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Cigarette smoking and smoking cessation among older adults: United States, 1965-94

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Abstract

Objective—To characterise patterns of cigarette smoking and smoking cessation among older adults in the United States.

Design—Data from the National Health Interview Surveys (NHIS) 1965-94 were analysed. The NHIS is a cross-sectional survey using a representative national sample.

Setting—In most cases interviews were conducted in the home; telephone interviews were conducted when respondents could not be interviewed in person.

Participants—Participants were from a representative sample of the American civilian, non-institutionalised population aged 18 and older. Sample sizes for the years analysed ranged from $n = 19\ 738$ to $n = 138\ 988$ overall, and $n = 3806$ to $n = 12\ 491$ for those aged 65 years and older.

Main outcome measures—Using the NHIS data from 1965-94, trends in current smoking and the prevalence of smoking cessation by demographic characteristics among older adults (65 years and older) were assessed and compared with trends among younger adults. A logistic regression analysis was conducted to determine the demographic characteristics of former smokers compared with current smokers among those aged 65 and older.

Results—The prevalence of current smoking among 65 year olds and older declined from 1965 to 1994 (17.9% to 12.0%). Although smoking prevalence was lower among older adults than younger adults (aged 18-64), the rate of decline in smoking was slower among older adults. Among older adults, the prevalence of cessation rose with increasing educational attainment, and was consistently higher for men than for women and for whites compared with blacks. After adjustment for demographic factors among older adults who had ever smoked, increasing age and educational attainment were strongly related to the likelihood of being a former smoker. Although there were no racial differences among women, older white (OR = 2.6) and Hispanic (OR = 3.67) men were significantly more likely to be former smokers than older black men.

Also, the gender difference in smoking cessation was noted only for whites.

Conclusions—Given the projected increase in the elderly population, the medical and economic consequences of smoking will become a greater burden in the next decades. Therefore, focusing attention on cessation among the elderly is an immediate and urgent priority for public health professionals and clinicians.

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Keywords: elderly; cigarette smoking; smoking cessation

Introduction

By 2020, 17% of the United States population will be aged 65 and older.¹ Many studies have found that those 65 years of age and older who are current smokers have a higher overall risk of death than their counterparts who have never smoked.²⁻⁶ Specifically, older adults who smoke have increased risk of cardiovascular disease, stroke, cancer, and respiratory disease.^{2-5, 7-12} In 1990, smoking caused an estimated 287 000 deaths in the United States from these diseases among those 65 years of age and older.¹³

In the United States population, the mortality effects of smoking occur primarily among older Americans. For example, in 1990, 70% of the estimated 419 000 smoking-attributable deaths occurred among people aged 65 and older; 86% of smoking-attributable deaths from chronic obstructive pulmonary disease, 64% of smoking-attributable deaths from lung cancer, and 65% of smoking-attributable deaths from ischaemic heart disease occurred among older adults.^{13 14} Clearly, tobacco use is a geriatric health issue.

Cigarette smoking not only increases risk of death among older adults but also affects quality of life. The increased risk of disability from malignant neoplasms, heart disease, cerebrovascular disease, chronic obstructive pulmonary diseases, and other diseases caused by smoking adversely affects quality of life and physical functioning.^{15 16} In addition, smoking affects drug action and metabolism.¹⁷

Quitting smoking has major and immediate benefits for smokers of all ages, and these benefits accrue to those who already have smoking-related diseases, as well as to those who do not.⁶ Smoking cessation at any age

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reduces the overall risk of death.^{6, 18} For example, if a person aged 60–64 years who smokes one pack of cigarettes or more per day quits smoking, they reduce their risk of dying in the next 15 years by 10%.⁶ Reduction in risk occurs relatively quickly for some diseases. For example, among older adults, the reduction in risk for developing cardiovascular disease occurs within one to five years after quitting.⁸ Quitting smoking also reduces the risk of recurrent myocardial infarction and death among those with cardiovascular disease. Hermonson *et al.* found that those 55 years of age or older who already had coronary artery disease improved their survival and risk of myocardial infarction by quitting smoking. Adults 65 years of age or older improved their survival comparable to their younger counterparts.¹⁸ Smoking cessation among older adults also decreases the risk of developing lung and other cancers. Among those aged 65 years or older, the estimated relative risks compared with continuing smokers were 0.73 with five years of abstinence, 0.54 with 10 years of abstinence, and 0.29 with 20 years of abstinence.⁶ Finally, studies have demonstrated that older former smokers have better physical functioning and quality of life measures than older current smokers.^{19, 20}

With the proportion of older Americans growing steadily, the health of this segment of the population is an increasing focus of public health efforts in the United States. The aim of the study was to contribute to these efforts by characterising the patterns of smoking and smoking cessation among American adults aged 65 and older.

Methods

Data from the National Health Interview Survey (NHIS) from 1965–94 were analysed in approximately five-year intervals (depending on data availability). The NHIS collects self-reported information on cigarette smoking from a representative sample of the American civilian, non-institutionalised population aged 18 and older. In most cases, the NHIS surveys were conducted in the home; telephone interviews were conducted when respondents could not be interviewed in person. Before 1974, the NHIS used proxy responses; because proxy information on smoking status is generally considered to be comparable to self-report,^{21–23} proxy responses were included in the analysis. The overall response rate for the NHIS for 1965–90 was at least 85%²⁴; the response rates for the 1993 and 1994 surveys were 81% and 80%, respectively.^{25, 26}

Participants ($n = 19\,738$ – $138\,988$ overall; $n = 3806$ – $12\,491$ for those 65 years of age or older) were asked standard questions to determine their smoking status. Smokers were categorised as ever-smokers if they had smoked at least 100 cigarettes in their lifetime. To evaluate the prevalence of current smoking, ever-smokers were asked in the surveys for 1965–90 if they “smoke cigarettes now” and in the 1993 and 1994 surveys if they now smoked “every day or some days”; respondents who answered affirmatively were considered current

smokers. The prevalence of cessation was defined as the proportion of ever-smokers who did not currently smoke.

For reporting and modelling the demographic factors associated with smoking cessation among older adults, data from the 1993 and 1994 surveys were aggregated to increase the sample size. All data were adjusted for non-response and weighted to provide national estimates. For the data for 1965, 95% confidence intervals (CIs) were calculated using variance curves²⁷; for later years, CIs were calculated using standard errors generated by SUDAAN.²⁸ CIs were used to determine statistical significance. This is a conservative method of determining statistical significance; estimates with slightly overlapping CIs may be significant at the $P = 0.05$ level. A logistic regression analysis was conducted to determine the demographic characteristics of former smokers compared with current smokers among those aged 65 and older. The model was built and diagnosed using strategies recommended by Hosmer and Lemeshow.²⁹ The Hosmer-Lemeshow goodness-of-fit test showed that the model fits the data well.

Results

TRENDS OVER TIME

The prevalence of ever-smoking among men aged 65 or older increased from 56.6% (± 2.5 percentage points) in 1965 to 72.2% (± 2.4 percentage points) in 1985 and then remained stable (71.6% [± 2.5 percentage points] in 1994) (data not shown). The prevalence of ever-smoking among women continued to increase from 14.1% (± 1.6 percentage points) in 1965 to 38.0% (± 2.2 percentage points) in 1994 (data not shown).

Current smoking prevalence was lower among those aged 65 and older than among adults aged 18–64 from 1965 to 1994. The prevalence of current smoking among 65 year olds and older decreased from 1965 to 1994 (from 17.9% to 12.0%); however, most of the decline occurred between 1985 and 1990. For younger adults (aged 18–64 years), the decline was larger and occurred over the entire period from 1965 to 1990 (table 1). The average annual rate of decline in the prevalence of current smoking during this period was three times slower for older adults than younger adults (0.20 percentage points for people aged 65 and older compared with 0.63 percentage points for those aged 64 and younger). For older men, smoking prevalence dropped steadily over this time period from 28.5% to 13.2%; among older women, smoking prevalence increased until 1985 and subsequently stabilised at around 11%. In contrast, among younger adults of both sexes, smoking prevalence decreased until 1990 and then stabilised.

From 1965–94, current smoking prevalence among older adults declined for whites but not for blacks. In contrast, among 64 year olds and younger, smoking prevalence declined for both whites and blacks from 1965 to 1990 and remained constant from 1990 to 1994. Sample sizes were too small to assess trends in other

racial or ethnic groups. There was no decrease in current smoking prevalence among older people with 11 or fewer years of education, although prevalence declined among older people with 12 or more years of education (table 1). In contrast, among younger adults, prevalence declined for all levels of education except for those with 9–11 years of education.

In 1994, there were no gender differences in current smoking prevalence among older adults; however, among younger adults, smoking prevalence was lower among women. Older blacks (18.7%) were more likely to smoke than were older whites (11.6%); among younger adults, smoking prevalence for blacks and whites was similar. Older adults with 16 or more years of education were less likely to smoke than were older people with eight or fewer years of education; in general, however, educational differences in current smoking among older Americans were smaller than those among younger adults. Only in 1994 was there a significant difference in smoking prevalence between the lowest and highest educational categories. In contrast, among younger adults, there were significant differences across educational categories for all years.

The prevalence of cessation (also referred to as the "quit ratio") among those aged 65 and older increased steadily from 45.5% in 1965 to 76.9% in 1994; the prevalence of cessation among younger adults increased from 1965 to 1990 and then stabilised (table 2). Although the prevalence of cessation was consistently higher among older men than older women from 1965 to 1994, it increased more quickly among older women than older men (an aver-

age of 1.33 percentage points a year for older women compared with 1.09 percentage points a year for older men). The same general pattern was seen among younger adults. Although the rate of increase was somewhat smaller among younger adults than older adults, similar racial patterns were observed for the two age groups. For older adults, the prevalence of cessation increased among all educational categories, with the smallest increase among older adults with 11 or fewer years of education; for younger adults, those with 9–12 years of education had a slower rate of increase (table 2).

In 1994, the prevalence of cessation was much higher for older men (81.5%) than for older women (70.7%), a more dramatic gender difference than that observed among younger adults. The prevalence of cessation was also higher among older whites (78.0%) than older blacks (60.9%), a pattern comparable to that among younger adults. Among older adults, the prevalence of cessation increased directly with increasing educational attainment, from 69.0% among older people with eight years of education or less to 83.3% among older adults with 16 or more years of education. In contrast, younger adults with 0–8 years of education had a higher prevalence of cessation than those with 9–11 years of education; however, prevalence of cessation for younger adults increased as educational attainment increased from 9–11 to 16 or more years of education.

DEMOGRAPHIC DIFFERENCES AMONG FORMER SMOKERS VS CURRENT SMOKERS, 1993–94

Among older adults, based on a model that included age, sex, race, and education, the likelihood of being a former smoker increased with

Table 1 Prevalence of current smoking* among people by age and other selected characteristics: United States, 1965–94

Characteristic	1965 (%)	(95% CI)	1970 (%)	(95% CI)	1974 (%)	(95% CI)	1979 (%)	(95% CI)	1985 (%)	(95% CI)	1990 (%)	(95% CI)	1994 (%)	(95% CI)
Age 65+														
Overall	17.9	(16.7–19.1)	16.1	(15.2–17.1)	17.3	(17.5–49.9)	16.4	(15.3–17.5)	16.0	(14.9–17.1)	12.8	(11.9–13.7)	12.0	(10.9–13.1)
Sex														
Men	28.5	(26.5–30.5)	23.1	(21.7–24.5)	24.8	(22.6–27.0)	20.9	(18.9–22.9)	19.6	(17.5–21.7)	14.6	(13.0–16.2)	13.2	(11.3–15.1)
Women	9.6	(8.6–10.6)	11.0	(9.9–12.1)	12.0	(10.8–13.2)	13.2	(11.9–14.5)	13.5	(12.2–14.8)	11.5	(10.6–12.4)	11.1	(9.8–12.4)
Race/ethnicity†														
White	17.7	(16.6–18.8)	16.0	(15.1–16.9)	17.2	(16.0–18.4)	16.2	(15.0–17.4)	15.6	(14.5–16.7)	12.5	(11.6–13.4)	11.6	(10.5–12.7)
Black	20.1	(15.4–24.8)	18.7	(16.1–21.3)	17.8	(13.7–21.9)	16.6	(12.1–21.1)	19.7	(15.9–23.5)	15.4	(12.3–18.5)	18.7	(14.2–23.2)
Education (years)‡														
≤8	NA		15.2	(14.2–16.2)	16.6	(14.7–18.5)	14.6	(13.1–16.1)	14.9	(12.8–17.0)	13.0	(11.2–14.8)	14.8	(12.2–17.4)
9–11	NA		16.5	(14.5–18.5)	19.3	(15.9–22.7)	19.4	(16.4–22.4)	18.2	(15.2–21.0)	14.4	(12.1–16.7)	13.9	(11.1–16.7)
12	NA		17.8	(15.6–20.0)	16.1	(13.3–18.9)	17.4	(14.9–19.9)	17.4	(15.5–19.3)	13.5	(12.0–15.0)	10.7	(9.0–12.4)
13–15	NA		18.9	(15.5–22.3)	17.9	(12.6–23.2)	19.0	(14.9–23.1)	15.9	(12.9–18.9)	11.3	(9.1–13.5)	11.9	(8.9–14.9)
≥16	NA		17.3	(14.1–20.5)	18.3	(12.7–23.9)	14.0	(9.6–18.4)	12.4	(9.4–15.4)	9.3	(7.1–11.5)	8.9	(6.0–11.8)
Age 18–64														
Overall	46.6	(46.0–47.2)	41.0	(40.4–41.6)	40.7	(39.9–41.5)	36.6	(35.7–37.5)	32.7	(31.9–33.5)	28.0	(27.4–28.6)	28.2	(27.4–29.0)
Sex														
Men	55.6	(54.8–56.4)	47.3	(46.5–48.1)	46.0	(44.9–47.1)	40.1	(38.9–42.5)	34.7	(33.6–35.8)	30.8	(29.9–31.7)	30.7	(29.5–31.9)
Women	38.3	(37.5–39.1)	35.4	(34.5–36.3)	36.1	(35.2–37.0)	33.3	(32.2–34.4)	30.9	(30.0–31.8)	25.4	(24.6–26.2)	25.8	(24.7–26.9)
Race/ethnicity†														
White	46.4	(45.8–47.0)	40.8	(40.2–41.4)	39.9	(39.0–40.8)	36.8	(35.9–37.7)	32.9	(32.0–33.8)	28.8	(28.1–29.5)	29.6	(28.6–30.6)
Black	49.1	(47.4–50.8)	44.4	(42.8–46.0)	47.8	(45.3–50.3)	40.4	(38.0–42.4)	37.1	(35.1–39.1)	27.7	(26.1–29.3)	28.3	(25.8–30.8)
Education (years)‡														
≤8	NA		43.0	(41.9–44.1)	43.8	(41.6–46.0)	40.6	(38.1–43.1)	38.2	(35.2–41.2)	34.1	(31.4–36.8)	31.9	(28.2–35.6)
9–11	NA		49.4	(48.2–50.6)	50.6	(48.6–52.6)	49.2	(47.2–51.2)	49.2	(47.0–51.4)	45.7	(43.6–47.8)	48.4	(45.3–51.5)
12	NA		41.3	(40.4–42.2)	41.2	(40.1–42.3)	37.7	(36.3–39.1)	36.1	(34.8–37.4)	33.5	(32.4–34.6)	34.0	(32.5–35.5)
13–15	NA		41.0	(39.5–42.5)	40.2	(38.0–42.4)	37.1	(35.5–38.7)	32.5	(30.9–34.1)	26.5	(25.3–27.7)	27.7	(25.9–29.5)
≥16	NA		29.9	(28.4–31.4)	29.8	(27.7–33.0)	24.7	(23.0–26.4)	19.7	(18.4–21.0)	14.5	(13.6–15.4)	12.7	(11.5–13.9)

Source: National Health Interview Survey (NHIS), 1965, 1970, 1974, 1979, 1985, 1990, and 1994.

*Persons who reported smoking at least 100 cigarettes in their lifetime and who smoked at the time of survey. Since 1992, estimates of current smoking explicitly include someday smokers.

†Ethnicity not determined by NHIS in 1965, 1970, or 1974.

‡Aged 25 and older only.

CI = confidence intervals; NA = not available.

increasing age and educational attainment (table 3). People aged 70–74 (OR = 1.37), aged 75–79 (OR = 1.51), and aged 80 and older (OR = 2.19) were significantly more likely to be former smokers than those aged 65–69. In addition, older people with some college education (OR = 1.44) and those who completed college (OR = 1.55) were significantly more likely to have quit smoking than were older adults with 9–11 years of education. Interaction was found only by gender and race. There were no racial differences in cessation among older women. However, among older men, whites (OR = 2.6) and Hispanics (OR = 3.67) were more likely to be former smokers than were blacks. After controlling for age, race, and education, older white men (OR = 1.95) were more likely than older white women to be former smokers (data not shown).

Discussion

The gender differences in the pattern of ever-smoking are consistent with historical trends in smoking prevalence. Smoking among men was highest in the 1920–30 birth cohorts,³⁰ which would be reflected in peak rates of ever-smoking among older men from 1985–95; for women, smoking was greatest among the 1930 and 1940 birth cohorts,³¹ and one would expect ever-smoking among older women to increase until about the year 2005. A study by the National Institute on Aging found that the eldest older adults were more likely to be never-smokers, consistent with these historical patterns of smoking.³¹

Although current smoking prevalence among older adults declined from 17.9% to

12.0% from 1965 to 1994, the total number of smokers aged 65 years and older actually increased 20% (from 3.078 million to 3.687 million) because of population growth in this age group. Despite the lower prevalence of smoking among older adults, the sheer numbers of the aging “baby boomer” generation will contribute to a continued growth in the number of older smokers into the next century.³² The medical and economic burden of smoking will also grow. United States social security currently pays \$4.6 billion in disability benefits a year to people who are disabled by tobacco-related diseases, and it is estimated that Medicare will pay \$800 billion to treat tobacco-related diseases over the next 20 years.³³ The lower prevalence of cessation among older women than among older men has been noted by others,³¹ and is thought to reflect gender differences in the historical patterns of smoking.³⁴ Men began to quit smoking in large number in the 1950s, whereas women did not begin quitting in substantial numbers until the mid-1960s.³⁵ Because the prevalence of cessation measure is a cumulative measure over time, and men began quitting earlier in the century than did women, the prevalence of cessation is higher for men. It has been reported that age-adjusted cessation and relapse rates among older adults do not vary by sex,³⁶ and that women and men are equally likely to attempt to quit and equally likely to succeed.³⁷ If the difference is due to these historical patterns of smoking and quitting, one would expect any sex difference in the prevalence of cessation to be greatest among the elderly; the results of this study are consistent with this expected pattern. The

Table 2 Prevalence of cessation* among people by age and other selected characteristics: United States, 1970–94

Characteristic	1965 (%)	(95% CI)	1970 (%)	(95% CI)	1974 (%)	(95% CI)	1979 (%)	(95% CI)	1985 (%)	(95% CI)	1990 (%)	(95% CI)	1994 (%)	(95% CI)
Age 65+														
Overall	45.5	(43.1–47.9)	56.9	(55.0–58.8)	57.5	(55.1–59.9)	62.7	(60.3–65.1)	68.0	(66.1–69.9)	74.1	(72.5–75.7)	76.9	(75.0–78.8)
Sex														
Men	49.7	(47.0–52.4)	63.2	(61.1–65.3)	62.7	(59.8–65.6)	69.2	(66.3–72.1)	72.8	(70.1–75.5)	79.1	(76.9–81.3)	81.5	(79.0–85.0)
Women	32.2	(27.5–36.9)	41.0	(37.9–44.1)	46.9	(42.8–51.0)	51.3	(47.1–55.5)	61.1	(58.3–63.9)	67.0	(64.6–69.4)	70.7	(67.5–73.9)
Race/ethnicity†														
White	46.2	(43.7–48.7)	57.7	(55.8–59.6)	58.1	(55.7–60.5)	63.8	(61.3–66.3)	69.3	(67.4–71.2)	75.3	(73.6–77.0)	78.0	(76.0–80.0)
Black	37.5	(27.2–47.8)	44.1	(37.6–50.6)	50.9	(42.3–59.5)	55.4	(46.8–64.0)	55.9	(48.6–63.2)	63.0	(56.4–69.6)	60.9	(53.1–68.7)
Education (years)														
≤8	NA		57.4	(55.0–59.8)	56.1	(52.4–59.8)	63.7	(60.4–67.0)	67.6	(63.4–71.8)	71.2	(67.6–74.8)	69.0	(64.2–73.8)
9–11	NA		58.4	(53.8–63.0)	59.5	(53.2–65.8)	58.7	(53.4–64.0)	64.0	(59.2–68.8)	71.6	(67.5–75.7)	73.9	(68.9–78.9)
12	NA		55.9	(51.8–60.0)	60.5	(55.1–65.6)	61.8	(56.8–66.8)	66.0	(62.4–69.6)	72.6	(69.7–75.5)	79.0	(75.8–82.2)
13–15	NA		47.5	(41.1–53.9)	58.3	(48.2–68.4)	61.6	(54.2–69.0)	70.8	(65.3–76.3)	79.1	(75.2–83.0)	79.7	(74.7–84.7)
≥16	NA		59.9	(53.4–66.4)	58.0	(47.4–68.6)	72.5	(63.9–81.1)	77.5	(72.6–82.4)	82.0	(78.0–86.0)	83.3	(78.3–88.3)
Age 18–64														
Overall	22.3	(21.6–23.0)	30.5	(29.7–31.3)	31.7	(30.8–32.6)	35.6	(34.5–36.7)	40.5	(39.4–41.6)	44.3	(43.4–45.2)	43.2	(41.9–44.5)
Sex														
Men	25.0	(24.1–25.9)	33.9	(32.9–34.9)	35.7	(34.5–36.9)	39.0	(37.6–40.4)	44.2	(42.8–45.6)	45.8	(44.5–47.1)	44.5	(42.7–46.3)
Women	18.4	(17.5–19.3)	25.9	(25.0–26.8)	26.6	(25.4–27.8)	31.3	(29.8–32.8)	36.1	(34.7–37.5)	42.4	(41.2–43.6)	41.7	(39.9–43.5)
Race/ethnicity†														
White	23.2	(22.5–23.9)	31.7	(30.9–32.5)	33.3	(32.4–34.2)	37.0	(35.8–38.2)	42.3	(41.1–43.5)	45.7	(44.7–46.7)	45.1	(43.7–46.5)
Black	13.9	(12.0–15.8)	18.7	(17.1–20.3)	16.8	(14.7–18.9)	23.7	(20.9–26.5)	28.4	(25.9–30.9)	35.7	(33.1–38.3)	30.6	(26.9–34.3)
Education (years)‡														
≤8	NA		28.7	(27.3–30.1)	30.1	(27.7–32.5)	34.2	(31.6–36.8)	39.2	(35.8–42.6)	38.8	(35.2–42.4)	39.3	(33.9–44.7)
9–11	NA		26.7	(25.5–27.9)	26.1	(24.0–28.2)	29.3	(26.8–31.8)	31.2	(28.9–33.5)	32.5	(30.2–34.8)	29.5	(26.2–32.8)
12	NA		32.2	(31.2–33.2)	33.2	(31.7–34.7)	36.8	(34.9–38.7)	39.5	(37.9–41.1)	42.0	(40.6–43.4)	40.6	(38.6–42.6)
13–15	NA		35.7	(33.9–37.5)	37.4	(34.9–39.9)	39.4	(37.3–41.5)	44.5	(42.3–46.7)	48.9	(46.9–50.9)	48.0	(45.3–50.7)
≥16	NA		48.3	(45.9–50.7)	48.5	(45.3–51.7)	52.2	(49.5–54.9)	59.6	(57.3–61.9)	65.1	(63.2–67.0)	67.3	(64.6–70.0)

Source: National Health Interview Survey (NHIS), 1965, 1970, 1974, 1979, 1985, 1990, and 1994.

*The prevalence of cessation is defined as the percentage of ever-smokers who are former smokers.

†Ethnicity not determined by NHIS in 1965, 1970, or 1974.

‡Aged 25 and older only.

CI = confidence intervals; NA = not available.

Table 3 Logistic regression analysis of former vs current smoking—age 65 and older: United States, 1993–94

Variable	Prevalence of cessation (%)	(95% CI)	Odds ratio*	(95% CI)
Age (years)				
65–69	72.2	69.7–74.6	1.00	
70–74	77.5	74.9–80.0	1.37	1.13–1.66
75–79	78.7	75.4–81.9	1.51	1.22–1.87
≥80	83.6	80.2–87.1	2.19	1.64–2.93
Education				
≤8 years	74.0	70.7–77.3	0.92	0.71–1.20
9–11 years	72.8	69.0–76.6	1.00	
High school diploma	76.8	74.4–79.3	1.23	0.97–1.56
Some college	79.8	76.2–83.4	1.44	1.06–1.94
College graduate	81.8	78.2–85.4	1.55	1.12–2.14
Race (male)				
White	82.5	80.5–84.6	2.60	1.70–3.98
Black	61.6	52.3–70.9	1.00	
Hispanic	84.7	72.9–96.6	3.67	1.19–11.37
Race (female)				
White	71.1	68.7–73.5	1.29	0.89–1.87
Black	63.0	54.9–71.1	1.00	
Hispanic	74.5	60.6–88.4	1.90	0.82–4.41

Source: National Health Interview Survey (NHIS), 1993 and 1994.

Hosmer-Lemeshow goodness-of-fit test: C-Hat = 12.906; df = 8; P = 0.12.

*Adjusted for age, sex, race, and education.

CI = confidence intervals.

logistic regression model presented here suggests that the historical gender differences in quitting occurred primarily among whites, because no gender differences in the odds of quitting were noted for older Hispanics or blacks. One must keep in mind, however, that the prevalence of cessation or the odds of quitting smoking as presented here do not take into account other tobacco use. Because men who stop smoking cigarettes are more likely to continue to use or switch to other tobacco products, adjustment for other tobacco use markedly narrows the gender difference in prevalence of cessation.⁶

The results of this study suggest that there are differences in cessation across racial and ethnic groups. The prevalence of cessation was lower among blacks than whites for both older and younger adults. After adjustment for other demographic factors, it appears that the difference among older adults primarily reflects racial differences in cessation among men. Others have reported that the lower prevalence of cessation among blacks reflects a higher relapse rate among black smokers.^{36, 37} It has been suggested that use of cigarettes with higher nicotine and tar levels, a higher level of nicotine dependency among smokers, comparatively limited access to preventive health services, and the lack of culturally sensitive cessation services for black smokers are potential explanations for this difference.^{37–40}

Our findings that the prevalence of cessation increases with increasing educational attainment and that education is an important predictor of smoking cessation among older adults (even after adjustment for other demographic factors) are consistent with other data showing that education is the strongest predictor of both smoking prevalence and quitting.^{12, 37, 41, 42}

Other studies have also reported that age is a significant predictor of current smoking among the elderly: current smoking among both men

and women was shown to decrease with increasing age among those aged 65 and older.³¹ It has also been reported that the eldest of the elderly have the highest quit rates.^{36, 43} Cumulative quitting over time will result in a lower prevalence of smoking and a higher prevalence of cessation among older adults. However, as continuing smokers are also less likely to survive to old age, this differential mortality may result in a greater apparent decrease in smoking prevalence and a greater apparent increase in the prevalence of cessation among older age groups.⁶ Other factors reported in the literature to be associated with quitting among those aged 65 and older are smoking fewer cigarettes per day, shorter duration of smoking, and diagnosis of myocardial infarction, stroke, or cancer.³⁶

In 1992, only 60% of elderly American smokers received advice to quit from a physician.⁴⁴ Because the success rate for older smokers who try to quit is generally higher than that for younger smokers,^{37, 45–48} and because of the major health effects and adverse impact on quality of life among elderly people who continue to smoke, it is time to focus more attention in the United States on helping elderly smokers quit. Older smokers began smoking decades ago when the health consequences of smoking were not as well known. Although many older smokers have been addicted to nicotine for decades, the literature has documented successful cessation interventions for older smokers, including physician advice to quit, as well as follow up, and motivational strategies addressing health beliefs.^{49–51} The Agency for Health Care Policy and Research in the US Department of Health and Human Services recently released clinical practice guidelines that call for healthcare providers to enquire if their patients smoke, repeatedly encourage them to quit, and provide interventions that have proven to be effective.⁵² Because those aged 65 years and older have more annual physician contacts than any other age group (9.7 for men, 11.0 for women),⁵³ physicians have multiple opportunities to encourage their older patients to improve their health status and quality of life by quitting smoking.

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