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Preventive Medicine 39 (2004) 1180–1186

Preventive Medicine

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Quit attempts among African American teenage smokers seeking treatment: gender differences

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Available online 15 June 2004

Abstract

Background. African Americans experience disproportionate smoking-related mortality. Because established smoking during youth predisposes to adult smoking and serious health consequences, characterizing ethnic differences in adolescent smokers' self-quit attempts may inform ethnic-specific approaches to youth smoking cessation.

Methods. African American and European American teenage smokers applying to a teenage smoking cessation study (2000–2003) provided smoking-related data, including characteristics of previous cessation attempts and prior use of nicotine replacement therapy (NRT). Tobacco dependence was assessed using the Fagerström Test of Nicotine Dependence (FTND).

Results. Of 980 (15.5 ± 1.3 years, 41.8% African American, 59.9% female) participants, African Americans boys were significantly less likely than European American boys to report a prior quit attempt (OR = 0.35, 95% CI 0.17–0.73, $P = 0.0049$) or to have used NRT (OR = 0.60, 95% CI 0.36–0.998, $P = 0.049$) after adjusting for years smoked and FTND score. African American girls were more likely to report a prior request for cessation treatment than European American girls after adjusting for FTND and years smoked (OR = 2.19, 95% CI 1.37–3.48, $P = 0.001$).

Conclusions. While increasing education and outreach to African American boys and enhancing access to formal cessation programs for African American girls who smoke may be beneficial, our findings warrant extension to non-treatment-seeking teenage smokers.
Published by The Institute For Cancer Prevention and Elsevier Inc.

Keywords: Adolescent; Smoking; Addiction; Quit attempts; Ethnicity; Gender

Introduction

Among ethnicities represented in the United States, tobacco use disproportionately impacts African Americans who incur increased relative risk of mortality from diseases associated with tobacco use, including coronary heart disease, stroke, and respiratory cancers [1]. African American adults have similar smoking prevalence rates of 23.2% vs. 24.1% for European Americans, despite both later onset and lower prevalence of smoking during adolescence [1–3]. While the majority of adult smokers in the United States are interested in quitting, European American smokers had the highest (51.0% 95% CI = ± 1.1]) and African American the lowest (37.3% [95% CI = ± 2.7]) rates of successful quitting, which may contribute to the more equal prevalence of smoking in African American and European American adults [4,5]. Related to this, African American adult smokers were significantly less likely to recall being advised to quit smoking by their primary care physician, compared to their European American counterparts [6].

Tobacco use typically begins during childhood and adolescence, and most teenage established smokers are interested in quitting [7,8]. Some teenage smokers use the nicotine gum or the patch and there is reason to believe that access to these aids could enhance some addicted teenage smokers' efforts at quitting [9–13] as they have done for adult smokers [14], despite negative pilot trials to date [15–17]. While success at self-quitting is limited for adolescents with established smoking habits [18], both the number and duration of quit attempts influence quitting outcome. The

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0091-7435/$ - see front matter. Published by The Institute For Cancer Prevention and Elsevier Inc.
doi:10.1016/j.ypmed.2004.04.050

duration of past quit attempts among a nationally representative sample of teenage smokers was shown to predict successful quitting [19]. An adolescent smoker's intent or attempt to quit does not necessarily lead to successful abstinence, but a greater number of quit attempts by adolescent smokers is associated with higher subsequent quit rates [20,21]. Given that most regular teenage smokers will continue to smoke as adults [18], characterizing early quit attempts may increase the understanding of how best to assist adolescent smokers in preventing the well-known smoking-attributable health consequences, including premature death [7,18]. Features of such quit attempts that correlate with ethnicity might inform culturally sensitive secondary prevention strategies designed to address tobacco-related health disparities [3].

However, few data are available to illustrate how characteristics of self-quitting efforts may vary by ethnicity during adolescence, when the effects of smoking are already manifesting or accruing [22,23]. Recent findings from the National Youth Tobacco Survey completed by middle and high school students indicate similar quit attempt rates during the preceding 12 months among European American and African American adolescent smokers [24]. The survey also indicated that female students were significantly more likely than male students to have tried to quit smoking. In addition to characterizing quit attempts in the general population, it is also important to examine quit attempts and their correlates among treatment seeking daily and addicted teenage smokers because this subset has the lowest quitting success and highest health risk [18,25], yet is amenable to clinical intervention.

It was previously reported that African American adolescent smokers seeking cessation treatment have a shorter smoking history and lower Fagerström Test of Nicotine Dependence (FTND) scores, along with qualitative differences in aspects of tobacco dependence, compared to their European American counterparts [3,26]. For example, African American youth smoked fewer cigarettes per day and found it easier to refrain from smoking in places where it was forbidden. Riedel et al. [27] reported lesser withdrawal symptomatology in African American adolescent smokers compared to European Americans. Preliminary analyses from a large prospective study suggest African American teenage smokers are less successful at quitting than their European American counterparts [28]. Taken together, these findings suggest that African American youth might be less likely to make a quit attempt (a necessary precursor to long-term abstinence) during these early phases of their smoking history, thereby placing them at higher health risk later in life.

The objective of this study was to compare aspects of young African American and European American daily smokers' efforts at self-quitting, before entry into a smoking cessation medication trial. The effect of gender on the relationship between ethnicity and quit attempts was examined because of previously reported gender differences in quitting [19,24]. Lesser likelihood of having tried to quit and fewer quit attempts, as well as less use of NRT among African American teenage smokers compared to European Americans, were hypothesized.

Methods

Participants and setting

Participants in this study were Baltimore African American and European American teenage smokers who responded via telephone to a broadly targeted print, radio, television advertisement, or community outreach (schools, churches, etc.) for an outpatient teenage smoking cessation study of medication and group therapy. Youths 13–17 years old who called in to request treatment between August 1999 and December 2002 were included in this analysis.

Procedures and measures

Teenage applicants completed a 20-min, internally developed, structured telephone interview performed by a clinical social worker. Sociodemographic information (age, sex, self-reported ethnoracial affiliation); medical, psychiatric, and medication history; smoking-related history; previous cessation attempts; and motivational level to quit were recorded onto intake forms. Because it was intended for use in prescreening for the cessation trial, the interview contained a limited number of questions covering sociodemographics and elements of smoking history, including previous quit attempts, degree of smoking and tobacco dependence, and use of NRT.

Ethnic group category was determined by asking callers: "Which of the following best describes your ethnoracial background: white or European American, African American, Native American, or Asian?" Smoking histories were elicited by asking the following questions: "How old were you when you took your first puff?" and "How old were you when you smoked your first cigarette?" For previous quit attempts, callers were asked: "Have you seriously tried to quit before? If they answered in the affirmative, they were asked: "How many times?" then "What was the longest time you were able to stay quit or smoke-free during any one of these quit attempts?" Respect for adolescent's intentions, as well as the relative imprecision of recalling time frames, prompted the research team not to impose any strict time limitation on what would constitute a genuine quit attempt. Due to the likely imprecision of participants' recall and the right-skewed nature of the responses, both number of prior quit attempts and length of longest quit attempt were used as dichotomous rather than continuous variables for all analyses. Both were dichotomized at the median: at least three prior quit attempts vs. two or fewer, and able to stay quit for at least 1 week vs. unable to quit for 1 week.

Adolescents were also queried regarding their use of two forms of nicotine replacement therapy with: "Have you ever used the nicotine gum?" and "Have you ever used the nicotine patch?" For the purposes of this study, these two responses were combined into one category: "Any prior use of nicotine replacement therapy (NRT)". Tobacco dependence was ascertained using the six-item FTND [29], as previously described [3,26].

Before analyzing these data, the personal identifiers of participants who did not qualify for the treatment protocol were removed. The current screening study was thus separately approved with a waiver of informed consent by the National Institutes of Health Office of Human Subject Research (OHSR).

Data analysis

The objective of the data analysis was first to assess the relationship between ethnicity and quit attempt variables, and second to determine if these effects varied by gender. Bivariate, unadjusted associations between ethnicity (African American vs. European American) and quit attempt variables (ever tried to quit before, at least 3 prior quit attempts, able to stay quit at least 1 week, ever used NRT, prior request for cessation treatment) were assessed for the entire sample, then separately for male and female participants using chi-square tests. Next, associations between ethnicity and quit attempt variables, for the entire sample and stratified by gender, were reassessed using logistic regression to determine whether these relationships persisted after adjusting for years smoked and FTND score. This was done because of the potential confounding effect of duration and severity of tobacco dependence on these variables and, also, because of ethnic differences in both FTND score and duration of smoking [3,26]. For all statistical tests, $P < 0.05$ was considered statistically significant. All analyses were conducted using SAS version 8.2 (SAS Institute, Cary NC).

Results

Sample characteristics

Of 1,265 teenage smokers screened for the smoking cessation trial, 980 were included in this analysis. Excluded were 80 participants outside the eligible age range for the trial (13–17), 58 participants who reported ethnicity other than African American or European American, and 147 participants who had missing data (quit attempt characteristics or covariates-years smoked, FTND score). Both European American and African American youth responded in near similar proportions to radio, TV, and print (data not included); thus, there was no need to adjust analyses for media outlet.

Table 1 provides basic demographic and smoking characteristics of the sample. The overall sample was predominately European American and female; the mean Fagerström score indicates substantial dependence. The two ethnic groups were comparable with regard to mean age of participants. There was no significant difference in gender or age distribution according to ethnicity. As a group, African American youth reported significantly later age at first cigarette, fewer years of smoking, fewer cigarettes per day and lower FTND score compared to European American adolescent cessation-treatment seekers, as previously reported [3].

Most participants had tried to quit before. Among those who reported a prior quit attempt (N = 870), the median number of prior quit attempts was 2 (interquartile range 2–4), and the median longest time quit was 7 days (interquartile range 2–14 days). Only about one-fifth had previously requested formal smoking cessation treatment. Approximately one quarter of the sample had used NRT in the past. Prior use of NRT was associated with having tried to quit before (25.8% of participants who had tried to quit had used NRT, compared with 10.9% NRT use in

Table 1
Demographic and smoking characteristics

	Entire sample (N = 980)	African Americans (N = 410)	European Americans (N = 570)
Age	15.5 ± 1.34	15.5 ± 1.33	15.4 ± 1.34
Gender (% female)	59.9%	61.0%	59.1%
Cigarettes per day**	14.0 ± 8.79	11.1 ± 8.34	16.0 ± 8.57
Age at first cigarette*	12.0 ± 2.01	12.7 ± 1.86	11.5 ± 1.97
Years smoked*	3.45 ± 1.98	2.83 ± 1.80	3.90 ± 1.99
Years to daily smoking*	1.04 ± 1.27	0.79 ± 1.12	1.22 ± 1.33
FTND total score**	5.85 ± 2.18	5.19 ± 2.26	6.33 ± 1.99
Tried to quit before*	88.8%	83.9%	92.2%
At least three prior quit attempts (N = 870)	46.3%	42.4%	48.9%
Able to stay quit at least 1 week (N = 870)	50.5%	52.0%	49.4%
Used NRT before*	24.1%	19.3%	27.5%
Requested cessation treatment before	18.4%	20.2%	17.0%

Statistical significance of differences between African Americans and European Americans.
NRT: nicotine replacement therapy.
FTND: fagerström test for nicotine dependence.
* $P < 0.05$.
** $P < 0.01$.

those who had not tried to quit, chi square = 11.8, *df* = 1, *P* = 0.0006), having at least three prior quit attempts (30.8% of participants who had at least three prior quit attempts had used NRT, compared with 21.4% NRT use in those who had tried to quit once or twice, chi-square = 9.9, *df* = 1, *P* = 0.0016), and previous request for treatment (35.0% NRT use in those who had requested treatment in the past, chi-square = 14.4, *df* = 1, *P* = 0.0001). However, prior use of NRT was not associated with ability to quit for at least 1 week (chi-square = 0.21, *df* = 1, *P* = 0.65).

Ethnicity and quit attempts

Having a prior quit attempt and prior use of NRT were less prevalent among African Americans compared to European Americans (Table 1). After adjusting for years smoked and FTND score, African American adolescents remained less likely to have tried to quit before (OR = 0.60), and were more likely to have requested cessation treatment (OR = 1.72); the relationship between ethnicity and prior NRT use became nonsignificant (Table 2).

Ethnicity and quit attempts by gender

Relationships between ethnicity and quit attempts differed by gender (Fig. 1). African American girls and boys were less likely to report a prior quit attempt than were European American teenagers; however, the magnitude of the difference was greater and reached statistical significance only for boys. The same pattern of results was also observed for NRT use. After adjusting for years smoked and FTND score, having tried to quit before and prior NRT use remained significantly and inversely associated with African American ethnicity only for boys (Table 2). Comparable proportions of African American and European American boys had at least three prior quit attempts, but a smaller proportion of African American girls relative to European American girls had tried to quit at least three times (Fig. 1); after adjusting for years smoked and FTND score, the association for girls became nonsignificant (Table 2). The proportion of teens having requested cessation treatment before was also unrelated to ethnicity for boys, but positively associated with African American ethnicity for girls. This association showed only a trend toward statistical significance in unadjusted analyses (Fig. 1), but became significant when years smoked and FTND score were added as covariates (Table 2).

Because of the association of prior use of NRT with any prior quit attempt, request for treatment, and number of prior quit attempts, regression analyses were repeated for the whole sample and stratified by gender, adding NRT use as a covariate. All results remained unchanged.

Discussion

This paper reports gender differences in ethnic correlates of quit attempt characteristics using data from adolescents screened for a smoking cessation study. In this clinical sample, African American boys were less likely than European American boys to report a prior quit attempt or use NRT and African American girls were more likely than European American girls to have previously requested smoking cessation treatment. The current study replicates and extends previous findings of later smoking onset and fewer cigarettes smoked per day among African American compared to European American youth [2,3,26].

The finding that African American boys were less likely to report a prior serious quit attempt was not consistent with the Youth Tobacco Surveillance report [22]. This may be due to difference in sample composition, namely a self-selected clinical sample vs. a randomly selected nonclinical sample. The current findings may prompt development of novel ways to encourage African American boys interested in quitting smoking to make a serious quit attempt, for example, by targeted outreach and education

Table 2
Adjusted logistic regression models[a] of associations of quit attempt variables with ethnicity

Outcome	African American ethnicity OR (95% CI)	Ethnicity by gender OR (95% CI)	
Tried to quit before	0.60 (0.39–0.92) *P = 0.02*	Boys	0.35 (0.17–0.73) *P = 0.0049*
		Girls	0.85 (0.49–1.46) *P = 0.55*
At least three prior quit attempts	1.07 (0.80–1.44) *P = 0.65*	Boys	1.57 (0.97–2.53) *P = 0.068*
		Girls	0.85 (0.58–1.24) *P = 0.39*
Able to stay quit at least 1 week	0.98 (0.73–1.31) *P = 0.89*	Boys	0.92 (0.57–1.48) *P = 0.73*
		Girls	1.05 (0.72–1.53) *P = 0.80*
Used NRT before	0.82 (0.59–1.14) *P = 0.23*	Boys	0.60 (0.36–1.00) *P = 0.049*
		Girls	1.04 (0.68–1.59) *P = 0.85*
Requested cessation treatment before	1.72 (1.21–2.45) *P = 0.0026*	Boys	1.28 (0.73–2.24) *P = 0.39*
		Girls	2.19 (1.37–3.48) *P = 0.001*

NRT: nicotine replacement therapy.
[a] With and without stratifying by gender, adjusting for years smoked and FTND score.

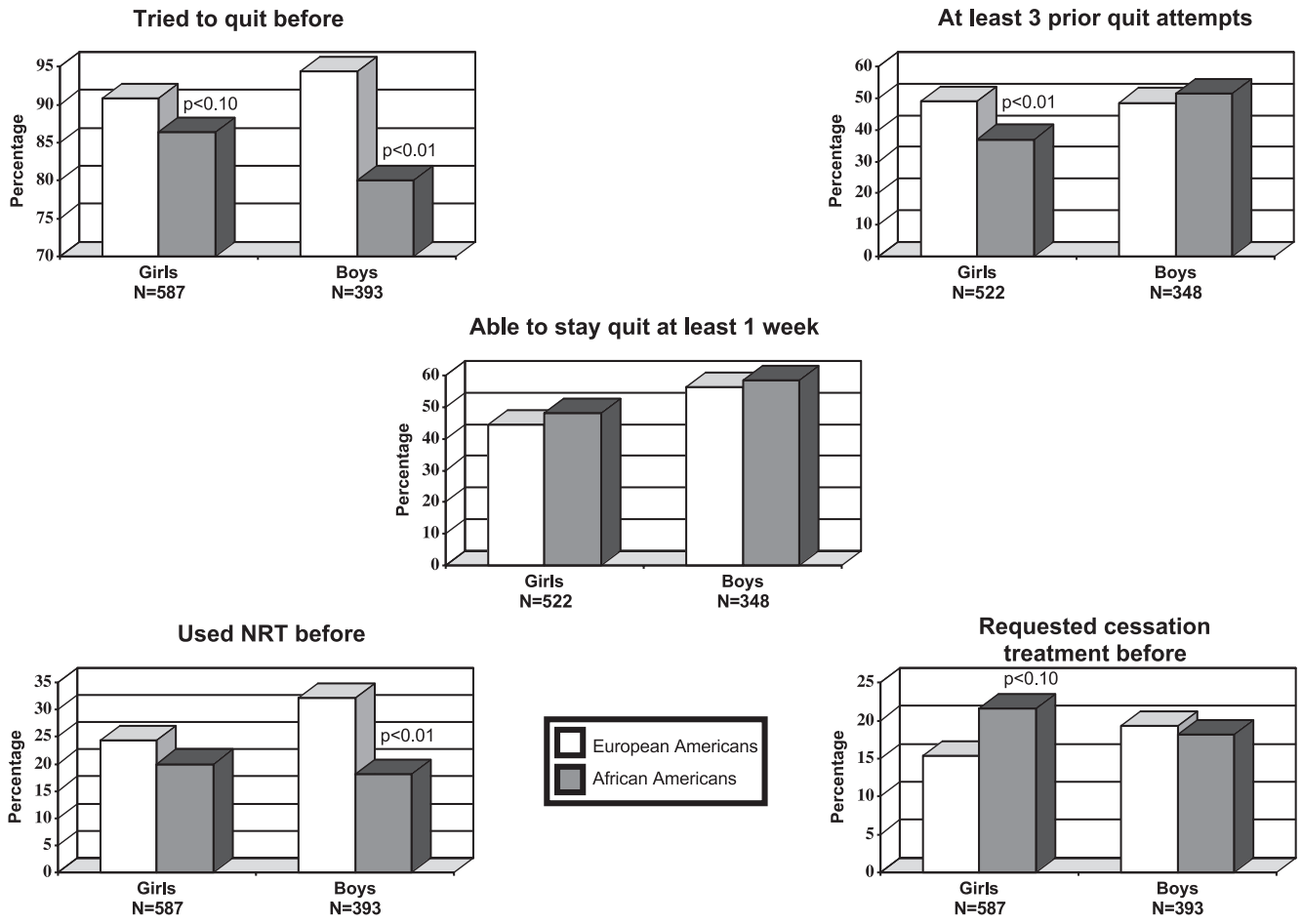

Fig. 1. Unadjusted ethnic comparisons of quit attempts among adolescent smokers by gender.

via community leaders, role models, and sports and athletic coaches, as reported by Aung et al. [30]. In our clinical sample, African American girls were more likely to have requested cessation treatment. Possible explanations for this may be that African American girls may perceive their home environment as not conducive to quitting [31], or they may be differentially influenced by life stressors [32]. Thus, practitioners treating African American girls who smoke should probe for their desires to quit smoking and actively assist them in engaging into cessation programs.

Both African American boys and girls were less likely to have used NRT, but the difference reaching statistical significance only among boys. This finding is consistent with results from a recent study in which adolescent African American smokers were less likely than non-African Americans to have used NRT [13]. Similarly, a study in Massachusetts showed that fewer non-white adults used NRT after the switch to over-the-counter availability [33]. While future studies need to further examine the contribution of socioeconomic and cultural factors to the use of NRT and other smoking cessation strategies, factors that might account for lower rates of their use by some populations include lack of access to treatments and the cost of such medications [9]. Reducing out-of-pocket costs for cessation counseling and treatment and expanding access to telephone counseling services (e.g., quitlines) might well encourage smoking cessation among youth with limited access to treatment, despite limited reported data to support the efficacy of NRT for youth [15–17].

Strengths of the current study include its focus on a subgroup of teenage smokers at high risk for tobacco-related morbidity and mortality. The large sample size and near-equal sampling of both ethnicities, allowed for within-ethnicity analyses of gender effects. We were able to uncover substantial use of NRT despite its perceived low level of availability to adolescent smokers [11]. However, this study has several limitations. Teenagers were asked to recollect information on events and their duration that may have occurred years earlier, with potential inaccuracies resulting from incomplete recall [34]. The number of prior quit attempts does not capture their clinical quality. Also, given their retrospective nature, quit attempts were based upon self-report and not biochemically verified, as in several similar reports [8,19,25]. Because these data were collected during screening for a smoking cessation study,

teenagers may have adjusted their smoking histories to what they thought would make them eligible for the trial. Although we queried regarding use of NRT, we did not explore the degree to which participants had used self-administered behaviorally based treatments that can improve quit rates among adult smokers [35].

While the generalizability of these findings is limited to treatment seeking, physically dependent teenage smokers, they add to the knowledge base for practitioners, program planners, tobacco control advocates, and policy advisors seeking to mitigate ethnic disparities in adverse health outcomes. These findings suggest strategies for secondary prevention through enhanced efforts at quit attempts targeted toward a subpopulation at great risk of subsequent tobacco-related morbidity and mortality (African American adolescents who smoke daily), yet amenable to clinical intervention (seeking smoking cessation treatment). Secondary prevention strategies suggested here must be proven effective in broad representative samples of adolescent smokers before their implementation.

Acknowledgments

This research was supported by NIDA intramural funds. We thank Susan Ruckel, LCSW-C and the NOVA Research staff and Dr. Jean Lud Cadet without whom this study would not have been possible. We are grateful to the staff of the Teen Tobacco Addiction Treatment Research clinic for technical support and Elissa Thorner for help with the manuscript.

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