

ORIGINAL INVESTIGATION

Socioeconomic Differences in the Risk Profiles of Susceptibility and Ever Use of Tobacco Among Indian Urban Youth: A Latent Class Approach

Charu Mathur PhD¹, Melissa H. Stigler PhD², Darin J. Erickson PhD¹, Cheryl L. Perry PhD², John R. Finnegan Jr. PhD¹, Monika Arora PhD^{3,4}, K. Srinath Reddy MD^{3,4}

¹Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, Minneapolis, MN; ²Michael & Susan Dell Center for Healthy Living, Austin Regional Campus, School of Public Health, University of Texas Health Science Center, Austin, TX; ³Public Health Foundation of India, New Delhi, India; ⁴HRIDAY, New Delhi, India

Corresponding Author: Charu Mathur, PhD, Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, 1300 S. Second Street, Suite 300, Minneapolis, MN 55454, USA. Telephone: 612-624-0577; Fax: 612-624-0315; E-mail: math0304@umn.edu

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ABSTRACT

Purpose: To empirically determine the socioeconomic differences in risk profiles of susceptibility and ever use of tobacco among adolescents in India and to investigate the association between the risk profiles and the psychosocial factors for tobacco use.

Methods: Students in 16 private (higher socioeconomic status [SES]; $n = 4,489$) and 16 government (lower SES; $n = 7,153$) schools in two large cities in India were surveyed about their tobacco use and related psychosocial factors in 2004. Latent class analysis was used to identify homogenous, mutually exclusive typologies existing within the data.

Results: Overall, 3 and 4 latent classes of susceptibility and ever use of tobacco best described students in higher- and lower-SES schools, respectively. Profiles with various combinations of susceptibility and ever use of tobacco were differentially related to psychosocial factors, with lower-SES students being more vulnerable to increased levels of tobacco use than higher-SES students.

Conclusions: Acknowledging the multiple dimensions of tobacco use behaviors and identifying constellations of risk behaviors will enable more accurate understanding of etiological processes and will provide information for refining and targeting preventive interventions. Additionally, identifying the socioeconomic differences in susceptibility and ever use risk profiles and their psychosocial correlates will enable policy makers to address these inequities through improved allocation of resources.

INTRODUCTION

There is an increasing amount of empirical evidence that susceptibility and previous use of tobacco are potent predictors of future tobacco use among adolescents (Conrad, Flay, & Hill, 1992; Pierce, Farkas, Evans, & Gilpin, 1995). The susceptibility model, proposed by Pierce et al. (1995), integrates constructs of intentions and expectations of future behavior to define susceptibility and to identify individuals who have a cognitive predisposition to smoking (Pierce, Choi, Gilpin, Farkas, & Merritt, 1996). Susceptibility has been defined as failure to exhibit a determined decision not to smoke either in the future (e.g., in the next year) or in a certain context (e.g., if offered a cigarette by a friend). This model has been validated extensively in the literature from the United States and predicts smoking, prospectively (Choi, Gilpin, Farkas, & Pierce, 2001; Choi, Pierce, Gilpin, Farkas, & Berry, 1997).

Several studies have investigated the association between prior tobacco use and later tobacco use (Stacy, Bentler, & Flay, 1994) and found it to be the best predictor of future use (Conrad et al., 1992). According to the theory of triadic influence, prior tobacco use affects later tobacco use through feedback mechanisms (Flay, Petraitis, & Hu, 1995). Numerous studies have found support for these feedback mechanisms (Bentler & Speckart, 1979; Krohn, Skinner, Massey, & Akers, 1985). Krohn et al. (1985) found that prior smoking, through its positive and negative consequences, both directly and indirectly affects smoking maintenance.

Choi et al. (2001) refined the susceptibility model by integrating susceptibility with previous smoking experience. The new integrated measure expanded each level of smoking behavioral experience and refined it based on adolescents' cognitions regarding tobacco use (e.g., never smoker with low-risk cognitions and never smoker with high-risk cognitions). These subgroups differed in their likelihood of progressing to

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current established smoking. Specifically, within each level of previous smoking experience, high-risk cognitions increased the probability of future smoking over low-risk cognitions (Choi et al., 2001). Although it is known that susceptibility and ever use of tobacco are contributory, it is less clear how they interact to increase or decrease the risk of future tobacco use, and therefore, examining their role as individual risk factors ignores the co-occurrence of these risks and their effects on the outcome. Furthermore, previous studies have employed standard analytical approaches such as linear or logistic regression for data analysis and therefore have been unable to elucidate the complex relationship between susceptibility and ever use of tobacco. The present study is notable in that it uses multiple indicators to identify distinct multidimensional risk profiles of susceptibility and ever use of tobacco.

Socioeconomic status (SES) differences in tobacco use in adolescents can be regarded as a prelude to socioeconomic differences in tobacco use and related health hazards in adulthood. Therefore, understanding the SES differences in the susceptibility and tobacco use risk profiles, the association between the risk profiles and psychosocial factors of influence is extremely important in halting the tobacco epidemic in India. According to Global Youth Tobacco Survey (GYTS), after a steady increase in prevalence of tobacco use by 13- to 15-year olds from 2001 to 2003 (Centers for Disease Control and Prevention, 2001), the prevalence of current tobacco use has plateaued among this population from 2003 to 2009 (Gajalakshmi & Kanimozhi, 2010; Sinha et al., 2008). However, GYTS does not contain measures of SES and therefore cannot be used to examine differences in tobacco use by this very important demographic factor. Additionally, more than one-third of adults (age 15+) in India are current tobacco users (Sinha, Palipudi, Rolle, Asma, & Rinchen, 2011). By 2020, in India, tobacco-attributable deaths will escalate from 1% of all deaths to over 13%, the fastest increase in these deaths worldwide, at present (Reddy & Gupta, 2004).

Globally, adult tobacco consumption is strongly and positively associated with poverty. In contrast to a large literature examining SES and adolescent smoking in Western countries, only a single published study has examined the social disparities in tobacco use among Indian youth and reported lower SES adolescents to be 1.5 times more likely to engage in current use of any tobacco compared with higher SES youth (Mathur, Stigler, Perry, Arora, & Reddy, 2008).

Studies in the United States have reported an array of psychosocial factors of influence for smoking among adolescents, ranging from the intrapersonal factors (e.g., knowledge about health effects of tobacco use) and social-environmental (e.g., social normative beliefs) contexts (Mayhew, Flay, & Mott, 2000). Similarly, these psychosocial factors were associated with significantly greater tobacco use in the study population in India at baseline (Mathur et al., 2008; Reddy, Perry, Stigler, & Arora, 2006; Stigler et al., 2010). The current study takes a more nuanced look at the association between each risk profile and psychosocial factors within both higher and lower socioeconomic groups, extending the previous work (Mathur et al., 2008).

The aims of this study were to (a) determine and describe the risk profiles of susceptibility and prior use of tobacco in urban Indian adolescents, across SES groups, and (b) investigate whether these risk profiles are differentially associated with psychosocial factors of tobacco use, across SES groups.

METHODS

Study Design

This analysis was conducted on survey data collected in 2004 from adolescents ($n = 11,642$) participating in Project Mobilizing Youth for Tobacco Related Initiatives in India (Project MYTRI). The study design is detailed elsewhere (Perry, Stigler, Arora, & Reddy, 2009). Briefly, MYTRI was a group-randomized trial designed to prevent the onset and reduce the prevalence of tobacco among youth in urban schools in Delhi and Chennai, India. SES was measured using school type, a variable often applied as a proxy indicator in this setting. In India, students from higher SES backgrounds typically attend private schools, whereas those from lower SES backgrounds attend government schools (Sharma, 1999). Therefore, in accordance with earlier similar studies in India, school type was used as a proxy measure for SES (Mathur et al., 2008; Reddy et al., 2006; Stigler et al., 2010). At baseline, among all students in the study ($n = 11,642$), the mean age of participants was 12 years, 54.9% of the participants were male (vs. female), and 63% of the participants were from Government schools (vs. private schools). Ethical clearances for the trial were obtained from Independent Ethics Committee, Mumbai, India, and the Institutional Review Board at the University of Minnesota, which required passive (but informed) parental consent and active student assent for young people to participate.

Measures

Tobacco Use

Ever use of chewing tobacco was measured with a single dichotomous variable (yes or no). Ever use of smoking bidis or cigarettes were also measured with two dichotomous variables (yes or no), and based on responses, a single ever smoked item was created (having said “yes” to ever use of bidis or cigarettes).

Susceptibility to Tobacco Use

Following Pierce et al. (1996), susceptibility to smoking was defined as a three-level indicator. To be classified as not susceptible to smoking, a respondent had to answer “no” for all three questions: “do you think you will try smoking cigarettes or bidis in the next month?” “do you think you will try smoking cigarettes or bidis in the next year?” and “if one of your close friends gave you a cigarette or bidi would you smoke it?” Individuals responding “yes” to any two questions were considered mildly susceptible, and individuals responding a “yes” to all the three questions were classified as highly susceptible to smoking. Likewise, a three-level indicator was created to measure susceptibility to chewing tobacco. This measure has been formally validated (Pierce et al., 1995, 1996) and used in previous studies (Choi et al., 1997, 2001).

Psychosocial Factors of Influence

Multiple-item, summative scales were created to measure 15 psychosocial factors hypothesized to be related to tobacco use among youth in India. Factor selection was guided by social cognitive theory and theories of youth health promotion, as well as prior research on the etiology of tobacco use in the West (Bandura, 1977; Mayhew et al., 2000; Perry, 1999; US Department of Health and Human Services, 1994). All scales had adequate psychometric properties (e.g., Chronbach's α ranged from 0.64 to

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0.98; Stigler, Perry, Arora, & Reddy, 2006). Scale scores were standardized before being used in the analyses to ease interpretation of parameter estimates and allow for comparison between scales. A higher score on all scales indicates less risk.

Statistical Analyses

First, latent class analysis (LCA; Collins & Lanza, 2010; Goodman, 1974; Lazarsfeld, 1950) was used to identify and describe susceptibility and ever use risk profiles across school types after accounting for nesting within schools. All LCAs were conducted using PROC LCA Version 1.2.7 (Lanza, Dziak, Huang, Xu, & Collins, 2011) in SAS for Windows (version 9.3; SAS Institute Inc.). Second, using a classify/analyze approach, information from the LCA model was used to assign students to risk profiles, and the means of psychosocial factor scores were examined across these after adjusting for other psychosocial factors.

Identifying Latent Classes of Risk

Across SES groups, LCA was used to identify subgroups of students characterized by unique combinations or profiles of susceptibility and tobacco use behavior. For each model, to assess model identification, multiple sets of starting values were specified. Model selection was conducted using a combination of fit indices, primarily the Akaike's information criterion (Akaike, 1974) and Bayesian information criteria (Schwarz, 1978), where lower values correspond to a more optimal balance between fit and parsimony, and interpretability. These best-fitting models provide estimates of the prevalence of each risk profile for each SES group.

Relations Between Risk Profiles and Psychosocial Factors of Influence

To examine the association between the risk profiles and the psychosocial factors, a classify/analyze approach was employed, using the LCA model results to assign each student

to the class in which they had the highest classification or posterior probability (Collins & Lanza, 2010). It was also used to determine the proportion of boys (vs. girls) and 6th (vs. 8th) graders in each risk profile. The average posterior probabilities of membership ranged from .96 to .98 for the higher SES profiles and from .86 to .95 for the lower SES profiles. Because these probabilities were high, and the proportion of students assigned to each risk profile closely corresponded to the prevalence estimates in the LCA model, this suggests that little classification error was introduced by using a classify/analyze strategy. Within both SES types, general linear mixed models were estimated for risk profiles predicting each psychosocial factor, adjusting for rest of the factors and accounting for clustering within schools.

RESULTS

Tables 1 and 2 present the parameter estimates for the 3- and 4-class models that best reflect the risk profiles of students in the higher and lower SES, respectively. Three classes were similar across SES, whereas there was an additional class unique to the lower SES students. Using the endorsement probabilities of the four indicators and previous research as guides, labels were developed to describe each risk profile.

In the three risk profiles that were similar across SES, the first risk profile was labeled "Never user, low risk" because individuals in this profile had a very low probability of endorsing any of the items. Across SES, this was by far the most prevalent subgroup and included 80% of the higher SES and 72.5% of the lower SES students. The second profile "Ever user, high risk" was almost evenly represented in the higher and lower SES groups (3% and 5%, respectively). This group had increased probabilities of having ever used smoked and smokeless tobacco, and high susceptibility to chewing and smoking tobacco in the future. Across SES groups, although the third profile "Never users, high risk" was similar on some aspects,

Table 1. Three-Class Model of Stages of Susceptibility and Ever Use of Tobacco in Higher-SES Students in India ($n = 4,489$)

	Latent classes		
	Never user, low risk (80%)	Never user, high risk (17%)	Ever user, high risk (3%)
Probability of response to indicators of susceptibility and ever use of tobacco			
Ever chewed tobacco			
No	.98	.70	.40
Yes	.02	.30	.60
Ever smoked tobacco			
No	.99	.99	.03
Yes	.01	.01	.97
Susceptibility to chewing			
None	.96	.00	.18
Mildly susceptible	.04	.30	.20
Highly susceptible	.00	.70	.62
Susceptibility to smoking			
None	.97	.70	.24
Mildly susceptible	.02	.20	.19
Highly susceptible	.01	.10	.57
Boys	58.64%	66.51%	78.52%
6 th graders	49.25%	65.26%	65.93%

Note. Probabilities in bold indicate a greater likelihood of endorsement for the particular item.

Table 2. Four-Class Model of Stages of Susceptibility and Ever Use of Tobacco in Lower-SES Students in India (*n* = 7,153)

	Latent classes			
	Never user, low risk (72.5%)	Never user, high risk (11%)	Ever user, low risk (11.5%)	Ever user, high risk (5%)
Probability of response to indicators of susceptibility and ever use of tobacco				
Ever chewed tobacco				
No	.99	.97	.32	.01
Yes	.01	.03	.68	.99
Ever smoked tobacco				
No	.99	.82	.49	.25
Yes	.01	.18	.51	.75
Susceptibility to chewing				
None	.92	.10	.62	.08
Mildly susceptible	.05	.19	.18	.09
Highly susceptible	.03	.71	.20	.83
Susceptibility to smoking				
None	.98	.15	.91	.01
Mildly susceptible	.02	.14	.09	.16
Highly susceptible	.00	.71	.00	.83
Boys	47.59%	57.96%	66.15%	68.88%
6th graders	48.20%	66.86%	68.48%	75.79%

Note. Probabilities in bold indicate a greater likelihood of endorsement for the particular item.

it differed on susceptibility to chewing and smoking. Within higher SES group, “Never users, high risk” profile contained 17% of students and was characterized by increased probability of high susceptibility to chewing tobacco only, and very low probabilities of endorsing other items. However, within lower SES group, “Never users, high risk” profile comprised of 11% of the sample and was characterized by increased probabilities for high susceptibility to both, chewing and smoking tobacco. As evident by the label, students in this profile had no experience with tobacco use.

The unique risk profile for the lower SES group “Ever user, low risk” included 11.5% of the students. Although, the members of this profile had an increased probability of having chewed tobacco, they were not susceptible to future tobacco use, smoked or smokeless. Within both SES types, boys (vs. girls) and 6th (vs. 8th) graders were approximately equally represented in the “Never user, low risk” profile. However, an overall trend of increase in proportion of boys (vs. girls) and 6th (vs. 8th) graders was observed in the other risk profiles with 2–3 times higher proportion of 6th (v 8th) graders.

Overall, a higher proportion of higher (vs. lower) SES students were in the “Never user, low risk” profile, and the proportion of ever users, regardless of susceptibility status, was more than five times in the lower (vs. higher) SES group (16.5% vs. 3% respectively).

Tables 3 and 4 show the adjusted means and standard errors for the psychosocial factors for each of the assigned risk profiles within each SES group. Among the lower SES group, risk profile membership was a significant predictor of scores for all factors but the “reasons not to use tobacco, knowledge of public policy, and exposure to advertising.” Risk profile membership was a significant predictor of psychosocial factors for 12 factors, and students assigned to “Ever user, high risk” profile scored the least (i.e., being at most risk for tobacco use) on 8 factors relative to other profiles. Interestingly, between “Ever user, low risk” and “Never user, high risk” profiles, both

scored lower on almost equal number, albeit different factors and therefore were at equal risk of future tobacco use.

Among the higher SES group, three additional psychosocial factors were not significantly predicted by risk profile membership. These were the “knowledge of health effects, perceived access, and receptivity to advertising.” Similar to the lower SES group, the higher SES students assigned to “Ever user, high risk” profile scored the lowest on most of the psychosocial factors with significant association (which indicates greatest risk for future tobacco use). As expected, across SES, “Never user, low risk” profile members were at the least risk of future tobacco consumption.

In summary, within SES groups, membership in the “Never user, low risk” profile conferred the most protection from future tobacco use, whereas membership in profiles other than the “Ever use, high risk” profile was associated with comparatively relatively lower risk of future tobacco use. However, across SES, lower SES group scored lower on more psychosocial factors, making them more vulnerable to future tobacco use.

DISCUSSION

The socioeconomic differences in risk profiles of susceptibility and ever use among adolescents in urban India were empirically determined using a latent class approach. Additionally, the association between the risk profiles and psychosocial factors of tobacco use was investigated. Three and four risk profiles best described differences in susceptibility and ever use in the higher and lower SES students, respectively. Based on risk profiles, a greater proportion of adolescents in the lower (vs. higher) SES group were in the susceptible and/or ever users risk profiles and therefore at an increased risk of future tobacco consumption. These findings are in accordance with a previous study from India where the prevalence of tobacco use was significantly higher among the lower (vs. higher) SES students

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Table 3. Relationship Between Psychosocial Factors and Latent Classes of Tobacco Use, Higher-SES Students ($n = 4,489$)^a

	Latent classes			Overall p value
	Never user, low risk	Never user, high risk	Ever user, high risk	
	M (SE)			
Intrapersonal factors				
Knowledge (health effects)	0.12 (0.02) _a	0.13 (0.04) _a	0.06 (0.08) _a	.6643
Beliefs (social consequences)	0.41 (0.02)	0.29 (0.03)	0.09 (0.05)	<.0001
Meanings (reasons to use)	0.09 (0.01)	-0.16 (0.03)	-0.33 (0.08)	<.0001
Meanings (reasons not to use)	0.72 (0.02) _a	0.71 (0.03) _a	0.67 (0.07) _a	.8259
Self-efficacy (refusal skills)	0.66 (0.05) _a	0.38 (0.06) _b	0.52 (0.11) _{ab}	<.0001
Social-environmental factors				
Normative beliefs	0.10 (0.02)	-0.25 (0.03) _a	-0.32 (0.07) _a	<.0001
Normative expectations	0.25 (0.01)	0.14 (0.02)	-0.06 (0.05)	.0001
Perceived access	-0.29 (0.04) _a	-0.23 (0.05) _a	-0.20 (0.10) _a	.4036
Perceived prevalence (chewing)	0.19 (0.02)	-0.08 (0.03) _a	-0.07 (0.07) _a	<.0001
Perceived prevalence (smoking)	0.15 (0.03) _a	0.38 (0.04)	0.16 (0.08) _a	<.0001
Knowledge (public policy)	-0.10 (0.02) _a	-0.07 (0.05) _a	0.07 (0.10) _a	.2204
Support (public policy)	0.08 (0.02)	-0.01 (0.04)	-0.22 (0.07)	<.0001
Self-efficacy (advocacy skills)	0.30 (0.03)	0.22 (0.04) _a	0.09 (0.07) _a	.0007
Other factors				
Receptivity to advertising	0.03 (0.02) _a	-0.03 (0.05) _a	0.02 (0.10) _a	.5306
Exposure to advertising	-0.01 (0.03) _a	0.04 (0.05) _a	0.04 (0.09) _a	.4187

Note. A higher score on all multi-item scales for all factors indicate less risk.

Means in the same row that share subscripts do not differ at $p < .05$ according to the pairwise comparisons.

^aEstimates are generated from mixed-effects models that are adjusted for other factors, using standardized scale scores.

Table 4. Relationship Between Psychosocial Factors and Latent Classes of Tobacco Use, Lower-SES Students ($n = 7,153$)^a

	Latent classes				Overall p value
	Never user, low risk	Never user, high risk	Ever user, low risk	Ever user, high risk	
	M (SE)				
Intrapersonal factors					
Knowledge (health effects)	0.07 (.03)	-0.21 (0.06) _a	-0.16 (0.05) _a	-0.40 (0.08)	<.0001
Beliefs (social consequences)	-0.09 (.06)	-0.23 (0.08) _a	-0.31 (0.08) _{ab}	-0.30 (0.10) _{ab}	<.0001
Meanings (reasons to use)	0.08 (.02)	-0.26 (0.04) _a	-0.01 (0.04)	-0.27 (0.06) _a	<.0001
Meanings (reasons not to use)	-0.41 (.02) _a	-0.40 (0.04) _a	-0.43 (0.04) _a	-0.39 (0.06) _a	.9330
Self-efficacy (refusal skills)	-0.42 (.03) _a	-0.27 (0.04) _b	-0.43 (0.04) _a	-0.19 (0.06) _b	<.0001
Social-environmental factors					
Normative beliefs	0.16 (.02) _a	-0.52 (0.04)	0.18 (0.04) _a	-0.64 (0.06)	<.0001
Normative expectations	0.01 (.03)	-0.27 (0.06) _a	-0.33 (0.05) _{ab}	-0.37 (0.08) _{ab}	<.0001
Perceived access	0.19 (.01)	0.05 (0.04) _a	0.27 (0.04)	-0.01 (0.07) _a	.0001
Perceived prevalence (chewing)	-0.07 (.03) _a	-0.10 (0.05) _{ab}	-0.18 (0.04) _c	-0.24 (0.07) _{bc}	.0073
Perceived prevalence (smoking)	-0.08 (.03) _{ab}	-0.03 (0.05) _{ac}	-0.22 (0.04)	0.03 (0.07) _{bc}	.0005
Knowledge (public policy)	0.10 (.03) _a	0.07 (0.05) _a	0.01 (.05) _a	0.09 (0.08) _a	.3268
Support (public policy)	0.15 (.03)	-0.32 (0.05)	-0.07 (0.04)	-0.66 (0.08)	<.0001
Self-efficacy (advocacy skills)	-0.08 (.03) _a	-0.29 (0.06) _b	-0.32 (0.05) _{bc}	-0.22 (0.08) _{abc}	<.0001
Other factors					
Receptivity to advertising	0.03 (.03)	0.16 (0.05)	-0.08 (0.04) _a	-0.13 (0.07) _a	<.0001
Exposure to advertising	-0.01 (.04) _a	-0.05 (0.06) _a	-0.09 (0.06) _a	-0.07 (0.09) _a	.3661

Note. A higher score on all multi-item scales for all factors indicate less risk.

Means in the same row that share subscripts do not differ at $p < .05$ according to the pairwise comparisons.

^aEstimates are generated from mixed-effects models that are adjusted for other factors, using standardized scale scores.

(Mathur et al., 2008). Across SES groups, the proportion of 6th (vs. 8th) graders was much greater in the higher risk profiles, vulnerable to future tobacco use. These findings are consistent with that of a previous MYTRI study too (Stigler et al., 2006).

The findings advance the understanding of the relationship between susceptibility and ever use risks with psychosocial factors of tobacco use by providing a more nuanced look at the risk profiles. Moreover, these risk profiles were meaningfully associated with the psychosocial factors, in a dose–response fashion that one might hypothesize. Those in the “Never user, low risk” profile were the least, and those in the “Ever user, high risk” profile were most vulnerable to future tobacco use, highlighting the synergistic effect of past use and susceptibility. Choi et al. (2001) noted that the probability of future smoking for those with low-risk cognitions was almost the same as those in the previous smoking experience group with high-risk cognitions, and this was corroborated in the findings from this study, with “Ever user, low risk” and “Never user, high risk” profiles, among the lower SES group being at almost equal risk of future use. Risk profiles were significantly associated with 9 and 12 psychosocial factors in the higher and lower SES groups, respectively. Across SES, “Ever user, high risk” profile consistently scored lower on almost all the psychosocial factors, with students in this profile at the highest risk for future tobacco use.

The higher proportion of adolescents in risk profiles other than “Never user, low risk” profile among lower SES (27.5%) compared with higher SES (20%) group could be due to lower SES students belonging to families with higher parental tobacco consumption (Palipudi et al., 2012). Behavior modeling might influence adolescents to follow their parents and initiate tobacco use (Chassin, Presson, Sherman, & Edwards, 1992). Additionally, parental use may increase the opportunity for procuring tobacco (Mayhew et al., 2000), especially in the initial stages of use as evidenced by a significant association between risk profiles and perceived access to tobacco. There are also a number of potential mechanisms in which parental SES may influence adolescent tobacco use, independent from parental tobacco consumption. For example, adverse health consequences of tobacco use may not be salient to adolescents from the lower SES families, and this was supported by a significant association between the risk profiles and lack of knowledge about health effects among the lower SES students. Adolescents from families with lower SES parents might also experience more stressors and have fewer opportunities, making them more likely to seek instant gratification through tobacco use (Soteriades & DiFranza, 2003). Additionally, adolescents are estimated to have three times the sensitivity to tobacco advertising (Pollay & Lavack, 1993), and this study found the risk profiles to have a significant association with receptivity to advertising. This association could explain receptivity as a possible mechanism for future use. Additional research with longitudinal studies replicating the potential pathways by which SES influences tobacco use is warranted.

The current study is not without limitations. The participants were urban adolescents from two metro cities in India. Risk profiles might have different dynamics in an urban setting. To test the generalizability of the current findings, the study should be replicated in rural settings in different geographical regions, as tobacco use varies widely among states in India. These findings should not be generalized beyond populations that are similar to the study population. 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. Finally, since the probability of membership in a particular class did not equal to 1 for each individual, there is some uncertainty associated with their latent class assignment. Because this uncertainty was not modeled in the subsequent regression analyses, it is important to interpret the results with caution (Lanza, Collins, Lemmon, & Schafer, 2007).

The current study has considerable strengths. It uses a validated measure of susceptibility, and ever use of tobacco, to identify distinct risk profiles across lower and higher SES students and expands understanding of the etiological processes and risk of tobacco use. To date, no studies have been conducted to empirically derive risk profiles of susceptibility and tobacco use among Indian youth and investigate their association with psychosocial factors of tobacco use.

CONCLUSIONS

Within SES groups, these risk profiles can be used to identify adolescents at most risk and therefore in the greatest need of interventions, although the intervention strategies best suited to needs of students in high-risk profiles may differ widely from intervention strategies that would be most appropriate for students in low-risk profiles. These results provide insights into how tobacco prevention strategies could be targeted among students that would be most appropriate to their needs. Across SES groups, prevention scientists could design interventions based on a set of psychosocial factors that are salient for each SES group, thus leveraging resources more effectively. Specifically, the 9 and 12 psychosocial factors that were significantly predicted by risk profiles for higher and lower SES groups, respectively, and therefore would be good candidates to target for behavioral change through intervention. Additionally, policy makers could address these socioeconomic discrepancies in tobacco use through allocation of funds for larger societal interventions that focused primarily on lower SES youth.

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DECLARATION OF INTERESTS

None declared.

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