater tobacco use among government school students.

Method

Project MYTRI is a group-randomized trial. In 2004, a total of 32 schools in Delhi ($n=16$) and Chennai ($n=16$) were recruited to participate in the trial, matched according to the type of school (private vs. government; co-ed vs. boys-only vs. girls-only), and randomly assigned to receive a tobacco prevention program or serve as a delayed program control (Perry, Stigler, Arora, & Reddy, 2006; Reddy et al., 2006). This paper is based on a convenience sample of schools. Ethical clearances for the trial were obtained from the independent ethics committee, Mumbai, India, and from the institutional review board, Minneapolis, Minnesota. This study is an analysis of data collected before the intervention had begun. The study, therefore, is cross-sectional by design (Shadish, Cook, & Campbell, 2002).

Participants

All students enrolled in the 6th and 8th grades in the 32 schools were eligible for this study and invited to participate ($N=12,484$). The response rate for the survey was 94.1% ($N=11,748$). Nonparticipants included parent refusals (<1%) and student absentees (>4%). Response rates did not vary by city, school, or grade. Students who responded inconsistently to four or more questions on the survey (e.g., reporting tobacco use in past month but not tobacco use in their lifetime) were eliminated from the analysis (<1% of sample). The final sample of analysis for this study was 11,642 students. Of these, 50.6% resided in Delhi (vs. Chennai), 61.4% attended a government school (vs. a private school), 52.9%

were enrolled in 6th grade (vs.8th), and 54.9% were male (vs. female). The mean ages of the government school students and private school students were 12.23 and 11.68 years, respectively (range=10–16 years).

Measures

A self-administered pencil-and-paper survey was implemented in all classrooms in these schools by two-person teams of trained staff using a standardized protocol. First, passive (but informed) parental consent and active student assent were obtained by staff prior to survey administration. Then the surveys were administered in an anonymous fashion using a unique identification number known only to research staff. The confidentiality of the student responses was assured. Students were told their responses to survey questions would not be shared with their teachers, school administrators, or parents. All private schools in Delhi and Chennai received an English survey, whereas the Government schools received a Hindi version in Delhi and a Tamil version in Chennai. The survey took about 40 min to complete. The survey and its administration protocol are adapted from other instruments used in prior research, including the Global Youth Tobacco Survey and a survey specific to Indian youth (CDC, 2001a, 2001b; Reddy et al., 2002). The survey underwent a rigorous pilot process before implementation, to ensure reasonable reliability and validity among both government and private school students (Reddy et al., 2006).

Tobacco use. The main outcome measure in this study was current use of tobacco. Three items were used to measure this outcome: ''During the last 30 days, did you chew tobacco in any form?'', ''During the last 30 days, did you smoke one or more bidis?'' and ''During the last 30 days, did you smoke one or more cigarettes?'' The response categories for all items were yes or no. Using the responses to the three items, we created a composite variable to measure current use of *any* tobacco. Students who responded yes to one or more of the questions were given a 1 on this variable (for ''use''); all other students received a 0 (for ''no use''). Ever-use of tobacco was measured with three items: ''How old were you when you first chewed tobacco in any form?'', ''How old were you when you first put a lit bidi in your mouth?'' and ''How old were you when you first put a lit cigarette in your mouth?'' The response categories for these items were ''I have never used tobacco'' or ''I first used tobacco when I was [a particular age]''). For analyses, the latter responses were collapsed and coded as ever using tobacco. Using the responses to the three items, we created a composite variable to measure ever use of *any* tobacco, like that noted above for current use of *any* tobacco.

Psychosocial risk factors. Multiple-item, summative scales were created to measure 15 psychosocial risk factors hypothesized to be related to tobacco use among youth in India and (in most cases) were targets of tobacco prevention program (Mishra et al., 2005). These included the following measures: knowledge about health effects of tobacco use, beliefs about social consequences, reasons to use tobacco, reasons not to use tobacco, refusal skills self-efficacy, social susceptibility (chewing), social susceptibility (smoking), normative beliefs, perceived prevalence (chewing), perceived prevalence (smoking), normative expectations of use, knowledge about tobacco control policies, support for these policies, advocacy skills self-efficacy, and exposure to advertising. Further information about the psychometric properties of these scales, including measures of their reliability, can be found in Stigler et al. (2006). Scale scores were standardized before being used in the analyses (i.e., the mean of each scale was set to 0 and its standard deviation to 1), to ease interpretation of parameter estimates and allow for comparison between scales. A higher score on all scales indicates less risk, or conversely is more protective. Thus the scales were hypothesized to be inversely (or negatively) related to increased tobacco use. Moreover, government school students were hypothesized to score lower than private school students on these psychosocial scales, given our other hypothesis of greater tobacco use among government school students.

Data analyses

A series of mixed-effects regression models were used to test the hypotheses of interest in the present study. These kinds of multiple-level regression models are appropriate for studies like the present one, given their nested design, as they account for variability in the dependent variable between both students and schools (Raudenbush & Bryk, 2002). These models were first used to examine differences in the prevalence rates of tobacco use between government and private school students. Next the models were used to examine the relationships between psychosocial risk factors and current use of any tobacco, by school type. A single regression model (Model 1) was used to examine the relationship between a single psychosocial factor and tobacco use. Then backward stepwise regression was used to build a multiple regression model (Model 2) to evaluate which factors were most strongly related to tobacco use. All psychosocial factors were entered into this regression model to begin, and then factors not significantly

related to tobacco use in the model ($p>.01$) were eliminated, until only significant factors remained. Finally, mixed-effects models were used to investigate differences in psychosocial risk factors by school type. All regression models were adjusted for, when not stratified by, city, grade, gender, and age. The analyses were done with SAS.

Results

The unadjusted prevalence rate for ever-use of any tobacco product was 19.0% (95% *CI* 16.6–21.4) for government school students, compared with 10.1% (95% *CI* 7.7–12.5) for private school students ($p<.01$), whereas the unadjusted prevalence rate for current use of any tobacco product was 5.6% (95% *CI* 4.6–6.6) for government school students and 3.7% (95% *CI* 2.5–4.9) for private school students ($p=.01$). After adjusting for city, grade, gender, and age, we found that ever-use of all tobacco products (i.e., gutkha, bidis, and cigarettes) was higher among government school students than private school students ($p<.01$). The adjusted rate of current use of cigarettes was 1.7 times higher among government school students than private school students (1.9% [95% *CI* 1.5–2.3] vs. 1.1% [95% *CI* 0.7–1.7], $p<.05$), whereas the adjusted rate of current use of bidis was 2.1 times higher in government schools than in private schools (2.1% [95% *CI* 1.7–2.5] vs. 1.0% [95% *CI* 0.4–1.6], $p<.01$). We found no significant difference in the rates of chewing tobacco between school types ($p=.42$, data not shown). The prevalence rates for ever and current bidi use by school type and other relevant demographic strata (including city, gender, and grade) are presented in Table 1.

Almost all of the psychosocial factors evaluated here were significantly related to current use of tobacco, for students in both school types. Table 2 presents results of the analyses for government school students, whereas Table 3 presents the results for private school students. Among private school students, all of the psychosocial factors were inversely associated with increased use of tobacco except for awareness about public policies related to tobacco control; e.g., "Does your state have a law that bans the sale of tobacco to minors?" ($p>.05$). The other factor not significantly related in the same group of students was exposure to tobacco advertising; e.g., "Have you seen any advertisements for tobacco in movies?" ($p>.05$). Among government school students, all factors were related to tobacco use (Table 2). Notably, the relationship with exposure to tobacco advertisements was statistically significant for all types of current tobacco use (chewing/smoking/any kind) among government school students but not private school students, in these initial regression models (Model 1).

After adjusting for other psychosocial factors (Model 2), we found that six factors were most strongly related to increased use of tobacco in government school students (Table 2). The most potent of these six was social susceptibility to chewing tobacco (e.g., "If one of your close friends gave you chewing tobacco, would you chew it?"), closely followed by social susceptibility to smoking (e.g., "If one of your close friends gave you a cigarette or a bidi, would you smoke it?"); $p<.01$). As in the unadjusted model, exposure to tobacco advertising was a strong correlate of current use of any tobacco product for government school students but not private school students. The other factors associated with increased tobacco use in this model were perceived prevalence for both chewing and smoking tobacco (e.g., "How many boys of your age in India do you think chew/smoke tobacco regularly?) and support for public policies (e.g., "Should

Table 1. Prevalence of smoking bidis in 2004, by school type (proxy for socioeconomic status), adjusted (N=11,642).[a]

	Government (n=7,153), Percentage (95% *CI*)	Private (n=4489), Percentage(95% *CI*)	RR[b]	p value
Smoking bidis (ever use)				
All students	10.90 (9.7,12.1)	2.80 (1.4,4.2)	3.89	<0.01
Chennai	10.49 (8.9,12.1)	2.05 (0.1,4.0)	5.12	<0.01
Delhi	10.90 (9.3,12.5)	3.30 (2.7,4.9)	3.30	<0.01
Girls	9.22 (7.9,10.6)	2.31 (0.7,3.9)	3.99	<0.01
Boys	13.02 (11.7,14.4)	3.51 (1.9,5.1)	3.71	<0.01
8th Graders	6.23 (5.10,7.4)	1.20 −0.2,2.6)	5.19	<0.01
6th Graders	16.16 (14.2,18.1)	5.73 (3.7,7.7)	2.82	<0.01
Smoking bidis (current use)				
All students	2.10 (1.7,2.5)	1.00 (0.4,1.6)	2.10	<0.01
Chennai	2.51 (1.9,3.1)	0.90 (0.1,1.7)	2.79	<0.01
Delhi	1.60 (0.8,2.4)	0.97 (0.2,1.8)	1.65	0.31
Girls	1.48 (0.9,2.1)	0.73 (0.1,1.3)	2.03	0.09
Boys	2.76 (2.2,3.4)	1.20 (0.6,1.8)	2.30	<0.01
8th Graders	1.24 (0.9,1.6)	0.58 (−0.01,1.2)	2.14	0.04
6th Graders	2.72 (1.9,3.5)	1.14 (−0.04,2.3)	2.39	<0.01

Note. [a]Estimates are generated from mixed-effect models adjusted for gender, age, class/grade, and city. [b]RR is the prevalence rate ratio of smoking bidis for the corresponding strata comparing students in government vs. private schools.

Table 2. Relationship between selected factors and relationship between selected factors and current use of any tobacco, government school students (n=7,153).[a]

	Model 1[b]			Model 2[c]		
	Mean	(SE)	p value	Mean	(SE)	p value
Intrapersonal factors						
Knowledge of health effects	−0.008	(0.003)	<.01	—	—	—
Beliefs about social effects	−0.008	(0.003)	<.01	—	—	—
Reasons to use tobacco	−0.041	(0.003)	<.01	—	—	—
Reasons not to use tobacco	−0.014	(0.003)	<.01	—	—	—
Self-efficacy (refusal skills)	−0.027	(0.004)	<.01	—	—	—
Social susceptibility (chewing)	−0.074	(0.003)	<.01	−0.039	(0.004)	<.01
Social susceptibility (smoking)	−0.063	(0.002)	<.01	−0.027	(0.004)	<.01
Social-environmental factors						
Normative beliefs about use	−0.049	(0.002)	<.01	—	—	—
Perceived prevalence(chewing)	−0.020	(0.003)	<.01	−0.009	(0.003)	<.01
Perceived prevalence (smoking)	−0.021	(0.002)	<.01	−0.011	(0.003)	<.01
Normative expectations of use	−0.029	(0.002)	<.01	—	—	—
Knowledge about public policies	−0.000	(0.002)	<.01	—	—	—
Support for public policies	−0.050	(0.002)	<.01	−0.022	(0.003)	<.01
Self-efficacy (advocacy skills)	−0.006	(0.002)	<.01	—	—	—
Exposure to advertising	−0.013	(0.002)	<.01	−0.010	(0.002)	<.01

Note. [a]Estimates are generated from mixed-effects models that are adjusted for city, school type, gender, and age, using standardized scale scores. [b]Examines the relationship between selected factor and outcome, separately. [c]Examines the relationship between selected factor and outcome, after adjusting for other factors.

any form of tobacco advertising be allowed?). In all, these six factors accounted for 29% of the variability between students and 59% of variability between schools in current use of any tobacco product for those students attending the government schools.

A somewhat similar set of factors were most strongly associated with increased tobacco use in private school students (Table 3). The most potent factor here was social susceptibility to smoking (e.g., ''If one of your close friends gave you a cigarette or a bidi, would you smoke it?''), followed by social susceptibility to chewing tobacco (e.g., ''If one of your close friends gave you chewing tobacco, would you chew it?''); p<.01. Among private school students, reasons not to use tobacco (e.g., ''My friends do not use tobacco'') and advocacy skills efficacy (e.g., ''Do you think you could ask an adult to stop smoking around you?'') were strongly and inversely related to increased tobacco use. In all, these five factors accounted for 20% of variability between students and 77% of variability between schools in current use of any tobacco, for those in the private schools.

We found significant differences between students in government and private schools in the distribution of all but 4 of the 15 psychosocial risk factors (p<.01). These results are presented in Table 4. Students in the government schools scored lower on

Table 3. Relationship between selected factors and current use of any tobacco, private school students (n=4,489).[a]

	Model 1[b]			Model 2[c]		
	Mean	(SE)	p value	Mean	(SE)	p value
Intrapersonal factors						
Knowledge of health effects	−0.028	(0.004)	<.01	—	—	—
Beliefs about social effects	−0.046	(0.005)	<.01	—	—	—
Reasons to use tobacco	−0.035	(0.003)	<.01	—	—	—
Reasons not to use tobacco	−0.031	(0.004)	<.01	−0.014	(0.004)	<.01
Self-efficacy (refusal skills)	−0.010	(0.003)	<.01	—	—	—
Social susceptibility (chewing)	−0.043	(0.002)	<.01	−0.023	(0.003)	<.01
Social susceptibility (smoking)	−0.053	(0.003)	<.01	−0.037	(0.004)	<.01
Social-environmental factors						
Normative beliefs about use	−0.042	(0.003)	<0.01	—	—	—
Perceived prevalence(chewing)	−0.025	(0.003)	<0.01	−0.015	(0.003)	<.01
Perceived prevalence (smoking)	−0.010	(0.004)	<0.01	—	—	—
Normative expectations of use	−0.059	(0.004)	<0.01	—	—	—
Knowledge about public policies	0.001	(0.003)	0.64	—	—	—
Support for public policies	−0.033	(0.003)	<0.01	—	—	—
Self-efficacy (advocacy skills)	−0.031	(0.004)	<0.01	−0.014	(0.004)	<.01
Exposure to advertising	−0.005	(0.003)	0.15	—	—	—

Note. [a]Estimates are generated from mixed-effects models that are adjusted for city, school type, gender, and age, using standardized scale scores. [b]Examines the relationship between selected factor and outcome, separately. [c]Examines the relationship between selected factor and outcome, after adjusting for other factors.

Table 4. Distribution of selected factors by school type (SES), adjusted, standardized scores (N=11,642).[a]

	Government (n=7,153)		Private (n=4,489)			
	Mean	(SE)	Mean	(SE)	Difference[d]	p value
Intrapersonal factors[b,c]						
Knowledge of health effects	−0.10	(0.03)	0.07	(0.03)	0.17	<.01
Beliefs about social effects	−0.25	(0.06)	0.30	(0.06)	0.55	<.01
Reasons to use tobacco	−0.05	(0.02)	−0.004	(0.03)	0.04	.26
Reasons not to use tobacco	−0.47	(0.04)	0.63	(0.04)	1.10	<.01
Self-efficacy (refusal skills)	−0.41	(0.05)	0.54	(0.06)	0.95	<.01
Social susceptibility (chewing)	0.02	(0.04)	−0.13	(0.04)	0.15	<.01
Social susceptibility (smoking)	−0.10	(0.03)	0.06	(0.03)	0.16	<.01
Social-environmental factors[b,c]						
Normative beliefs about use	−0.03	(0.03)	−0.05	(0.03)	0.02	.71
Perceived prevalence (chewing)	−0.13	(0.03)	0.10	(0.04)	0.23	<.01
Perceived prevalence (smoking)	−0.14	(0.02)	0.14	(0.03)	0.28	<.01
Normative expectations of use	−0.16	(0.03)	0.16	(0.04)	0.32	<.01
Knowledge about public policies	0.03	(0.03)	−0.11	(0.03)	0.14	<.01
Support for public policies	−0.05	(0.03)	−0.02	(0.03)	0.03	.49
Self-efficacy (advocacy skills)	−0.02	(0.04)	0.21	(0.04)	0.40	<.01
Exposure to advertising	−0.02	(0.03)	0.01	(0.03)	0.03	.60

Note. [a]Estimates are generated from mixed-effects models adjusted for city, class/grade, gender, and age. [b]A higher score on all multiple-item scales for all factors indicates *less risk*, or conversely, is more protective. [c]Scale scores from multiple-item measures of these factors were standardized before being analyzed in the model. [d]This difference represents the absolute difference in the standardized scale scores between government and private schools.

all of the factors that were significantly different (indicating that they were more vulnerable to tobacco use than were the students in private schools), except for two: social susceptibility to chewing tobacco and knowledge about public policies related to tobacco control. Although students in government schools reported more exposure to tobacco advertising, the score was not significantly different (p>.05) from that of students in private schools. The magnitude of difference in "risk" between the school types was largest for reasons not to use tobacco and refusal skills efficacy, whereas the differential was smallest for knowledge about tobacco control-related public policies.

Discussion

An important sociodemographic factor associated with the onset of tobacco use in developed countries is being an adolescent from a family with low SES (U.S. Department of Health and Human Services [USDHHS], 1994). The results from the present study continue to substantiate this statement in the Indian setting and demonstrate that the socioeconomic differential in tobacco use that exists among adults in this country also exists among youth.

As stated earlier, after adjusting for grade, gender, city, and age, we found that current use of cigarettes was 1.7 times higher among government school students than private school students, whereas current use of bidis was 2.1 times higher in government schools than in private schools. A rather surprising finding was the higher prevalence of cigarette smoking among government school students as compared with private school students, because cigarettes are 8–10 times more expensive than bidis in this setting. This finding is in contrast to the pattern commonly found among adults in India, whereby those of higher socioeconomic class are using cigarettes at higher rates, and those of lower socioeconomic class are using bidis at a higher rate, especially in urban and rural settings, respectively (Gupta, 1996; Subramanian et al., 2004). Overreporting by government school students to identify with the success and glamour promoted by advertising and promotion of cigarettes may partly explain this finding.

After adjusting for other psychosocial factors, we found that six factors were most strongly related to increased use of tobacco in government school students. The most potent of these six was social susceptibility to chewing tobacco, followed closely by social susceptibility to smoking. The other factors associated with increased tobacco use were exposure to tobacco advertising, perceived prevalence for both chewing and smoking tobacco, and support for public policies. Factors most strongly associated with increased tobacco use in private school students were social susceptibility to smoking and social susceptibility to chewing tobacco.

As hypothesized, government school students scored lower than private school students on most (all but 6) of the 15 psychosocial factors studied here, pointing to their being more vulnerable to increased levels of tobacco use than the private school students. Government school students scored the lowest for self-efficacy (regarding refusal skills) and reasons not to use tobacco, which meant that, compared with the private school students, they lacked the confidence to say no to offers of tobacco in social situations and

had few reasons for not wanting to experiment with tobacco. Self-efficacy is a strong predictor of the likelihood and circumstances for the occurrence of the behavior, and the reasons not to use tobacco is one of the proximal factors in the social environment of a young person and hence is a potent influence in instigating behavior change (Perry, 1999). The distribution of the risk factors may explain, in large part, the high tobacco prevalence rates among government school students, rendering them more susceptible to outside influences that encourage onset and progression of tobacco use. Notably, these psychosocial risk factors accounted for a reasonably large portion of the variance between students and schools in tobacco use, for both types of schools. These results also provide some guidance for the design of future interventions, for both private and government school students, as they highlight which risk factors are most strongly correlated with increased tobacco use (and so would be good candidates to target for behavioral change through intervention).

Considerable scientific and epidemiological evidence links exposure to advertising with tobacco consumption. They not only make the tobacco products more visible but also affect adolescents' perceptions of the pervasiveness of smoking, images of smokers, and the function of smoking (USDHHS, 1994). One significant, persistent, and troubling finding in the present study was that exposure to advertising was associated with increased tobacco use among government school students but not private school students. Further studies should explore this topic more.

The findings of higher tobacco use rates by government school students cannot be considered as accidental because this group has consistently shown higher prevalence rates and scored lower on many psychosocial factors studied here, indicating higher risk. The data are derived from a convenience sample of schools, and study findings are not necessarily representative of schoolchildren in the study cities or across India as a whole. Because this study is cross-sectional by design, causality cannot be established nor is it possible to assess the trends and patterns of tobacco consumption over time. Also, data on parents' occupation and family's caste/tribe were not collected in this study. This information, therefore, could not be used to determine a child's SES or to examine how these variables related to tobacco use, independent of school type. The other major limitation to this study was the use of self-report, which may lead to over- or under-reporting of tobacco use. This could have affected the magnitude of observed versus actual differences in tobacco use between the two school types. An extensive piloting procedure was used in the early stages of this project to ensure that the survey was appropriate for students in both school types. The survey was administered confidentially, which has been showed to improve validity and reliability of self-reported data such as these, at least in other settings (USDHHS, 1994). A large sample size makes the findings robust, and the study is representative of two large metropolitan cities, one each in southern and northern India.

Previous studies have found that tobacco consumption in India has a distinct socioeconomic distribution among adults (Neufeld et al., 2005; Rani et al., 2003; Sorensen et al., 2005; Subramanian et al., 2004); the poor and less educated are at increased risk of tobacco use (Giovino, Henningfield, Tomar, Escobedo, & Slade, 1995; Neufeld et al., 2005; Rani et al., 2003; Sorensen et al., 2005; Subramanian et al., 2004). Findings from this study mirror this differential in urban Indian youth, especially in regards to cigarette and bidi use. Besides a definite need for tobacco prevention for young adolescents attending government schools in India, there is also a need for more of these studies. The data from these prevention programs can be used as a surveillance tool, to help guide policy makers at the state and national levels and also help in reducing the inequalities in susceptibility to consume tobacco. By examining not only the differences in tobacco use among adolescents in government and private schools but also the distribution of psychosocial risk factors and the relationship between these risk factors and tobacco use, these findings should have important implications for future intervention design.

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