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Abstract

We examined changes in the patterns of the rates of smoking initiation in the United States by gender for 1950, 1965, and 1980. Data from National Health Interview Surveys on the ages people started smoking (survey years 1970, 1978, 1979, 1980, 1987, and 1988) were used to construct age-specific rates of smoking initiation for males and females 10 to 24 years of age for 1950, 1965, and 1980. We used information from 87,483 white respondents who were between 20 and 50 years of age when surveyed. In 1950, initiation was higher for males of all ages than for females, and smoking initiation rates were higher among those age 18 years and older compared to those younger. Although still somewhat higher, the rates for males in 1965 had declined much more than those for females, and the tendency for higher rates in older youth was still evident. In 1980, no gender difference was seen and most initiation clearly took place in those younger than 18 years of age. We concluded that the public health campaign has been successful in convincing older youth not to smoke. However, smoking initiation rates in younger adolescents have changed little, indicating that new approaches to tobacco control are necessary if smoking prevalence in the United States is to be further reduced.

Introduction

The earliest reports linking cigarette smoking to lung cancer appeared in the early 1950s (1, 2). Prior to that time, smoking was largely considered to be a harmless adult activity. There was no strong objection if individuals started to smoke, especially if they waited until they approached adulthood. However, with the publication of the Surgeon General’s report in 1964 (3), a public health campaign was launched to actively discourage cigarette smoking. Over the 25 years since the campaign began, more data have become available linking cigarette smoking to disease, so that in recent years, the health consequences of smoking have been increasingly recognized and accepted. Declining trends in smoking prevalence among 20- to 24-year-olds suggest that since the beginning of the public health campaign in 1964, fewer people are starting to smoke (4–6). Such declines are essential to achieve the year 2000 goal for the United States to reduce smoking prevalence to 15% (7).

Because regularly conducted surveys of sufficiently large sample sizes at each age are lacking, national trends for the age-specific initiation rates of smoking uptake have not been previously published (5). Previous studies have assessed national trends in adult smoking using the NHIS (4, 5, 8, 9). A number of these surveys contain information on the age respondents started to smoke. With the sufficiently large numbers obtained by pooling the data from these surveys, age-specific rates of smoking initiation can be obtained.

The purpose of this study was to examine the patterns of smoking initiation rates from the NHIS data for males and females in 1950, before the health consequences of smoking were recognized; in 1965, just after the public health campaign was launched; and in 1980, 15 years after the start of the campaign.

Materials and Methods

Surveys. The NHIS supplements on smoking that included information on the age of initiation were undertaken in 1970, 1978, 1979, 1980, 1987, and 1988. The sampling methods for these surveys change every decade and details concerning the survey methodology are reported elsewhere (8, 10, 11). Surveys prior to 1974 included smoking information on all adult members of a household collected from a single adult. However, after 1974, smoking information was collected from a randomly selected household member; if the person was not present during the initial household interview, the survey was conducted by telephone. The NHIS are probability samples of the civilian, noninstitutionalized United States population. The sample sizes varied between 10,000 and 80,000 adults and included a section or supplement on smoking behavior. All surveys included the question, “Have you smoked at least 100 cigarettes in your entire life?” Respondents who answered “yes” were classified as “ever smokers.” All ever smokers were then asked, “How old were you when you started smoking cigarettes fairly regularly?”

In this study, we included all individuals of white race who were between 20 and 50 years of age when interviewed. Data on individuals younger than 20 years of age were not included (some but not all surveys interviewed people 17 years of age and older). An upper age limit (50 years) was used to avoid any bias that the differential mortality between smokers and nonsmokers might introduce. Although smoking adversely affects health in smokers

The abbreviations used are: NHIS, National Health Interview Surveys.
Fig. 1. Smoking initiation rates for males and females 10-24 years of age in 1950. Vertical bars represent exact binomial 95% confidence intervals.

The unevenness of the curve reflects digit preference. For example, respondents appeared more likely to nominate 18 on 20 than 19 years as the age they started to smoke. In 1950, the sample sizes for males tended to be small, particularly in those older than 21 years of age; nearly everyone in the cohort 10 to 24 years of age had started by this age. In 1950, 15.6% of all 18-year-old male nonsmokers started to smoke at the same rate as those 18 years and older within a given calendar year controlling for gender; (d) there were no differences in initiation over calendar year within gender controlling for age. A P-value of less than 0.05 was considered statistically significant.

Results

To compare the initiation rates of those younger than 18 years to those older (see below), we pooled the individual age rates by summing the numerator and denominator sums of weights and computed the overall rate based on the pooled sums.

Statistics. The initiation rate, computed as described above, was multiplied by the sample size (the sum of the number of individuals rather than the sum of their weights), and the resultant numerator together with the sample size were used to compute exact binomial 95% confidence intervals (13). In addition, these numbers were also used to test (Cochran-Mantel-Haenszel test) the null hypotheses that: (a) males showed no difference in smoking initiation from females within a given calendar year controlling for age; (b) those younger than 18 years started to smoke at the same rate as those 18 years and older within a given calendar year controlling for gender; (c) there were no differences in initiation over calendar year controlling for gender and age; and (d) there were no differences in initiation over calendar year within gender controlling for age. A P-value of less than 0.05 was considered statistically significant.

Fig. 1 presents the smoking initiation rates at each age in 1950 for males and females. The unevenness of the curve reflects digit preference. For example, respondents appeared more likely to nominate 18 or 20 than 19 years as the age they started to smoke. In 1950, the sample sizes for males tended to be small, particularly in those older than 21 years of age; nearly everyone in the cohort 10 to 24 years of age had started by this age. In 1950, 15.6% of all 18-year-old male nonsmokers started to smoke. The second highest initiation level for males occurred in 21-year-olds (13.7%). The initiation rates in females were significantly lower than the
Fig. 2. Smoking initiation rates for males and females 10-24 years of age in 1965. Vertical bars represent exact binomial 95% confidence intervals.

Discussion
Examination of the age-specific rates of smoking initiation in 1950, 1965, and 1980 revealed distinctive patterns. In 1950, the rates of smoking initiation were higher in those 18 years and older than in those younger and much lower in females than in males. By 1965, initiation rates in males had declined but were still higher than those in females, and the rate in those younger than 18 years of age was still somewhat lower than the rate in older youth. By 1980, no gender difference was apparent and the highest initiation rates were among those younger than 18 years of age. It is important to note that between 1950 and 1965 smoking initiation rates decreased mainly among older youth; the decrease that occurred from 1965 to 1980 was considerably less. Also, the apparent shift from older to younger ages of smoking initiation observed in 1980 was due to the decline in initiation rates in older youth; rates for the younger adolescents have been remarkably steady over the entire study period.

While national data on age of smoking initiation have not previously been published, surveys of smoking prevalence among high school seniors conducted since 1975 show a overall decline in daily smoking from 27% in 1975 to 21% in 1980 (5). In male seniors, smoking prevalence declined from 27% in 1975 to 18% in 1980, but in females, the decline was much less, from 26 to 24%. The lower initiation rates in younger males but fairly constant rates for younger females from our study in 1980 compared to 1965 are consistent with these data.

The decline in initiation rates among older youth is probably related to health concerns in response to the information linking smoking to lung cancer. Although the decrease in initiation rates for older youth was apparent in females, it was considerably less dramatic than the decrease reported in males. Since the early studies that provided the
data indicting cigarette smoking were all in males, it is possible that fewer young women viewed this evidence as pertaining to them, and thus, were less influenced by the subsequent public health campaign.

Younger adolescents do not appear to be influenced by the idea of refraining from smoking to protect future health. Factors that influence the decision to refrain from smoking compete with other influences that encourage it. For younger teenagers, parental example and influence may be primary, but by the mid-teenage years peer influence may become an overriding factor (14). A teenager's choice of friends may expose him or her to smokers, which in turn may provide the motivation to smoke; conversely, a teenager may seek out a social group in which his or her negative intentions regarding smoking would be reinforced (15). Teenagers who want to assert their independence and rebel against a family situation or norms; those who have problem behaviors or who are school dropouts appear more likely to choose to smoke (16–21). There is also evidence to suggest that some of these factors interact; e.g., peer smoking appears to play a greater role in influencing teenagers who are rebellious to start smoking (17). Also, depending on social group affiliation, different personal characteristics may influence the decision to smoke (22). In addition to the influences that the family and peer group have on smoking behavior, cigarette marketing may play a role. Although cigarette advertising has been banned on radio and television, it abounds in magazines with large teenage readerships (23). Children acquire some of their positive images of smoking from advertising (24–26). Cigarette advertising is full of rugged individuals and slim, beautiful women who embody the traits likely to be highly appealing to teenagers; adolescents who believe that smoking will help them attain these images are more likely to smoke (27–29).

We conclude that the public health campaign has been successful in convincing adults and older youth not to take up smoking. However, little change has occurred in the rates of smoking initiation in younger teenagers since the campaign began in 1964. Thus, new approaches to tobacco control are necessary if we hope to reduce smoking in the future.

References

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