

Short Communication

Predictors of Participation in a Smoking Cessation Program among Young Adult Smokers

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Abstract

This study investigated the predictors of participation in a smoking cessation trial for young adults ages 18 to 30 years old. Eligible smokers ($n = 164$) completed a telephone survey that measured demographic, smoking history, and psychosocial variables before the initiation of smoking cessation treatment. Young adult smokers who attended at least one smoking cessation session were compared with those who did not attend any sessions. Logistic regression analysis indicated that race and age were statistically significant multivariate predictors of participation. Caucasians were over six times (odds ratio, 6.03; 95% confidence interval, 2.41-15.05) more likely to

participate in the smoking cessation program compared with non-Caucasians (61% versus 19%). For every SD increase in age (SD, 2.45), there was about a 2-fold increase in the likelihood that a young adult smoker participated in the smoking cessation program (odds ratio, 1.82; 95% confidence interval, 1.23-2.71). Future research should investigate how to promote participation in smoking cessation programs among smokers in emerging adulthood and among non-Caucasian young adult smokers to prevent a lifelong habit associated with disproportionate morbidity and mortality. (Cancer Epidemiol Biomarkers Prev 2007; 16(3):627-9)

Introduction

The prevalence of smoking among young adults ages 18 to 24 years old is >26%, the highest of any adult age group in the United States (1). Although young adults are more likely to attempt to quit smoking than older adults, young adults are less likely to succeed (2, 3). In fact, ~20% of young adults in college reported five or more quit attempts in the past year (4), although few tend to be successful (5).

Despite the high smoking prevalence, desire to quit, and difficulty quitting among young adults, there do not seem to be smoking cessation programs that are directed toward this high-risk age group (6, 7). Therefore, it is unclear what factors influence the likelihood that a young adult smoker would participate in a formal smoking cessation program. Prior research in older adults suggests a host of factors (e.g., demographic, smoking history, social, and psychological) may contribute to nonparticipation in smoking cessation programs (8-12). These factors include gender, race, education, smoking rate, and depressive symptoms.

However, studies to date have not examined issues of program participation among young adults specifically. By developing a better understanding of factors associated with participating in a smoking cessation program, this work could guide and inform the development of future programs aimed at helping young adult smokers to quit. The purpose of this study was to evaluate the predictors of participation in a

smoking cessation program among young adult smokers. We evaluated variables shown to be important in older adult smoking cessation programs and those variables associated with young adult smoking (8-14).

Materials and Methods

Subjects. Data were collected through a randomized clinical trial comparing two behavioral interventions for young adult smokers. Smokers responded to print advertisements (e.g., flyers in locations frequented by young adults, college newspapers, and free daily newspapers) for free smoking cessation treatment. Eligibility required being 18 to 30 years of age and smoking at least five cigarettes a day. Forty respondents were ineligible due to age (i.e., >30 years old). All eligible respondents ($n = 164$) completed a baseline telephone survey, which evaluated demographic, smoking history, and psychosocial variables. Of the 164 eligible smokers, 73 initiated treatment (i.e., began one-on-one smoking cessation counseling by attending at least one of six in-person counseling cessation sessions), whereas 91 did not. These 91 young adult smokers completed a baseline telephone survey although never presented for treatment.

Measures. The outcome variable, participation in smoking cessation treatment, compared the smokers who completed the baseline telephone survey and attended at least one of six in-person smoking cessation sessions with those smokers who completed the baseline telephone survey and did not attend any sessions of the smoking cessation program.

Gender, race (Caucasian versus non-Caucasian), age, and education (at least some college versus high school education or less) were assessed to characterize the sample. The smoking history variables, smoking rate, and previous quit attempts were measured with items used in previous studies (15). Nicotine dependence was measured by the Fagerstrom test

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Table 1. Sample characteristics and bivariate statistics

Variable	Level	Participation (%)		Statistical test	P
		Yes, n = 73	No, n = 91		
Gender	Male	32 (41)	47 (59)	$X^2 (1) = 0.99$	0.32
	Female	41 (48)	44 (52)		
Race	Non-Caucasian	12 (19)	52 (81)	$X^2 (1) = 28.20$	<0.0001
	Caucasian	61 (61)	39 (39)		
College	Yes	62 (56)	49 (44)	$X^2 (1) = 17.89$	<0.0001
	No	11 (21)	42 (79)		
Previous quit attempt	Yes	64 (42)	87 (58)	$X^2 (1) = 2.66$	0.10
	No	9 (67)	4 (33)		
Home smoking	Yes	39 (39)	62 (61)	$X^2 (1) = 3.70$	0.05
	No	34 (54)	29 (46)		
		Mean (SD)	Mean (SD)		
Age, y		22.3 (2.5)	21.4 (2.3)	$t (162) = -2.30$	0.023
Cigarettes/d		12.9 (6.0)	13.1 (7.3)	$t (162) = 0.18$	0.86
Nicotine dependence		3.0 (2.1)	4.1 (2.3)	$t (161) = 2.97$	0.004
Friend smoking		4.5 (2.5)	4.6 (2.6)	$t (162) = 0.38$	0.70
Depression symptoms		18.3 (9.6)	18.5 (10.6)	$t (162) = 0.15$	0.88

for nicotine dependence, which is a six-item self-report measure with satisfactory psychometric properties (16, 17). For peer smoking, respondents were asked if their best friend smokes and how many of their four best male and female friends smoke (range, 0-9; refs. 18, 19). Home indoor smoking restrictions were measured with one item that asked, "Is smoking allowed in your dorm/apartment/home?" as restrictions have been shown to predict smoking behavior (20, 21). Depression symptoms were measured with the Center for Epidemiologic Studies Depression Scale. This 20-item Likert-style scale has high internal consistency (Cronbach's $\alpha = 0.85-0.90$) and has been shown to correlate with clinical ratings of the severity of depression (22), self-medication smoking, and nicotine dependence (23). Response options range from 0 (none of the time) to 3 (most of the time).

Results

The sample characteristics and bivariate statistics are shown in Table 1. About 52% of the sample were female, 39% were non-Caucasians (57 African Americans, 7 Asian Americans, 1 Native American, and 1 Pacific Islander), and 68% were currently attending college or graduated college. The average age of the sample was 21.8 years old (SD, 2.45). Considering the bivariate associations with participation, Non-Caucasians were less likely to participate compared with Caucasian smokers (19% versus 61%). Young adult smokers with a college degree or currently attending college were more likely to participate compared with those with a high school education or less (56% versus 21%). Age was also related to participation with younger smokers less likely to participate compared with young adults who were a little older (21.4 versus 22.3 years old). Young adult smokers who were permitted to smoke inside their homes were less likely to

Table 2. Logistic regression predicting participation (n = 162)

Independent variables	OR (95% CI)	P
Race	6.03 (2.41-15.05)	0.0001
Age	1.82 (1.23-2.71)	0.003
College	2.35 (0.95-5.82)	0.07
Quit attempts	0.35 (0.08-1.55)	0.17
Nicotine dependence	0.92 (0.77-1.09)	0.33
Home smoking	0.53 (0.24-1.14)	0.10

NOTE: Two subjects had missing data on at least one independent variable. Abbreviations: OR, odds ratio; 95% CI, 95% confidence interval.

participate than those who were not (39% versus 54%). Smokers with a higher level of nicotine dependence were also less likely to participate (4.1 versus 3.0). Gender, smoking rate, previous quit attempt, friends smoking, and depression symptoms were not significantly related to participation.

A multivariate logistic regression analysis was conducted to determine the independent associations with participation. Variables with a significant bivariate association ($P \leq 0.10$) with participation were entered into the model (24). Race and age were the only significant independent predictors of participation. Caucasians were over six times (odds ratio, 6.03; 95% confidence interval, 2.41-15.05) more likely to participate in the smoking cessation program compared with non-Caucasians. For every SD increase in age (SD, 2.45), there was about a 2-fold increase in the likelihood that a young adult smoker participated in the smoking cessation program (odds ratio, 1.82; 95% confidence interval, 1.23-2.71). These results are summarized in Table 2. For exploratory purposes, we evaluated a race by education interaction, which was not significant.

Discussion

To our knowledge, the present study is the first to date to examine smoking cessation program participation among young adult smokers. The findings indicate that race and age play an important role in determining who participates in smoking cessation treatment. Caucasian young adult smokers were over six times more likely to participate in the smoking cessation treatment program compared with non-Caucasians. Older young adult smokers were almost twice more likely to participate compared with younger adult smokers.

Ethnic and racial underrepresentation in preventive health studies is a long-standing problem (25). The data here suggest that the challenges of enrolling minorities in health-related research extend to young adult smokers. Recent observational findings indicate that race is the strongest demographic predictor of quitting behavior among young adults (26).

Of note, African Americans comprised >85% of the non-Caucasians in this study. Many African Americans attempt to quit smoking on their own (27). Thus, those African Americans who decided not to enter into smoking cessation treatment may have decided to try to quit outside of a formal program. Consistent with our findings, over one third of African American smokers who were eligible to participate in a randomized clinical trial for smoking cessation did not return for either culturally sensitive or standard smoking

cessation counseling (28). In fact, younger African American smokers were the least likely to return for smoking cessation treatment (28). There may be unique barriers to participation in smoking cessation programs related to being a young adult and a racial minority. These factors warrant investigation. It is important to note that the race effect remained robust when only the African Americans were included in the non-Caucasian group (i.e., odds ratio, 9.16; 95% confidence interval, 3.12-26.42; $P < 0.0001$).

In the present study, those young adult smokers who were older were more likely to participate in the smoking cessation program compared with younger smokers. Although, the smoking history and smoking habits of young adult smokers have received little attention, one could speculate that young adults in their mid-twenties are more serious about quitting than young adult smokers 18 to 20 years old. As young adult smokers progress through their twenties, graduate college, and/or obtain a job (i.e., acquire more adult roles), quit attempts may become more serious and translate into successful cessation (29). In addition, younger smokers may have fewer resources to facilitate participation in a formal program. The study covered the cost of public transportation; however, data on other variables that may help explain participation were not collected (e.g., socioeconomic variables). Younger adult smokers may also experience more ambivalence about quitting and any perceived health-related consequences of their smoking may be too distal to maintain motivation to make a quit attempt (14). A better understanding of the individual and environmental barriers to participation in smoking cessation treatment among younger adult smokers may inform interventions to promote smoking cessation in this population and prevent a lifelong smoking habit associated morbidity and mortality.

To reduce the burden of smoking-related morbidity and mortality among young racial minority groups, especially African Americans, smoking cessation clinical trials, specifically targeted to young adults in these subgroups, are needed (30, 31). Research investigating factors that promote treatment initiation and retention among young minority smokers is warranted (32). For example, individual variables (e.g., mistrust of research-based programs) and programmatic variables (e.g., inadequate recruitment messages and treatment features) may individually affect or interact to influence participation and retention. In the current study, the observed race effect may very well relate to a general mistrust of research programs by African Americans (33). Participation may also relate to the specific treatment program offered, such as the setting, intensity of treatment, and type of treatment. However, the young adult smokers received a detailed description of the program and what participation involved at the time eligibility was determined. The sample and program characteristics highlight limits to the generalizability of the findings. Enrollment and participation in other smoking cessation programs for young adults may be predicted by other variables.

As the sample size of the current study was not large, this study may be best conceptualized as a pilot study. Future research will be needed to replicate these findings and evaluate potential interactions, including variables that interact with race. Nonetheless, this study provides important information to consider in efforts to enroll young adult smokers into formal smoking cessation treatment programs.

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