

# Ecuadorian adolescents and cigarette smoking: A cross-sectional survey

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## ABSTRACT

*This study investigates adolescents' attitudes and behaviors toward cigarette smoking in Ecuador. Using social cognitive theory as a basis, the cross-sectional survey focuses attention on such social influences as the smoking habits of family members and peers, as well as on the role of cigarette advertisements. Data on prevalence of actual use, access to cigarettes, and knowledge and attitudes about smoking are also obtained.*

*The survey was conducted during the summer of 1994 in both urban and rural areas. Fifty schools in 40 different communities participated, resulting in a sample of 2 625 adolescents aged 9 to 15 years who completed the self-administered questionnaire. This study was conducted in collaboration with Amigos de las Américas (AMIGOS), an international health organization. Staff and volunteers who participated in projects conducted by AMIGOS in Ecuador worked with local health and education officials to implement the survey.*

*Nearly 9% of students identified themselves as current smokers, 24.5% had experimented with smoking, and 61.1% had never smoked. The results varied significantly by age and gender, with older students and boys smoking at the highest rate. The smoking status of family members and peers also significantly predicted student smoking status.*

*The results from this sample replicate findings from North American samples. Although Ecuadorian students smoke somewhat less than their American counterparts, cigarette smoking in Ecuador is a significant public health problem and clearly warrants a coordinated response. The present study points to several strategies for preventing smoking among youth.*

Few available published reports explore the cigarette smoking behavior of adolescents in Latin America. While studies of this nature conducted in the United States have revealed smoking behavior to be intimately related to the nature of adolescence itself (1–3), the reasons motivating Latin American youth have been largely unexplored.

In recent years tobacco companies

from the United States have allocated increasing resources for marketing their products in Latin America (4). As concern has risen among international health professionals regarding the vulnerability of nations that lack effective opposition to tobacco interests, the importance of understanding what drives young people to smoke has increased as well. Understanding why adolescents initiate cigarette smoking is central to the development of appropriate interventions.

This study provides insight into the smoking behavior of youth in Ecuador, South America. Using social cognitive theory (5) as a basis, a cross-

sectional survey was developed to determine the prevalence of smoking and the role of family members, peers, and advertising in smoking initiation among adolescents.

## MATERIALS AND METHODS

The survey was conducted in Ecuador among children aged 9 to 15 years. Data collection took place during the summer months of July and August 1994 in the three Andean provinces of Tungurahua, Cotopaxi, and Azuay, and in the coastal province of El Oro. Data collection was conducted in coor-

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dination with *Amigos de las Américas* (AMIGOS), an international voluntary organization.

Letters of support were obtained from the national and provincial level Directors of Health Education of the Ministry of Education and distributed to schools and other involved participants. In January, AMIGOS staff from Ecuador met in Houston for training. During this time, the staff received preliminary instruction on how to conduct the survey. A follow-up workshop in April provided further training.

### Sample selection

The study population consisted of school children attending classes in selected schools in the communities where AMIGOS volunteers and staff were living and working. Fifty schools in 40 different communities participated in the survey. The communities were selected based on two criteria established by AMIGOS and their in-country sponsoring agencies: 1) public health need and 2) safety of AMIGOS staff and volunteers.

Many of the smaller communities had only one primary school, a fact facilitating the selection of participants. However, larger communities and provincial capitals often had several schools with both primary and secondary grades. In these cases, schools were chosen by the AMIGOS Project Director or by a Ministry of Education official. Selection depended on cooperation of the school officials and accessibility of the students. The majority of participating schools were public. In all cases, classes were chosen based on student availability.

### Questionnaire development

The social cognitive theory (5) provided the framework for questionnaire development around the central constructs of family and peer influences. A tobacco-advertising component was added, as well as general questions regarding cigarette use and knowledge of health consequences. Question

formats and sample items came from a review of existing questionnaires from state-sponsored research in California and Texas, national efforts by the Centers for Disease Control and Prevention, and questionnaires developed and administered abroad in Ecuador, Peru, and Mexico. Other questions were developed specifically for the current study. The questionnaire was designed to be self-administered.

The initial Spanish-language version of the questionnaire was pre-tested with adolescent school children ranging in age from 8 to 17 years. Changes were made based on the children's input, and the revised version was reviewed by several members of Ecuador's Interinstitutional Anti-Smoking Committee. The final version of the questionnaire took approximately 30 minutes to complete.

### Data collection

Schools, classrooms, and education officials were uniformly accessible and cooperative. Students enrolled and attending primary and secondary schools completed the supervised questionnaire in class. Adolescents not attending school the day of data collection were not, however, included in the survey. Students in participating schools could refuse to participate and turn in to the AMIGOS staff member a blank questionnaire. This occurrence was rare, with fewer than 20 blank questionnaires returned.

The analysis followed several steps for quality control and accurate data entry:

- 1) Each questionnaire was manually reviewed before data entry for the above-mentioned problems;
- 2) Approximately 15% of the questionnaires were selected and verified against data file to assure accurate data entry;
- 3) Frequencies were run and checked against coding instructions to identify possible miscodes;
- 4) Cross-tabulations were run on related variables to check for consistent and logical coding.

Data from the 2 457 usable questionnaires were entered into the computer and analyzed using the statistical pro-

gram Epi Info 6 (6). Stratified analysis was conducted based on cross-tabulations. Risk ratios and 95% confidence intervals were calculated. All results referred to as significant have a *P*-value of less than 0.05.

## RESULTS

Of the 2 625 questionnaires collected, 6.5% were not usable. The unused questionnaires were eliminated because: 1) students were either below or above the study's age range; 2) answers to questions were either illogical or inconsistent; 3) series of questionnaires reflected a pattern suggesting that individuals had copied from each other; 4) the questionnaires were so incomplete as to render them unusable.

### Demographics

The respondents were 52.5% male and 42.0% female (the gender of 5.5% was unknown). Of the participants, 65.1% were between 11 and 13 years of age. Participants from Andean (mountain) communities comprised 71.8% of the surveyed population. Such participants were, however, almost equally divided between urban and rural communities (52.4% and 47.6%, respectively). Most of the students (41.3%) reported having fathers that worked as farmers or builders.

### Smoking prevalence and behavior

Of respondents, 8.6% considered themselves "current" smokers. A "current" smoker was someone identified as smoking from occasionally to at least once a week. The majority of the students (61.1%) had never smoked, but 24.5% had smoked at least a puff (another 5.8% were past smokers or persons who puffed on occasion, but did not consider it smoking). Most of the students (54.7%) who had tried smoking or were current smokers smoked their first cigarette between the ages of 10 and 12. Of those who were current smokers, most (85.4%)

identified themselves as occasional smokers. Since smoking on a daily or weekly basis was also an answer option for this question, "occasional" smoking would imply less than weekly.

Increased current smoking prevalence was significantly associated with being older and male (Table 1). The exception was children aged 9 years, who were second only to 15-year-olds in their level of current smoking. Boys (9.4%) were also more likely than girls (2.4%) to say that they intended to smoke in the future.

Of adolescents who had smoked, most had their first cigarette at a party (39.7%), with home (36.0%) being a close second. Curiosity (46.3%) was the main reason for smoking, and health concerns (55.5%) were the main explanation for quitting or not pursuing smoking after the first try. Health concerns (74.0%) were also the main reason adolescents who had never smoked did not try cigarettes in the first place. Most nonsmokers felt that they did not intend to smoke in the future (59.8%); a third of them (33.9%) were unsure of their future smoking status.

### Family and peer variables

Most of the students (75.5%) reported having a family member who smoked cigarettes, with a father (71.9%) or brother (27.5%) being the most likely to smoke. Many participants reported having a friend (32.7%) or teacher (40.0%) who smoked cigarettes. Many respondents (42.8%) felt at least some of their peers smoked cigarettes, and 12.8% felt all their peers were smokers.

Whether or not a family member smoked was significantly associated with individual students' smoking behavior. Students from nonsmoking households were more likely to have never smoked cigarettes (70.2%) than their counterparts from smoking households (57.2%). Those who were raised in a nonsmoking household were also less likely to say they intended to smoke in the future.

**TABLE 1. Age<sup>a</sup> and gender<sup>b</sup> cross-tabulated with smoking status. Ecuador, 1994**

	Smoking status				
	Never %	Once %	Past %	Current %	Other <sup>c</sup> %
Age (in years)					
9	72.8	10.5	1.8	11.4	3.5
10	71.2	19.0	2.1	5.2	2.5
11	66.5	19.7	3.7	7.1	3.0
12	64.0	23.1	1.7	8.0	3.1
13	55.3	31.3	4.7	7.5	1.2
14	47.9	34.1	5.7	9.6	2.7
15	36.1	35.4	4.2	24.3	0.0
Gender					
Girls	73.4	20.0	1.6	3.9	1.2
Boys	51.0	28.4	4.4	12.7	3.5

<sup>a</sup> Age:  $n = 2\ 425$ ;  $P < 0.001$ .

<sup>b</sup> Gender:  $n = 2\ 308$ ;  $P < 0.001$ .

<sup>c</sup> "Other" includes persons who tried once but did not consider the experience as smoking.

Siblings had a significant impact on the smoking behavior of the students surveyed. Boys with brothers who smoked were more likely to smoke (17.7%) than boys whose brothers did not smoke (12.8%). Similarly, girls with smoking sisters were significantly more likely to smoke (30.8%) than girls (3.6%) whose sisters did not smoke. Stratified analysis showed a cigarette-smoking family member to be a risk factor for both girls and boys

(Table 2). Having a brother who smoked increased the risk of smoking in boys but not girls. Having a sister who smoked, however, was a risk factor for both girls and boys, although the influence on girls was much greater. Table 2 also shows the significantly increased risk to boys in terms of intention to smoke in the future when a family member smoked.

As students get older, they appear more likely to report smoking by their

**TABLE 2. Stratified analysis of family and student smoking status, by student gender. Ecuador, 1994**

Family smoking status	Student smoking status		Risk ratio (95%CI)	
	Girls (%)	Boys (%)	Girls	Boys
Current				
Any family member				
Smoker ( $n = 1597$ )	6.0	20.0	2.0 (.93 to 4.07)	1.8 (1.27 to 2.57)
Nonsmoker ( $n = 524$ )	3.0	11.0		
Sister				
Smoker ( $n = 34$ )	46.0	33.0	8.2 (4.26 to 15.87)	1.7 (.90 to 3.12)
Nonsmoker ( $n = 1632$ )	6.0	20.0		
Brother				
Smoker ( $n = 448$ )	6.0	27.0	1.0 (.52 to 1.94)	1.6 (1.18 to 1.97)
Nonsmoker ( $n = 1218$ )	6.0	17.0		
Intention to smoke (%)				
Any family member				
Smoker ( $n = 931$ )	4.0	19.0	1.3 (.46 to 3.31)	3.8 (1.69 to 6.36)
Nonsmoker ( $n = 324$ )	3.0	6.0		

**TABLE 3. Stratified analysis of peer and smoking status, by student age and gender. Ecuador, 1994**

	Student smoking status (%)		Risk ratio (95%CI)	
	Primary <sup>a</sup>	Secondary <sup>b</sup>	Primary	Secondary
Peer smoking status				
Smoker (n = 978)	11.0	19.0	.98 (.61 to 1.58)	2.5 (1.64 to 3.94)
Nonsmoker (n = 592)	11.0	8.0		
	Girls	Boys	Girls	Boys
Smoker (n = 919)	7.0	23.0	1.5 (.79 to 2.85)	1.8 (1.30 to 2.50)
Nonsmoker (n = 574)	5.0	13.0		
Friend smoking status	Primary	Secondary	Primary	Secondary
Smoker (n = 754)	14.0	25.0	1.6 (1.01 to 2.49)	4.2 (2.69 to 6.0)
Nonsmoker (n = 773)	9.0	6.0		
	Girls	Boys	Girls	Boys
Smoker (n = 716)	12.0	28.0	5.4 (2.53 to 11.54)	2.5 (1.66 to 3.05)
Nonsmoker (n = 742)	2.0	12.0		

<sup>a</sup> Students in primary grades are 8 to 11 years old.

<sup>b</sup> Students in secondary grades are 12 to 15 years old.

peers. Only 14.9% of 9-year-old students thought that at least some of their peers smoked, compared with 74.8% of 15-year-old students. Boys (61.2%) were more likely than girls (49.3%) to report that their peers smoked.

Age was significantly associated with having a friend who smokes. The number of students aged 9 years to 12 years with friends who were smokers was never greater than 30%, with 9-year-old students having the lowest percentage (23.9%). This changed at age 15, when 60% of students reported having a friend who smoked cigarettes. Having such a friend was significantly associated with current smoking status; students who had a friend who smoked were more likely to engage in smoking on a current basis (14.9%) than those without (5.1%).

As revealed by the stratified analysis, there was an association between the belief that peers smoked and a respondent's current smoking behavior, particularly among students in secondary school (Table 3). When stratifying by gender, the impression that peers smoked was a risk factor for both girls and boys.

Having a friend who smoked was a significant risk factor for older students (Table 3). Although having such a friend influenced both girls and boys, it was a greater risk factor for girls.

### Propaganda variables

Most of the participants (93.6%) had either seen or heard some type of propaganda for cigarettes. Among those who had been exposed to advertising, television (88.5%) was overwhelmingly the most pervasive tool for tobacco promotion. Most of the students (62.2%) said they did not like cigarette advertisements, but Lark, Marlboro, and Lider enjoyed the greatest popularity for their types of promotion among students who did. The only cigarette brand that showed an association with gender was Marlboro, which was preferred by boys (32.0%) over girls (16.7%) to a significant degree.

Although there was little difference between current smokers, students who had been exposed to cigarette advertisements were almost twice as likely to have tried smoking (26.2%) than those who had not (13.4%). Students who had favorable opinions regarding cigarette advertisements were much more likely to be current smokers (20.3%) than those who did not (8.0%).

### Knowledge variables

Overall, the students were quite knowledgeable about the health con-

sequences of cigarette smoking. However, when asked whether it was difficult to quit smoking, a substantial portion of them (57.8%) felt it was not difficult or expressed being uncertain.

Most students (69.2%) had also been exposed to some type of anti-tobacco information, with television, radio, and print media being the most likely sources. School (37.0%) was the least likely place for students to have received anti-tobacco information.

## DISCUSSION

Our study findings coincide with much of the research existing in the United States. Peers and siblings are clearly important social influences on young smokers-to-be (3, 7-9). The pervasiveness of cigarette promotion in Ecuador is also quite strong and may influence the development of behavioral norms for young people (10-12).

The smoking prevalence in this study was not as high (approximately 14%) as that found in other adolescent surveys in Ecuador (4). This finding is most likely due to the scope of the present survey, which covered rural and smaller urban areas as opposed to the large urban populations of the previous surveys.

Of current smokers, very few could be regarded as heavy smokers. Most smoked only occasionally, with only a few smoking on a daily or weekly basis. While only a small portion of adolescents identified themselves as current smokers, a significant percentage has tried smoking at one time or another. The age at which students smoked their first cigarette is comparable to that found in the United States (13).

The result that boys smoke more than girls may be viewed in a cultural context. In Ecuador boys are often expected to engage in "manly" activities, such as smoking. For this reason, although boys are influenced by family and friends, it is the overall perception or acceptance of smoking by peers that sets them apart from the girls who smoke. On the other hand, girls who smoke may not see them-

selves as smokers in a "cultural identity" sense but look to more personal models, such as a sister or friend. This is strikingly different from the current trend in the United States, where it is quite culturally acceptable for young women to smoke.

An interesting finding reveals that 9-year-olds are second only to 15-year-olds in current smoking status. There are three possible explanations for this unexpected finding. First, this age group actually has a high current smoking rate. Second, 9-year-old students might have been trying to appear more "grown-up" by answering the smoking question positively when the opposite was true. Third, 9-year-old participants were perhaps more likely than the older students to be poor readers and not to understand the concept of the survey. This situation would likely render a finding not properly reflecting the real smoking status of this age group.

Overall, health concerns were quite influential in both motivating non-smokers to never smoke and in encouraging smokers to quit. The health consequences of smoking were well-known among the adolescents surveyed, with the one exception being the large number of young persons in Ecuador who were unaware of the difficulty of quitting smoking once addicted. This is consistent with findings in the United States, where adolescents are knowledgeable of health consequences but lack an understanding of the addictive nature of nicotine (14).

In the case of tobacco advertisements as well as anti-smoking information, television was the most likely source from which respondents received these messages. Since students were more likely to report being exposed to tobacco advertisements than to anti-smoking information (93.6% vs. 69.2%), it is apparent that commercial television is not an unbiased messenger.

Consistent with research conducted in the United States (3, 7-9), this study finds sibling and peer smoking behavior a significant influence on the participants' own smoking behavior. A

brother's or sister's smoking behavior relates significantly to that of the respondent, with boys being influenced more by their brothers and girls by their sisters.

Family and peer factors also influence the age groups differently. Younger students look to a family member, most probably a sibling, for their role model, and older students find this model in their friends.

An interesting trend that parallels the one in the United States (7, 15) is the perception by adolescents that their peers smoke much more than they actually do. While the actual current smoking rate for students in this study was 8.6%, 12.8% of students surveyed thought that all of their peers smoked, 7.0% thought that half did, and 23.0% thought that at least some smoked. This may be due to the different way people interpret their own actions and the actions of others around them. A respondent, having seen some of her peers puff on a cigarette, may perceive them as "smokers" without knowing whether the behavior was truly a habit. However, the same respondent, having experimented with cigarettes herself, has first-hand knowledge of her own behavior and can respond accordingly. Another explanation for this overestimation may be the pervasiveness of cigarette advertising, which spreads the message that "everyone is doing it."

A similar phenomenon occurred when participants were asked whether they have a friend who smoked. Thirty-two percent of the respondents said they had a friend who smoked, a ratio also much greater than the actual current smoking rate (8.6%) for students in this study. Again, though a respondent may have felt that a friend who puffed on a cigarette was a smoker, that friend may not necessarily have viewed himself or herself as a smoker and, in turn, would have responded as a non-smoker on a survey. It may also be the case that many of the respondents' smoking friends did not participate in the survey or were older and would not have been part of the survey by design.

The "other" smoking outcome does not involve current smoking status, but rather the intention to smoke cigarettes in the future. Most of the students said they did not intend to smoke in the future, with a small percentage responding affirmatively. As with the large portion of students who had tried smoking, a significant percentage of students were unsure about their future smoking status. This group represents a large number of young people who may be quite vulnerable to acquiring the smoking habit at some future date.

Having a family member who smokes was significantly associated with the potential to smoke in the future, particularly among boys. Similarly, students who did not yet smoke but who intended to do so in the future were more likely to be using an older family member as a role model (e.g., father). On the other hand, young people who were current smokers were more strongly influenced by siblings and friends (persons with a closer resemblance to themselves).

## RECOMMENDATIONS

The following recommendations are based on the results garnered from this study and are designed to address significant areas of risk for Ecuadorian adolescents contemplating cigarette smoking.

### Smoking prevalence and behavior

- Anti-smoking efforts should focus on at-risk age groups, in this case children 10 to 12 years old who are most likely to start smoking and adolescents 15 years of age who are actually smoking. (Some attention should also focus on the 9-year-olds if this result withstands further research.)
- Any effort should endeavor to demystify or deromanticize the smoking experience, given that curiosity was the primary reason students in this study began to smoke. Since this reason was signif-

icantly more common among students aged 11 to 13, focusing on the at-risk population of children 10 to 12 years old should capture most students in this group.

- Strengthening refusal skills and working to promote an image that smoking is “uncool” may help reduce the likelihood of acquiring the smoking habit at parties.
- Efforts should also focus heavily on boys. Since it is still much more culturally acceptable for boys to smoke, they are the highest at-risk group and in need of additional attention both in terms of current smoking and intention to smoke in the future.

### Knowledge variables

- To improve on the present haphazard method (television, radio, magazines, etc.) of receiving anti-smoking information, school-based learning should be a priority so that information will be available to all students and not susceptible to the whims of the commercial media.

- The focus of school-based programs should be on younger students, since they are the least likely to acquire anti-smoking information from other sources.
- Any school-based curriculum should emphasize the addictive nature of tobacco and the difficulty of quitting once the habit is well established. Also, students should realize the high expense of the smoking habit over a long period of time.

### Family and peer variables

- Since parents are not in school, television, radio, and billboard public service announcements should be used to educate them regarding the influence family members have on children’s smoking behavior and on the accessibility of cigarettes in the home.
- The cultural importance of family responsibility should be used to target older students. There should be an emphasis on being a good role model for younger siblings.

- School-based curricula should address the overestimation of peers as cigarette smokers. This factor is an important one for boys.
- There should be a focus on older students and girls when addressing the influence of friends on smoking behavior. It is important to inculcate refusal skills and to promote an image that smoking is “uncool.”

### Propaganda variables

- The school-based curriculum should have a special section to address the manipulative nature of propaganda. This section should focus on younger students, since they are the most likely to view cigarette advertisements favorably.

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**RESUMEN****Los adolescentes  
ecuatorianos y el consumo  
de cigarrillos: encuesta  
transversal**

En el presente estudio se investigan las actitudes y conductas en torno al tabaquismo de los adolescentes en Ecuador. Basándose en teorías tomadas de la sociología cognoscitiva, la encuesta transversal enfoca la atención en influencias sociales tales como los hábitos de tabaquismo de los miembros de la familia y de los pares o semejantes, así como en el papel que desempeña la propaganda de los cigarrillos. También se obtienen datos sobre la prevalencia de tabaquismo, el acceso a los cigarrillos y los conocimientos y actitudes en torno al hábito de fumar.

La encuesta se llevó a cabo en el verano de 1994 en zonas urbanas y rurales. Participaron en ella 50 escuelas situadas en 40 comunidades distintas, y de ese modo se obtuvo una muestra de 2 625 adolescentes entre las edades de 9 y 15 años que completaron el cuestionario autoadministrado. El estudio se efectuó en colaboración con los Amigos de las Américas (AMIGOS), organismo internacional dedicado a la salud. Los miembros del personal de planta y los voluntarios que participaron en los proyectos dirigidos por AMIGOS en el Ecuador trabajaron con los funcionarios de salud y educación de cada localidad para realizar la encuesta.

Casi 9% de los estudiantes se describieron a sí mismos como fumadores activos, 24,5% habían fumado en ocasiones y 6,1% no habían fumado nunca. Los resultados mostraron grandes diferencias cuando se desglosaron por edad y sexo, ya que los estudiantes mayores de sexo masculino tuvieron las cifras más altas de tabaquismo. La situación de los miembros de la familia y de los semejantes con respecto al tabaquismo también fue un factor que permitió predecir la situación de cada estudiante con respecto al tabaquismo.

Los resultados obtenidos con esta muestra son similares a los obtenidos con muestras norteamericanas. Pese a que los estudiantes ecuatorianos fuman un poco menos que sus semejantes estadounidenses, el consumo de cigarrillos en el Ecuador es un problema de salud pública importante y claramente exige una respuesta coordinada. El presente estudio apunta hacia diversas estrategias para prevenir el tabaquismo entre la gente joven.

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