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High School Students Who Tried to Quit Smoking Cigarettes --- United States, 2007

In the United States, cigarette use is the leading cause of preventable death, and most adult smokers started before the age of 18 years (1). Nicotine dependence maintains tobacco use and makes quitting difficult. Despite their relatively short smoking histories, many adolescents who smoke are nicotine dependent, and such dependence can lead to daily smoking (2). To examine the extent to which high school students had tried to quit smoking cigarettes, CDC analyzed data from the 2007 Youth Risk Behavior Survey (YRBS), a nationally representative survey of students in grades 9--12 in the United States. This report describes the results of that analysis, which found that 60.9% of students who ever smoked cigarettes daily tried to quit smoking cigarettes, and 12.2% were successful. These findings indicate that comprehensive tobacco control programs need to continue to implement community-based interventions that prevent initiation and increase cessation (3) and increase the use of evidence-based cessation strategies for youths (4).

YRBS, a component of CDC's Youth Risk Behavior Surveillance System, measures the prevalence of health risk behaviors among high school students through biennial national, state, and local surveys. The national YRBS uses a three-stage cluster sample design to obtain cross-sectional data representative of public- and private-school students in grades 9--12 in the 50 states and the District of Columbia (5). Students complete school-based, anonymous, self-administered questionnaires that examine the prevalence of health risk behaviors, including tobacco use. In 2007, the school response rate was 81%, the student response rate was 84%, the overall response rate was 68%, and 14,041 students completed a usable questionnaire (5). The following two behaviors were examined: 1) ever smoked cigarettes daily and tried to quit smoking cigarettes,* and 2) ever smoked cigarettes daily, tried to quit smoking cigarettes, and were successful.†

Race/ethnicity data are presented only for non-Hispanic black, non-Hispanic white, and Hispanic students (who might be of any race); the numbers of students from other racial/ethnic groups were too small for meaningful analysis. Data were weighted to provide national estimates. Statistical software that takes into account the complex sampling design was used to calculate prevalence estimates and 95% confidence intervals (CIs) and to conduct t-tests for subgroup comparisons ($p < 0.05$).

Overall, 60.9% of students who ever smoked cigarettes daily tried to quit smoking cigarettes (Table). The prevalence of this behavior did not vary by grade but was higher among female students (67.3%) than male students (55.5%) ($t = 11.8$, $p = 0.001$), and higher among black students (68.1%) than Hispanic students (54.1%) ($t = 2.2$, $p = 0.03$). No other differences were found by race/ethnicity.

Overall, 12.2% of students who ever smoked cigarettes daily tried to quit smoking cigarettes and were successful. The prevalence of success in quitting did not vary by sex or race/ethnicity. More students in 9th grade (22.9%) than in 10th grade (10.7%, $t = 2.3$, $p = 0.02$), 11th grade (8.8%, $t = 2.4$, $p = 0.02$) and 12th grade (10.0%, $t = 2.3$, $p = 0.03$) tried to quit smoking cigarettes and were successful.

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Editorial Note:

The YRBS data presented in this report indicate that the majority of high school students who ever smoked cigarettes daily had tried to quit smoking, but few were successful. Youths experiment with or begin smoking for a variety of reasons, including societal and parental norms, tobacco product advertising, depictions of smoking in movies and other popular media, and peer influences (4). Studies also indicate that nicotine dependence might be established rapidly among some adolescents (4). The U.S. Public Health Service's 2008 update to its clinical practice guideline on treating tobacco use and dependence recommends that adolescent smokers be provided with counseling interventions to aid them in quitting smoking (4). However, although the use of counseling approximately doubled quit rates in the seven studies on youth cessation reviewed by the guideline panel, the panel noted that absolute abstinence rates of those who received counseling remained low (i.e., an 11.6% quit rate at 6 months), attesting to the need for improved counseling interventions for adolescents. Tobacco control policies and community-based interventions that increase cessation among adults also might encourage youths to quit smoking. These interventions, in addition to those that prevent initiation, need to be fully implemented to further lower the prevalence of smoking among both youths and adults (3).

The level of dependence and intensity of withdrawal experiences are related to smoking patterns (e.g., the number of cigarettes smoked per day), and adolescents who successfully quit smoking report less intense withdrawal experiences (2). In this analysis, the higher quitting success rate among 9th-grade students compared with students in other grades might be attributable to lower levels of dependency from smoking fewer cigarettes per day or having smoked for shorter periods. These data suggest the importance of targeting young smokers with cessation counseling while their likelihood of success in quitting is greatest; the reasons for higher success rates among this subgroup should be examined to identify potential intervention strategies.

Other research has shown that youths often do not use evidence-based methods for their quit attempts, which might be one reason why many youths are unsuccessful (6). Although current guidelines for effective treatment of adolescent smoking recommend that health-care providers ask all youths about their smoking status, strongly encourage abstinence from tobacco use among nonusers, and provide counseling interventions for cessation among those who smoke (4), more research is needed to determine additional best practices for helping youths quit smoking. In the interim, the CDC report *Youth Tobacco Cessation: A Guide for Making Informed Decisions*§ gives practical guidelines for programs to determine whether they should implement a youth cessation intervention as part of a comprehensive tobacco control program. This report also discusses the importance of conducting a needs assessment for the population with which the program might intervene and the importance of having an evaluation plan for the intervention. The report cautions against the use of some interventions that have not been shown to be effective with youths, such as fear-based tactics and pharmacotherapy (e.g., nicotine patch and gum). In addition, a recent review of tobacco cessation interventions for young persons concluded that psychosocial interventions and interventions based on the transtheoretical model (stage of change) show promise (including the N-O-T (Not on Tobacco) program) (7). N-O-T is the American Lung Association's school-based voluntary program designed to help high school students stop smoking, reduce the number of cigarettes smoked, increase healthy lifestyle behaviors, and improve life management skills.¶

The findings in this report are subject to at least three limitations. First, these data apply only to youths who attend school and, therefore, are not representative of all persons in this age group. Nationwide, in 2005, of persons aged 16 and 17 years, approximately 3% were not enrolled in a high school program and had not completed high school (8). Second, the extent of underreporting or overreporting of cigarette use cannot be

determined, although the survey questions demonstrate good test-retest reliability (9) and high school students do not tend to underreport cigarette use (10). Third, the definition of successful quitting was not having smoked during the 30 days before the survey. Students were not asked directly about their success in quitting, and calculating the percentage of high school students who quit smoking before the 12 months preceding the survey was not possible. Some youths who reported not smoking during the preceding 30 days might relapse to cigarette smoking in the future.

The Institute of Medicine and CDC have concluded that state-based, comprehensive tobacco control programs that support cessation need to be implemented at CDC-recommended funding levels to lower tobacco use among youths and adults (3). Furthermore, current best practices recommend that, to prevent youths from starting to smoke, states establish and sustain comprehensive tobacco control programs that increase excise taxes, promote smoke-free air policies, and conduct media campaigns in conjunction with other community-based interventions, such as tobacco-use prevention programs in schools that include school policy and education components (3).

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* Ever smoked at least one cigarette every day for 30 days, smoked cigarettes during the 12 months before the survey, and tried to quit smoking cigarettes during the 12 months before the survey.

† Ever smoked at least one cigarette every day for 30 days, smoked cigarettes during the 12 months before the survey, tried to quit smoking cigarettes during the 12 months before the survey, and did not smoke on any of the 30 days before the survey.

§ Available at http://www.cdc.gov/tobacco/quit_smoking/cessation/youth_tobacco_cessation/index.htm.

¶ Additional information available at http://www.lungusa.org/site/c.dvLUK900E/b.39866/k.A46F/NotOnTobacco_NOT_Backgrounder.htm.

TABLE. Percentage of high school students who tried to quit smoking cigarettes,* and those who were successful,† by sex, race/ethnicity, and grade --- United States, Youth Risk Behavior Survey, 2007

Characteristic	Ever smoked cigarettes daily and tried to quit smoking cigarettes		Ever smoked cigarettes daily, tried to quit smoking cigarettes, and were successful	
	%	(95% CI)	%	(95% CI)
Sex				
Female	67.3	(62.8--71.6)	11.5	(8.1--16.1)
Male	55.5	(51.0--59.9)	13.0	(8.7--18.8)
Race/Ethnicity				
White, non-Hispanic	62.5	(59.2--65.8)	12.2	(9.1--16.1)
Black, non-Hispanic	68.1	(57.9--76.8)	8.7	(5.4--14.0)
Hispanic	54.1	(46.1--61.8)	17.7	(9.0--31.8)
Grade				
9	57.2	(48.9--65.2)	22.9	(14.7--33.9)
10	64.6	(56.4--72.1)	10.7	(6.5--17.1)
11	61.1	(55.6--66.3)	8.8	(4.8--15.5)

12	60.5	(54.5--66.3)	10.0	(6.1--16.1)
Total	60.9	(58.0--63.8)	12.2	(9.7--15.2)

* Ever smoked at least one cigarette every day for 30 days, smoked cigarettes during the 12 months before the survey, and tried to quit smoking cigarettes during the 12 months before the survey.

† Ever smoked at least one cigarette every day for 30 days, smoked cigarettes during the 12 months before the survey, tried to quit smoking cigarettes during the 12 months before the survey, and did not smoke on any of the 30 days before the survey.

§ Confidence interval.

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