

BRIEF COMMUNICATION

Sociodemographic factors associated with smoking risk perception in adolescents in São Paulo, Brazil

Gabriela A. Wagner,¹  Zila M. Sanchez,¹ Thiago M. Fidalgo,² Sheila C. Caetano,² Hannah Carliner,³ Silvia S. Martins³

¹Universidade Federal de São Paulo (UNIFESP), Escola Paulista de Medicina, Departamento de Medicina Preventiva, São Paulo, SP, Brazil.

²Departamento de Psiquiatria, Escola Paulista de Medicina, UNIFESP, São Paulo, SP, Brazil. ³Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY, USA.

Objective: We examined the sociodemographic factors associated with smoking risk perceptions (SRP) in youth living in two very different neighborhoods in the city of São Paulo, Brazil: a middle-class central area (Vila Mariana) and a poor outer-city area (Capão Redondo).

Methods: A cross-sectional survey was conducted with 180 public school-attending youth (all aged 12 years) and their parents. SRP was evaluated through self-reports. Weighted multinomial logistic regression was used to examine factors associated with SRP.

Results: Smoking was considered a high-risk behavior by 70.9% of adolescents. There were significant differences in SRP associated with socioeconomic status (SES) and maternal smoking status. Having a non-smoking mother was positively associated with perceiving smoking as having low to moderate risk versus no risk (OR=3.91 [95%CI 1.27-12.02]). Attending school in Capão Redondo was associated with perceiving smoking as having high risk compared to no risk (OR=3.00 [95%CI 1.11-8.12]), and low SES was negatively associated with perceiving at least some risk in smoking versus perceiving no risk in this behavior.

Conclusions: Youth whose mothers smoke appear to have lower SRP than those whose mothers do not smoke. Living in a poor outer-city area was associated with higher SRP.

Keywords: Tobacco; public school; neighborhoods; Brazil

Introduction

Since 1989, there has been a decline in tobacco consumption in Brazil as a result of nationwide government anti-smoking interventions and strategies.¹ Additionally, the Brazilian government has worked to decrease drug use, especially among youth – for example, by creating distance-learning courses on drug prevention aimed at training school teachers, health professionals, and religious and community leaders in drug abuse prevention.² However, smoking among Brazilian adolescents remains a problem, and 19.6% still report lifetime use of tobacco.³ National messages about the long-term harmful consequences of tobacco use may not be as effective on young people, who tend to assess harm from a perspective of immediate damage rather than long-term health risks.⁴

Individual and family characteristics are risk and protective factors for smoking among youth.⁵ At the individual level, situational characteristics as well as person-centered characteristics jointly influence attitudes toward risk, according to the interactional model of risk-taking.⁶ At the family level, the behavior of parents and siblings may serve as a model for adolescents and can

act positively or negatively on habits and behaviors, including smoking.⁷⁻⁹

Little is known about smoking risk perceptions among youth in Brazil. This paper presents preliminary data from a study conducted among public school students and their parents in the city of São Paulo, Brazil. We examined sociodemographic factors and history of parental smoking associated with smoking risk perceptions among youth living in two very different urban neighborhoods: a middle-class central area (Vila Mariana) and a poor outer-city area (Capão Redondo).

Methods

This cross-sectional study was conducted in 180 public school-attending youth (all 12-year-olds) and their parents in two neighborhoods in São Paulo, Brazil. One of the neighborhoods, Vila Mariana, has relatively low exposure to urban violence (13 homicides per 100,000 inhabitants) and a high Human Development Index (HDI) of 0.950. The other, Capão Redondo, is one of the most violent neighborhoods in the city of São Paulo, has high exposure to urban violence (47 homicides per 100,000 inhabitants),

Correspondence: Gabriela Arantes Wagner, Rua Botucatu, 740, 4º andar, CEP 04023-062, São Paulo, SP, Brazil.

E-mail: gabriela.wagner@unifesp.br

Submitted Jul 10 2018, accepted Oct 23 2018, Epub Feb 04 2019.

How to cite this article: Wagner GA, Sanchez ZM, Fidalgo TM, Caetano SC, Carliner H, Martins SS. Sociodemographic factors associated with smoking risk perception in adolescents in São Paulo, Brazil. *Braz J Psychiatry*. 2019;41:546-549. <http://dx.doi.org/10.1590/1516-4446-2018-0219>

and a lower HDI (0.782). Both neighborhoods are located in the southern region of the city, which has a population of 3.6 million according to the 2010 Census (versus 11.4 million for the city as a whole).

Nine public schools from the poorest sections of each neighborhood were selected for this study – five in Vila Mariana and four in Capão Redondo. We recruited all students born between January 1 and December 31, 2002 and regularly enrolled in the 7th grade in 2014 ($n=416$). Every student's caregivers received a letter explaining the goals and procedures of the study. Subsequently, the field supervisor telephoned the caregivers to invite them to participate and to clarify potential questions about the goals and procedures. Of the 416 registered students, only 210 had an active landline or cell phone line that allowed the research team to recruit them. Among the 210 students with active phones, 180 consented to participate, generating an acceptance rate of 85%. The other 15% declined to participate.¹⁰

The study protocol was approved by the Columbia University institutional review board (IRB-AAM4702) and by the Universidade Federal de São Paulo research ethics committee (protocol 451.565 of August 11, 2013).

Data collection and instruments

Interviews were conducted with both the adolescent and the caregiver by a trained team of child and adolescent psychiatrists and psychologists using an app developed to record data onto personal smartphones. The questionnaire included demographic information about the caregiver and child and their socioeconomic status (SES).¹¹

Variables

Dependent variable

Adolescents were asked “How risky is it for a young person to occasionally smoke use cigarettes?” Based on their answers (no risk, low risk, moderate risk, high risk, and I don't know the risk), participants were classified as high risk, low to moderate risk, and no risk. The answer “I don't know the risk” was classified as missing ($n=10$). Although the response category option “occasionally” may give rise to different interpretations for each individual, we decided to keep the same answer formulated in the original questionnaire, extracted from the Project on Human Development in Chicago Neighborhoods.¹²

Independent variables

Sex (boy/girl), neighborhood, family SES, and parental smoking were included as covariates. SES was evaluated according to a standardized Brazilian survey assessment known as the ABEP index, which stratifies respondents into SES classes.¹¹ In order to improve the accuracy of estimates in regression models, classes A and B were grouped as high SES, while classes C to E were grouped as low SES. Adolescents were also asked whether their mothers and/or fathers were current smokers. We created

a separate binary variable for each parent's current smoking status.

Statistical analysis

Descriptive analyses were conducted for sociodemographic characteristics, history of parental smoking, and smoking risk perceptions. Between-group comparisons were done using Pearson's chi-square test with the Rao-Scott correction.¹³ Multinomial logistic regression was used to identify factors associated with smoking risk perceptions. The reference category was “no risk” in comparison with “light to moderate risk” and “high risk.” Analyses were performed using the Stata statistical software package, version 12. All covariates of interest were included in final models, except for paternal smoking status, which was not associated with smoking risk perception in bivariate analyses. Effect estimates are reported as adjusted odds ratios (OR) and 95% confidence intervals (95%CI). All analyses took into account the sample weights, and the inferences considered the design effect. Only 3 adolescents (1.7%) were current smokers at the time of the interview, so this variable was not included in final models because of the low prevalence.

Results

At the time of the interview, occasional youth smoking was considered a high-risk behavior by 70.9% of the adolescents; a low to moderate risk behavior by 22.4%; and a risk-free behavior by 6.8%. Neighborhood, sex, and paternal smoking were not associated with smoking risk perception levels. In contrast, SES ($p = 0.018$) and maternal smoking ($p = 0.030$) were statistically significantly associated with smoking risk perception levels (Table 1). In the multinomial logistic regression model, with no risk as reference, having a non-smoking mother (vs. having a mother who smokes) was positively associated with perceiving smoking as having low to moderate risk versus no risk in the unadjusted logistic regression model (OR = 4.33 [95%CI 1.44-12.96]) and in the adjusted model (OR = 3.91 [95%CI 1.27-12.02]). Attending school in Capão Redondo was significantly associated with perceiving smoking as having high risk compared to no risk (OR = 3.00 [95%CI 1.11-8.12]), versus students from Vila Mariana (Table 2). Finally, low SES was negatively associated with perceiving at least some risk in smoking versus perceiving no risk in this behavior (Table 2).

Discussion

Most adolescents in our sample perceived smoking as a high-risk behavior. Being a boy and attending school in Capão Redondo were significantly and positively associated with perceiving smoking as a high-risk behavior. Low SES was significantly and negatively associated with perceiving at least some risk in smoking versus perceiving no risk in this behavior. Having a non-smoking mother

Table 1 Weighted distribution of sociodemographic characteristics and history of parental smoking by smoking risk perceptions, São Paulo, Brazil, 2014 (n=180)

	No risk		Light to moderate risk		High risk		p-value*
	Wgt% (95%CI)	n	Wgt% (95%CI)	n	Wgt% (95%CI)	n	
Total	6.7 (4.4-10.2)	12	22.4 (18.1-27.4)	40	70.9 (65.6-75.6)	128	
Sex							
Female	9.4 (5.7-15.4)	8	25.3 (18.9-32.9)	22	65.3 (57.3-72.5)	57	0.072
Male	4.3 (2.1-8.9)	4	19.8 (14.3-26.7)	18	75.9 (68.7-81.9)	71	
Socioeconomic status [†]							
High	1.6 (0.4-6.9)	1	25.6 (18.4-34.5)	17	72.7 (63.8-80.2)	49	0.018
Low	9.9 (6.4-14.9)	11	20.4 (15.3-26.6)	23	69.7 (63.0-75.7)	79	
Father is a current smoker							
No	6.5 (4.0-10.4)	9	22.5 (17.7-28.2)	31	71.0 (65.0-76.4)	100	0.945
Yes	7.6 (3.2-17.0)	3	22.0 (13.9-33.0)	9	70.4 (58.8-79.8)	28	
Mother is a current smoker							
No	4.6 (2.5-8.2)	6	24.3 (19.2-30.3)	31	71.1 (64.9-76.6)	92	0.030
Yes	12.3 (6.8-21.0)	6	17.5 (11.0-26.8)	9	70.3 (59.9-78.9)	36	
Neighborhood in which school is located							
Vila Mariana	8.7 (5.0-14.8)	7	26.3 (19.4-34.4)	21	65.0 (56.5-72.7)	52	0.085
Capão Redondo	5.0 (2.6-9.3)	5	18.9 (13.9-25.2)	19	76.1 (69.5-81.7)	76	

95%CI = 95% confidence interval; Wgt% = weighted percentage.

* Rao-Scott chi-square test for categorical variables.

[†] Socioeconomic status classification by Associação Brasileira de Empresas de Pesquisa (ABEP) criterion, where high SES = classes A/B and low SES = classes C/D/E.¹¹

Table 2 Associations between smoking risk perceptions, sociodemographic characteristics, and history of parental smoking, São Paulo, Brazil, 2014 (n=180)

	Low to moderate risk				High risk			
	OR (95%CI)*	p-value	aOR (95%CI)* [†]	p-value	OR (95%CI)	p-value	aOR (95%CI)	p-value
Non-smoking mother	4.33 (1.44-12.96)	0.009	3.91 (1.27-12.02)	0.031	1.86 (0.74-4.69)	0.186	1.65 (0.62-4.34)	0.310
Neighborhood								
Capão Redondo	1.26 (0.47-3.38)	0.647	1.92 (0.66-5.54)	0.227	2.04 (0.83-5.07)	0.121	3.00 (1.11-8.12)	0.030
Sex								
Male	1.71 (0.60-4.81)	0.307	1.75 (0.56-5.42)	0.328	2.54 (0.99-6.62)	0.550	2.92 (1.02-8.41)	0.047
Socioeconomic status [‡]								
Low	0.13 (0.02-0.66)	0.014	0.11 (0.02-0.63)	0.013	0.15 (0.03-0.78)	0.022	0.12 (0.02-0.63)	0.013

95%CI = 95% confidence interval; aOR = adjusted odds ratio; OR = odds ratio; SES = socioeconomic status.

* Multiple polynomial analyses. No risk as reference.

[†] Model adjusted by sex and SES, as described in the Methods section.

[‡] Socioeconomic status classification by Associação Brasileira de Empresas de Pesquisa (ABEP) criterion, where high SES = classes A/B and low SES = classes C/D/E.¹¹

was positively associated with perceiving smoking as a low-to-moderate risk behavior (vs. no risk).

The first important finding is that most adolescents in the sample considered smoking a high-risk behavior. A study conducted in the United States suggested that some adolescents may start smoking because they ignore the long-term health effects of smoking, even though they are not uninformed about its harms.⁴ Our findings from São Paulo may reflect the impact of government anti-smoking interventions and strategies which have been conducted in Brazil since 1989. The general perceptions of risk associated with drugs (acquired through risk information programs and social influence)

can have an impact on patterns of tobacco consumption for future generations,⁸ as has been seen with the significant reduction of young smokers in Brazil.²

Concerning sociodemographic characteristics, boys perceived smoking as a high-risk behavior. This is different from previous findings, which have identified boys as perceiving smoking behavior as less risky than girls,^{14,15} or which have found no sex differences in risk perception.¹⁶ This may be due to the age of our participants. As boys engage in risky behavior earlier than girls, they may also perceive risk as higher at earlier ages.¹⁷

Neighborhood-level factors are well known to be enablers or barriers to health behaviors, including smoking,

above and beyond individual-level sociodemographic characteristics.¹⁸⁻²² Our findings showed that perception of smoking as a high-risk behavior was positively associated with attending school in Capão Redondo. Previous studies have attributed differences in health behaviors and attitudes to differential distributions of resources available to neighborhood residents and to their differential capability to access them.^{18,22-24} We can infer that this would be especially true in a country where social inequalities are widespread, such as Brazil. Moreover, perceived neighborhood infrastructure has been identified as a predictor of health behaviors, including smoking, among men.²⁵ We speculate that adolescents from Capão Redondo might have less access to health care facilities and primary smoking prevention programs as compared to those from Vila Mariana. This could make them minimize the harmful effects of behaviors such as smoking.

In the present paper, we used SES as a marker of the social conditions of adolescents. Our findings suggest that the adolescents who live in a poor outer-city area have higher smoking risk perceptions, perhaps because smoking is more prevalent among people with low SES in Brazil.² It is worth mentioning, however, that data concerning this topic in the Brazilian context are still controversial, as some studies have shown an association between low SES and smoking while others have not.⁵

In our study, adolescents with non-smoking mothers were more likely to perceive smoking as low to moderately risky than as risk-free, compared to those whose mothers smoked. The effect of maternal smoking seems to be particularly important to smoking risk.

Acknowledgements

We thank the study participants and the data collection team. This research was supported by a grant from the Columbia University President's Global Innovation Fund (PI: SSM). HC was supported by the National Institute on Drug Abuse (NIDA; grant T32DA031099; PI: Hasin).

Disclosure

The authors report no conflicts of interest.

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