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An E-Mail Assessment of Undergraduates' Attitudes Toward Smoking

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Abstract. Responses from 513 of 1,000 randomly selected undergraduate students who were sent an e-mail questionnaire, about cigarette smoking were analyzed. Thirteen percent of the respondents identified themselves as smokers. No statistically significant differences were observed between smokers and nonsmokers and year in college, sex, age, race, or having attended public or private high schools. Ninety-eight percent of the respondents considered themselves knowledgeable about adverse health consequences of smoking, yet 39.1% of current smokers seriously considered stopping smoking, and 11.5 % of current nonsmokers intended to start smoking. The preferred quitting method of smokers and ex-smokers was stopping all at once ("cold turkey"). Fifty-two percent of the smokers did not want professional assistance to stop smoking; 40% of the nonsmokers wanted information on second-hand smoke.

Key Words: college students, prevention, second-hand smoke, smoking cessation, smoking

Cigarette smoking is a recognized cause of morbidity and premature mortality in the United States. Therefore, *Healthy People 2000*¹ includes goals for reducing the initiation of cigarette smoking by children and youth and increasing the proportion of cigarette smokers who stop smoking cigarettes.

Substantial evidence illuminates the multitude of possible motivations for teenage smoking. These include gender and race-based differences as well as educational, physio-

logical, psychological, sociological, environmental, and perception factors. Research suggests that young women may be more susceptible to outside influences than young men, and are more likely to be in a depressed mood, both of which may contribute to cigarette smoking.² Among possible physiological motivations for smoking are negative experiences with withdrawal symptoms,³ especially after addiction has occurred.⁴

Psychologically, smokers may exhibit personality characteristics different from those of nonsmokers.⁴ Some evidence suggests that extroverted individuals may be motivated to smoke because they feel bored and need stimulation, whereas introverts may be more prone to smoke to relieve tension and stress.⁵ Potential sociological motivations for teenage smoking have been associated with social comparisons with peers and parents.² Environmental factors, such as relaxed smoking restrictions in dormitories and the absence of parental supervision might also influence a student's decision to smoke.⁶ Teenagers may perceive smoking as a sign of independence² at the same time that they underestimate the likelihood that they will contract a smoking-related illness.⁷

According to a former surgeon general, the vast majority of smokers begin using tobacco when they are adolescents. For adult regular smokers, estimates are that 91.3% tried their first cigarette before the age of 20 years, and 77.0% became regular smokers before they turned 20.⁸ Three fourths (74.8%) of college students nationwide have tried cigarette smoking in their lifetimes, according to data reported in the 1995 National College Health Risk Behavior Survey.⁹ More than one fourth (29.0%) of college students nationwide smoked one or more cigarettes on the 30 days preceding that national survey, and 16.5% of the college students reported smoking on 20 or more of the 30 days preceding the survey. White students (19.0%) were

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significantly more likely than Black students (7.0%) and Hispanic (8.0%) students to report this behavior. A significant race/ethnicity difference was also observed when data for female and male students were examined separately.⁹

Breaking one's smoking habit is difficult. Research suggests that smokers move through a series of stages of change in their efforts to quit smoking.^{10,11} The transtheoretical model¹² provides an outline of the stages: precontemplators are not thinking about quitting (within the next 6 months); contemplators are seriously thinking about quitting smoking; ex-smokers in the action period are in the first 6 months after they stopped smoking; ex-smokers in the maintenance stage have stopped smoking more than 6 months ago; and relapse can occur when ex-smokers revert to smoking.^{11,13}

A number of studies have shown that only 10% to 20% of current smokers are in the preparation stage and are prepared to take action. Forty to 80% are in the precontemplation stage. People in the precontemplation stage have been shown to consider the disadvantages of making a healthy behavior change greater than the advantages. The opposite was true for individuals in the action stage.¹⁴

Among college students nationwide who were current cigarette smokers, about two thirds (67.7%) have ever tried to quit smoking.⁹ Colleges and universities can play a useful role in promoting smoking cessation and prevention because college students are a relatively definable group. Unfortunately, formal smoking cessation programs have not been successful in recruiting young adults and adolescents.¹⁵ Students generally tend to be resistant to smoking cessation interventions.¹⁶ The addictive nature of nicotine and the perceived "positive" effects of tobacco use reported by smokers make smoking cessation problematic.

Approximately three out of four smokers report that they continue to smoke because it is so hard to quit.³ The perceived likelihood of success appears to be a main factor in choosing a smoking cessation program.¹⁷ Evidence suggests that teenagers overestimate the prevalence of smoking in their peers^{2,7} and the likelihood of success in quitting smoking, but they underestimate the likelihood of contracting a smoking-related illness.⁷

Our study was an effort to help a college health service improve antismoking programs for current smokers and nonsmokers. The operational hypothesis was that a number of students begin smoking after entering college and that it may be easier to prevent these individuals from starting than to change the behavior of current smokers. The objectives of our study were to determine (a) when college students began smoking, (b) the prevalence and motivations for students to smoke or not smoke, and (c) smokers' attitudes toward smoking cessation.

METHOD

We conducted a cross-sectional study of undergraduate students from a major northeastern university in the 1997 spring semester. During the 1996/97 academic year, the

total enrollment of the university was more than 10,000 students, 5,398 of whom were undergraduates.

Our study consisted of a survey sent by e-mail to undergraduate students, after obtaining approval from the Human Investigation Committee at our academic institution. The dean of student affairs authorized the registrar's office to supply us with a random sample of 1,000 undergraduates. Because all students at this college have e-mail accounts in the university system and opportunities to access their e-mail on campus, we decided to use e-mail to save on postage and delivery and response time. Of the 1,000 surveys that we sent, 86 were undeliverable because the mailbox of the recipient was full or the e-mail account had been inactivated. Thus, 914 surveys were successfully delivered through the e-mail system.

We sent the e-mail to the sample of students at midnight; many responses were received within hours of being sent. The overall response rate was 56.1% ($N = 513$) of those surveyed. We made no repeat contacts because of time constraints and because the response rate was significantly higher than the approximately 30% for traditional mailed surveys at this college. The form was designed in text format with a column on the right-hand side and spaces next to each question for responses. The response was entered by the student directly on the form and the entire document was returned to our e-mail address for data processing.

Our survey was adapted from the 1992 National Health Interview Survey¹⁸ and tailored to our target audience on the basis of insights gained from small focus groups. The survey contained multiple-choice questions with write-in options that assessed demographic factors, knowledge about adverse affects of smoking in general, smoking status, onset of smoking, attitudes toward smoking and smoking cessation, and motivations for smoking or not smoking. Smoking status was categorized according to respondents' self-identification as current smokers or nonsmokers in response to the question, "Do you smoke cigarettes now?"

Our survey did not include a time frame or number of cigarettes smoked for classification as smoker or nonsmoker. However, ex-smokers were identified as those nonsmokers who reported smoking a total of 100 cigarettes or more during their lifetimes.

We used the SAS statistical package to analyze the data. We calculated frequencies for each question, computed rates for the entire sample and for subgroups, and used chi squares to determine the significance of the relationships between certain variables.

RESULTS

Our survey identified undergraduate students by cigarette smoking status and a number of demographic characteristics. The demographics of our sample fairly closely matched the demographics for all students that was provided by the college dean's office. When we compared the university population demographics with those of the respondents, we found the proportion of female respondents was slightly higher than the total campus college population and

that more 1st- and 2nd-year students than 3rd- and 4th-year students answered the questionnaire (see Table 1).

We found no significant differences between smokers and nonsmokers in terms of sex, year in college, age, race, and attendance at either public or private secondary schools. The sample size was not large enough to make valid comparisons among races. Our survey further identified self-perceived knowledge about adverse health effects of smoking, motivations for smoking and not smoking, and preferences for smoking cessation methods (see Table 2).

The vast majority (98.4%) of smokers and nonsmokers

considered themselves knowledgeable about adverse health effects of smoking, and 89.9% of the respondents did not want to receive more information about the adverse health consequences of smoking. However, about one third (36.3%) of the respondents were interested in information about adverse health consequences of second-hand smoke. Significantly more nonsmokers than smokers ($p = .003$) expressed interest in these effects.

Thirteen percent of the respondents identified themselves as smokers. Of the current nonsmokers, 11.5% responded that they would "try cigarette smoking during the next 12

TABLE 1
Characteristics of Sample Compared With Total Population, by Sex, Year in College, and Smoking Status, in Percentages

Group	Sex		College year			
	M	F	1	2	3	4
Total population (%)	51.4	48.6	24.4	24.2	26.1	26.1
Sample (%)	44.1	55.8	28.3	27.5	23.4	20.7
Smokers	13.7	13.3	16.6	10.6	15.0	11.3
Nonsmokers	81.4	82.9	80.6	85.9	78.3	83.0
Ex-smokers	4.9	3.8	2.8	3.5	6.7	5.7

Note. Total population $N = 5,398$; sample $n = 513$.

TABLE 2
Knowledge and Motivations for Smoking and Not Smoking, by Smoking Status

Variable	Smokers (%)	Nonsmokers (%)	Ex-smokers (%)
<i>Knowledge base</i>			
Know about adverse health effects	97.1	98.6	—
Want more information about second-hand smoke	18.2	39.6	—
<i>Motivation for smoking</i>			
Stress	49.3	6.5	—
Image smokers project	39.1	2.5	—
Expression of independence	36.2	1.8	—
Friends smoke	11.6	11.1	—
Depression	31.9	2.7	—
<i>Motivation for not smoking or quitting</i>			
Concerns about			
Future health	76.8	88.7	73.9
Current health	56.5	80.8	52.2
Cost of cigarettes	36.2	33.9	8.7
Pressure from family/friends	36.2	24.8	30.4

Note. $N = 513$.

months." An additional 7.9% of nonsmokers were not sure if they would initiate smoking during the next 12 months. The most frequently cited reasons for nonsmokers to start smoking were (a) friends smoked (11.1% of all nonsmokers) or (b) stress (6.5%).

About half of the smokers (49.3%) had started smoking after enrolling at college. Of those who started smoking in college, the majority seem to have done so during their 1st or 2nd year of college (Table 3). However, the number of respondents was too small to reach a definite conclusion. The number of seniors who smoked and responded to this question was too small to analyze separately. Stress was a motivational factor for almost half (49.3%) of the current smokers.

Five percent of current nonsmokers had smoked a total of 100 cigarettes or more in their lifetimes, and we identified them as ex-smokers. The main reason for ex-smokers to stop smoking was "concern about future health" (73.9% of all ex-smokers). Almost two thirds of ex-smokers (65.2%) had stopped smoking all at once, or "cold turkey."

The major motivation that would lead smokers to quit was also "concern about future health" (76.8% of current smokers). Fifty percent of the current smokers had tried to quit smoking in the past, and 39.1% indicated that they were "seriously considering stopping smoking within the next 6 months." In considering quitting, almost two thirds (62.3%) planned to "stop all at once (cold turkey)."

About half of the smokers (52.2%) did not want any assistance from their college in helping them quit. Of those who wanted assistance, the preferred methods (in order of preference) were informational pamphlets and books, assistance from a doctor or nurse, support groups, and a smoking cessation clinic.

COMMENT

We chose the e-mail method because of ease of implementation, lower cost, and a quicker response time than regular mail, and the knowledge that almost all of our students were computer literate and had e-mail accounts. We found

that the use of e-mail resulted in less than 1% of the surveys being undeliverable. This led us to assume that only a relatively small number of our student population could not be reached through e-mail.

We received the first responses within an hour of sending out the survey at midnight. The entire predetermined response time was 6 days, during which we received responses from 56.1% of the delivered surveys. We could not determine whether those who did not respond simply chose not to respond or did not read their e-mail. Because it was not possible under our system for students to return the survey anonymously, we do not suggest e-mail surveys for sensitive topics, such as sexual behavior, unless confidentiality can be assured.

Our survey revealed a smoking prevalence of 13.4%. Although 97.1% of the smokers reported that they were knowledgeable about the adverse health consequences of smoking, only about one third (39.1%) of the smokers indicated they were seriously considering stopping smoking cigarettes within the next 6 months. This percentage of contemplators indicating a desire to quit was less than the national average. According to the surgeon general's 1994 report, two thirds of adolescent smokers desired to quit.⁸

Our data suggested that smokers' concerns about the adverse health effects are different for long- and short-term effects. Although 76.8% of the smokers indicated that they were concerned about future adverse health effects of smoking, only 56.5% of smokers said that concern about present health effects would lead them to stop smoking.

Our study demonstrated that most smokers (85.5%) did not want additional information about the adverse health consequences of smoking. This lack of receptiveness to more information could be a major barrier to successful efforts to conduct smoking cessation interventions. In this study, we did not address the question of whether smokers are, in fact, qualitatively informed about smoking risks. An additional complicating factor is that smokers' preferred choice of smoking cessation methods (62.3%) was to stop unassisted or "cold turkey." This is consistent with the traditional trend of the majority of American smokers because 70% to 80% of adult ex-smokers reported quitting on their own.¹⁹

Fifty-two percent of the smokers in our survey indicated they did not want smoking cessation assistance from the university's health services. The findings about smoker resistance to smoking cessation programs may be consistent with findings that smokers tend to overestimate their ability to stop smoking unassisted.¹⁷ The experience of the ex-smokers we studied also tended to support the preference for unassisted smoking cessation methods. The majority of ex-smokers (65.2%) indicated they stopped smoking all at once. No ex-smoker indicated using a stop-smoking clinic or program or following instructions in a pamphlet or book. However, the smokers in our survey who did want assistance expressed interest in a pamphlet or book, assistance from a doctor, nurse, support groups, or smoking cessation clinics.

TABLE 3
Year Sampled College Students
Initiated Smoking

Year started	Year in college				Total
	1	2	3	4	
High school	14	6	5	4	29
College					
1st	3	6	4	0	13
2nd	0	1	5	5	11
3rd	0	0	3	1	4
4th	0	0	0	1	1
Total	17	13	17	11	58

Note. N = 58.

Because half of college students started smoking after beginning college and the majority of those began in the 1st or 2nd year on campus, major emphasis should be placed on preventing those students from starting to smoke.

Our survey also sought to understand nonsmoking undergraduate students' attitudes toward smoking prevention efforts. Although 98.6% of the nonsmokers considered themselves knowledgeable about the adverse health consequences of smoking, 11.5% of nonsmokers indicated they were contemplating trying smoking during the next 12 months, and 7.9% were unsure (precontemplating) whether they would try smoking. This population of students (19.4% of nonsmokers) appears to be the group that should be targeted for smoking prevention efforts. Interventions should focus on emphasizing the adverse effects (especially short-term effects) of smoking, such as bad breath, and countering the desire to begin smoking by providing students with the means of coping with their major reasons, such as stress, that lead them to start smoking.

Among the students who plan to try smoking within the next 12 months, we found no significant differences in year in college, age, or sex. Students in our survey who were contemplating smoking claimed to be motivated by stress and by friends who smoked more than those students who did not plan to start smoking.

Our survey also assessed interest in information about second-hand smoke. Although we found students were reluctant to receive information about the adverse effect of smoking, both smokers (18.2%) and nonsmokers (39.6%) wanted more information about the adverse effects of second-hand smoke. This relatively high interest in exposure to second-hand smoke may reflect a high level of concern among students about that hazard, perhaps because smoking is still allowed in some dormitory rooms. Consequently, in addition to developing interventions to assist nonsmokers from starting smoking and to help smokers quit, colleges and universities may want to consider providing information on second-hand smoke.

Allowing smoking in dormitories and in university buildings sends a mixed message. Strict nonsmoking regulations in university buildings, in general, and particularly in residence halls, will prevent exposure to second-hand smoke and may encourage some students not to smoke.

Several limitations affect the results of our study. The relatively low identified smoking prevalence among undergraduate students in our study might be a result of response bias (proportionately more nonsmokers than smokers responded to the survey), or a population bias (this college may not be representative of all colleges or noncollege students in this age range). Some students may not have classified themselves as smokers because our survey instrument did not explicitly define *smoker* (eg, an individual who smokes at least a certain number of cigarettes per week or month). The participants of our focus groups had perceived a higher prevalence of smoking among fellow students than the survey findings showed. In addition, our survey asked only for cigarette smoking. Other forms of smoking, such as

cigar smoking, or other uses of tobacco, such as chewing, were not assessed.

In assessing reasons for smoking, an oversight was that we did not specifically ask whether weight concerns were a motive for starting or continuing smoking. The effect of smoking on controlling body weight might be a factor, especially for women. However, no student mentioned weight concerns as a write-in answer in our questionnaire.

Our instrument also did not explicitly assess the relation of alcohol consumption to smoking. The most frequent write-in answer (2.5%) for nonsmokers' having started smoking was being under the influence of alcohol.

CONCLUSION

The combination of resistance to receiving additional information on the adverse health consequences of smoking, which might indicate a precontemplation stage, and smokers' preferences for unassisted methods for stopping smoking appears to explain why smoking cessation programs experience modest participation by undergraduate smokers. Thus, programs could focus on providing self-help kits. Smokers who prefer quitting on their own have reported being interested in self-help manuals. However, these manuals have traditionally not been particularly effective.^{20,21}

Programs could also focus on making environmental changes, such as a complete prohibition of smoking in all dormitories. Participants in our focus groups suggested this approach. Our survey also indicated that about 50% of the smokers started smoking after they began attending college, the majority in the first 2 years. It may be easier to prevent these students from getting started than to get smokers to quit.

For nonsmokers, barriers to developing smoking prevention initiatives also exist. Most nonsmokers (90.7%) do not want more information about the adverse health consequences of smoking, yet a large percentage of nonsmokers are receptive to information on second-hand smoke. Thus, providing information on second-hand smoke appears to be a possible entry point for smoking prevention programs.

Despite widespread self-perceived knowledge of the adverse health effects of smoking, some nonsmoking students (11.5%) said they are going to smoke anyway. More qualitative information on these potential smokers should be gathered to address them appropriately. Perhaps directing efforts toward decreasing the root causes for starting smoking, such as stress, may decrease the number of new smokers.

As a result of this study, new initiatives have been instituted to help smokers at this university quit smoking and reinforce the efforts of nonsmokers to resist. A large-scale kickoff introduced a Healthy Lungs campaign and provided an opportunity for us to distribute a newly designed self-help booklet along with water bottles, T-shirts, and buttons, all printed with our Healthy Lungs logo. Rather than a negative effect directed only at smokers, this initiative was to encourage all students to maintain healthy lungs by not starting to smoke and avoiding passive smoke.

The Healthy Lung initiative continued in a newly instituted "stress down day." Table tents (informational pamphlets displayed in the dining halls on dining tables) continued the educational process with different messages weekly, including information about second-hand smoke. Moreover, on-campus visits by health service professionals to campus locations outside the health services allow for wider distribution of materials and additional displays. Articles in the student health newsletter have also been published to increase awareness and to support those students who need help with quitting.

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NOTE

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