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How Long Will Today's New Adolescent Smoker Be Addicted to Cigarettes?

John P. Pierce, PhD, and Elizabeth Gilpin, MS

ABSTRACT

This study estimated the expected smoking duration for young smokers who have started recently. Data from National Health Interview Surveys were combined to model the ages at which smoking prevalence will decline to various percentages of the peak smoking prevalence for each successive birth cohort. Smoking-cessation ages were then estimated for the males and females born from 1975 through 1979. The median cessation age for those in this cohort who start smoking as adolescents is expected to be 33 years for males and 37 years for females. Thus, 50% of these adolescent males may smoke for at least 16 years and 50% of these adolescent females may smoke for at least 20 years, based on a median age of initiation of 16 to 17 years. Despite the decline in the median age of US smokers who quit, these data predict that smoking will be a long-term addiction for many adolescents who start now. (*Am J Public Health*. 1996;86:253-256)

Introduction

Since the early 1960s, there has been intense effort to reduce the prevalence of smoking.^{1,2} This effort has been divided into two realms: encouraging smokers to quit and preventing nonsmokers from starting. Prevention efforts appear to have been very successful among adults³; the median age of smoking initiation has dropped to 16 to 17 years.^{4,5} Despite many programs aimed at preventing adolescent smoking initiation, smoking prevalence among high school seniors, which has declined over the last 2 decades, may again be increasing.⁶ Thus, a reduction in smoking prevalence is more likely to be achieved by encouraging addicted smokers to quit than by preventing adolescent nonsmokers from starting.^{7,8}

The process of becoming a permanent nonsmoker is long and arduous,⁹⁻¹¹ and for most smokers success comes only after many years. Adolescents may not fully understand that quitting this addiction is very difficult. Nearly a third of high school seniors (31.6%) who smoke a pack or more of cigarettes a day think they

probably or definitely will not be smoking in 5 years.⁵ This percentage increases to 41.6% for those who smoke about a half a pack a day, to 60.6% for those who smoke one to five cigarettes a day, and to 84.8% for nondaily smokers. With more smoking experience, it becomes increasingly apparent to young smokers that cigarettes are an addiction that they will not easily escape.

In this article, we use smoking data collected by the National Health Interview Surveys from 1965 to 1988 to establish trends in cessation patterns and, as in previous work, to project future experience.¹² Specifically, we estimate the expected duration of smoking for White

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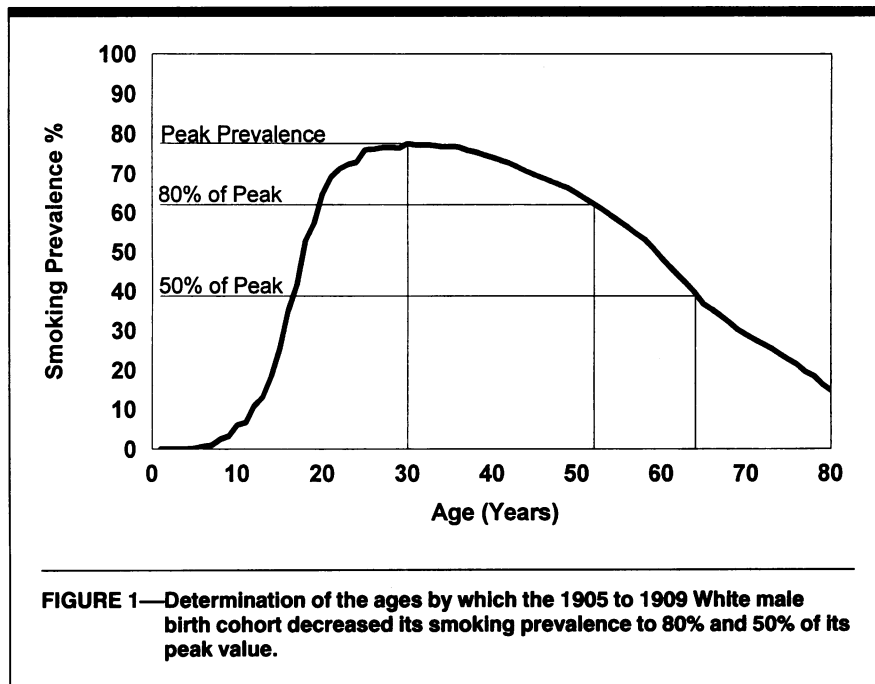


FIGURE 1—Determination of the ages by which the 1905 to 1909 White male birth cohort decreased its smoking prevalence to 80% and 50% of its peak value.

TABLE 1—Ages at Which Declines in Smoking Prevalence (to Various Percentages of the Peak Prevalence) Occur for Birth Cohorts of White Males and White Females

Birth Cohort	Target % of Peak Smoking Prevalence									
	White Males					White Females				
	80	70	60	50	40	80	70	60	50	40
1890–1894	60	65	69	73	77	69	73	76	79	82
1900–1904	54	60	63	66	70	63	67	70	74	78
1910–1914	50	55	59	64	67	58	62	66	69	73
1920–1924	44	48	53	59	62	53	58	62	66	67 ^a
1930–1934	39	44	49	54	57 ^a	47	52	56 ^a	59 ^a	63 ^a
1940–1944	36	40	45	49 ^a	52 ^a	39	47 ^a	51 ^a	54 ^a	59 ^a

Note. Numbers are ages in years.

^aExtrapolated by means of the procedure indicated in Figure 2.

adolescents in the 1975 to 1979 birth cohort, who are now at the prime age for smoking initiation. Concerns related to small sample sizes and the markedly different smoking initiation behavior among African Americans^{5,13,14} led to the exclusion of this group from the current analysis.

Methods

The data analyzed in this report are from summary tables included in a recent monograph.¹⁵ Data from 15 different National Health Interview Surveys were pooled ($n = 460\,254$) to develop smoking prevalence rates for White males and females by age for 17 consecutive 5-year

birth cohorts (1885 to 1989 through 1965 to 1969). These cross-sectional surveys collected information on the same birth cohorts at different ages. Each of the surveys asked respondents whether they had ever smoked 100 cigarettes and whether they smoked currently (for details about the methods used to generate the prevalence data, readers should refer to the monograph¹⁵).

For each gender-specific birth cohort, we found the peak prevalence of smoking from the tabulated data plotted in Figure 1 for the 1905 to 1909 birth cohort of White males. Next we noted the age at which this prevalence had declined to a target percentage of its peak value. For example, Figure 1 shows that the age

at which prevalence declined to 80% of its peak was 52 years, and the age for decline to 50% of its peak was 64 years. We then performed a simple linear regression analysis for each target percentage for each gender, with birth cohort (coded 1, 2, etc.) as the independent variable. Some of the younger birth cohorts (after 1925 for males and after 1915 for females) did not contribute data to some analyses because the decline in prevalence had not yet reached the target percentage of peak.

Using the estimated regression parameters, we then extrapolated the age by which the target percentage of the 1975 to 1979 birth cohort (cohort 19 of our coding scheme), whose members are currently becoming smokers, will still be smoking. We report 95% confidence intervals (CIs) for these extrapolated ages.

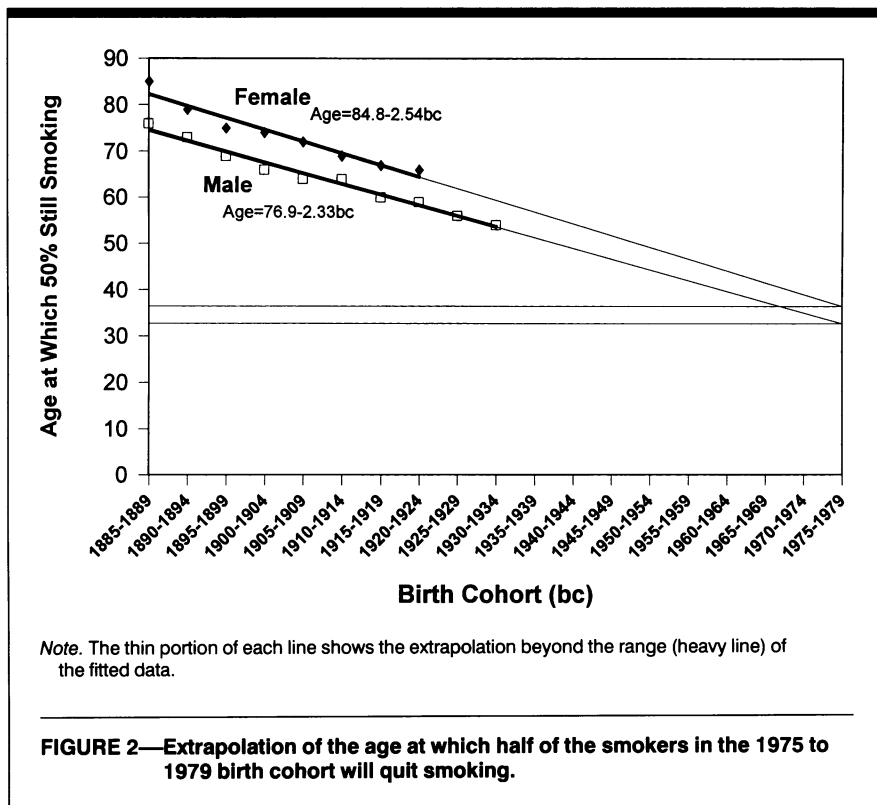
Results

Table 1 shows the ages at which smoking prevalence among birth cohorts of White males and White females declines to various target percentages of peak. Males are reaching each target percentage of peak prevalence at a younger age than females. The age intervals for each target percentage decline are generally regular within a birth cohort, and more recent birth cohorts reach the target percentages of peak at younger ages.

The estimated age by which 50% of smokers in the 1975 to 1979 birth cohort quit is shown in Figure 2 for each gender. The fitted regression line is plotted (heavy line; $R^2 = .99$, $P < .001$), and its projection to the 1975 to 1979 birth cohort is extrapolated (thin line). Reading from the age axis, it appears that 50% of White males will no longer be smokers at 33 years of age (95% CI = 28, 37) and that 50% of females will no longer be smokers at 37 years of age (95% CI = 27, 46). Assuming the median age for smoking initiation to be 17 years, the expected durations of smoking are expected to be 16 years for White males and nearly 20 years for White females. A similar analysis suggests that males may reach 40% of peak prevalence by 36 years of age (95% CI = 29, 43) but that females may not reach this level of decline until 45 years of age (95% CI = 39, 52).

Discussion

Quitting behavior appears to change at a slow and linear pace across successive birth cohorts. Importantly, the time to reach various percentages of peak preva-



lence decreases with each younger birth cohort, suggesting that public health approaches to encourage smokers to quit are working, albeit at a slow pace. Projecting these data forward, we estimate that the adolescent who starts smoking now will smoke for at least 16 years if male and 20 years if female.

We classified respondents as smokers if they had smoked 100 cigarettes or more. This classification probably overestimates the proportion of the population who actually became addicted. For example, we project that prevalence will decline to 80% of its peak for the 1975 to 1979 birth cohort before the age of 20 years. It is likely that some of these early quitters would not meet more stringent definitions for addiction. Although they may smoke at least 100 cigarettes, they may never have smoked daily for 6 months. Including such short-term smokers who were never truly addicted will lead to a faster estimated decline in prevalence than if these smokers had been excluded. Data from the United States indicate that, among people who had reported smoking in the month before they were surveyed as high school seniors (1976 to 1986), more than 60% were smoking daily 5 years later.⁵ The fact that 40% were not smoking daily 5 years later further underscores the contention that we may be underestimating smoking

duration for those who start to smoke now. For this reason, the age by which prevalence reaches 40% of its peak may be a better estimate of expected median smoking duration. For those who start smoking now, the median smoking duration may actually be closer to 20 years for males and 30 years for females.

On the other hand, it is possible that various external factors, such as escalation in the social undesirability of smoking, may increase the rate at which successive birth cohorts quit smoking. Also, if new approaches that successfully prevent teens who are still in the initiation process from progressing to addicted smoking are designed and implemented, the projected duration may be shortened. There is also an obvious need for new programs that encourage young addicted smokers to quit; those that have had some success with adults may not work with youth.

Nevertheless, efforts to prevent experimentation must be given high priority. Promising strategies may include a ban on cigarette advertising or higher cigarette taxes. There is considerable evidence that tobacco advertising and promotion encourages adolescents to start smoking¹⁶⁻¹⁸ and that increasing the price of cigarettes discourages young people from starting to smoke.⁵ While new and innovative approaches are being sought, the addictive nature of cigarettes and problems associ-

ated with successful quitting need more emphasis in current prevention programs. □

Acknowledgments

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Nominations Invited for 1996 Mental Health Media Awards

Each year the National Mental Health Association (NMHA) honors journalists who excel in communicating about mental illnesses and mental health issues. NMHA is currently accepting nominations for the 1996 awards, to be presented during the Clifford W. Beers National Mental Health Conference in Washington, DC, in June. Award categories include print media (large and small newspapers, national and regional magazines), electronic media (national and local television, national and local radio), and student awards.

Entries can be any piece published or aired during the calendar year 1995 that addresses pertinent mental health or

mental illness issues. The piece can be a single story or a series and should illustrate an innovative and creative approach to the topic, as well as exhibit technical excellence in writing and production.

All entries must be postmarked by *February 29, 1996*. For more information or to obtain an entry form, please contact J. Scott Punk, APR, Director of Media Relations, National Mental Health Association, 1021 Prince St, Alexandria, VA; tel (703) 838-7528; fax (703) 684-5968; email jspnmha@cais.com.