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# Cigarette Smoking and Cessation Behaviors Among Urban Blacks and Whites

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## Synopsis .....

*Smoking behaviors among blacks and whites were studied in a population-based sample of 2,626 residents of Minneapolis-St. Paul, MN. More blacks than whites were found to be smokers, before and after adjusting for age and education differences. More whites than blacks were former smokers, but the prevalence of those who had never smoked was comparable for whites*

*and blacks. Among smokers, the mean number of cigarettes smoked per day was lower among blacks than whites, but more blacks were found to smoke cigarettes with high "tar" (dry particulate matter) and nicotine content. Men smokers were found to smoke more than women smokers, young people smoked more than older people, and those with a high school education or less smoked more than those with more than a high school education.*

*Smoking cessation behavior consisted mostly of a variety of strategies that began with reducing cigarette consumption, followed by changing to lower tar brands, attempting to quit, and actually quitting. In general, a higher percentage of whites than blacks reported smoking cessation behaviors. A greater percentage of white than black women had tried cigarette brands lower in tar and nicotine within the previous year. Among men, a lower percentage of black than white smokers had tried quitting, and fewer black men planned to quit in the future. Blacks appeared to lag behind whites in their efforts to quit smoking.*

*Smoking behavior continues to be problematic for both blacks and whites. Studies are needed to explain better the racial differences in smoking and smoking cessation behaviors, and to facilitate programs to encourage cessation.*

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**I**N THE VAST LITERATURE on cigarette smoking, there is limited information comparing the smoking cessation attempts of blacks and whites in defined populations and relating success in quitting to such activities as smoking cigarette brands low in "tar" (dry particulate matter), reducing cigarette consumption, and other factors (1-2).

More recent data (3) suggest that education is the strongest sociodemographic predictor of smoking status among races and sexes (4), with smoking prevalence decreasing among those with more years of education at a rate five times faster than among those with fewer years. With the exception of women with fewer years of education, people with more years of education are less likely to begin smoking than their less educated counterparts, who also are less likely to stop smoking.

The trend of smoking patterns suggests that the prevalence of smoking among men and women will be about equal in 1995, and that blacks will have slightly higher rates by the end of the century (5). The biggest differences in smoking behavior will be related to years

of education. Hypothetically, a 15 percent difference in smoking prevalence will exist by 2000 between those with some college education and those with the least amount of education.

Although studies analyze smoking behavior by sex, race, and education level, specific comparisons have been lacking between black and white men and black and white women. We describe smoking behaviors among 2,626 urban blacks and whites who participated in a 1985-86 cross-sectional survey.

## Methods

**General population surveys.** The Minnesota Heart Survey is a population-based systematic surveillance of coronary heart disease risk factors and related behaviors in probability samples of residents aged 25 to 74 years in the Minneapolis-St. Paul seven-county area. The first series of general population surveys was conducted in the period 1980-82. A second series was begun in December 1985, with two complete 1-year survey

cycles. Methods and preliminary findings have been reported (6).

In the second series, using a two-stage sample design and updated census information, a cluster sample of households in the seven-county area was selected. One person age 25 to 74 years in each household was selected at random. Information on health behaviors, attitudes, and knowledge was collected during a home interview. Those interviewed were invited to attend a survey clinic, usually established in a neighborhood church, to respond to a detailed questionnaire and provide physiologic measurements related to risk factors. Among those receiving a home interview, the response rate for attending the clinic was 68 percent.

**Special Black Twin Cities Survey.** In a separate survey effort in 1985, we sampled four and a half census tracts containing proportionately large numbers of blacks in order to obtain more detailed information on cardiovascular risk factors among black Minneapolis residents. Survey interviewers identified households within the tracts and invited all black household members 35 to 74 years of age to participate. The overall response rate among participants receiving both home and clinic interviews was 65 percent. In all other respects, the methodologies of the general Twin Cities and special black surveys were identical. Using these data, smoking patterns of whites ages 35 to 74 years from the 1985–86 general population survey were compared to those of blacks from the 1985 black survey.

**Assessment of smoking behaviors.** While information on smoking status was requested in the home interview as well as at the clinic, detailed information on smoking behavior was solicited only at the clinic. Participants who were so-called recent quitters (former smokers who reported quitting within the last 12 months) were asked a series of standard questions concerning their age at initiation, their usual brand and the number of cigarettes smoked, previous cessation attempts, and their participation in programs to encourage quitting.

Current smokers were asked about reduction in number of cigarettes smoked, use of low tar cigarette brands, and intentions to quit during the next year. Participants who reported smoking more than 100 cigarettes in a lifetime were categorized as ever smoked; former smokers were ever smokers who had quit. A long-term quitter was described as a former smoker who quit more than a year prior to the study. Anyone who consumes 25 or more cigarettes per day was characterized as a heavy smoker.

Tar, nicotine, and carbon monoxide ratings of cigarette brands were published by the Federal Trade Commission in February 1985 (7). Measurements of

subjects' serum thiocyanate levels, used to validate cigarette usage, were analyzed using standardized colorimetry (8).

**Data analyses.** Sex-, age-, and education-specific comparisons were made of current smoking prevalences between races. Ninety-five percent confidence limits (CL) for percent differences were calculated using a pooled estimate of the variance. Age- and education-adjusted prevalence of smoking patterns was compared between black and white men and women. Adjusted values were calculated using one-way analyses of covariance (9). Chi-square analyses were used to test for racial differences in the distributions of tar, nicotine, and carbon monoxide ratings of the usual brand of cigarettes smoked and in cessation attempts.

## Findings

**Prevalence of cigarette smoking.** The age-adjusted prevalence of smoking among those who completed the home interview was 44 percent for black men (BM), 27 percent for white men (WM), 33 percent for black women (BW), and 26 percent for white women (WW). Current smokers were less likely than nonsmokers to come for a clinic visit. As a result, the prevalence of smoking among clinic attendees was slightly lower (BM, 43; WM, 25; BW, 33; and WW, 24 percent).

Significantly more blacks than whites were current smokers (table 1). No significant racial differences were found in the percentages of men or women who had never smoked, although women were less likely to have ever smoked than men. However, significantly more white men and women were former smokers than their black counterparts. Thus, the ratio of former smokers to those who had ever smoked (the quit ratio) was significantly greater among white men (64 percent) than black men (41 percent) and among white women (54 percent) than black women (35 percent).

Among quitters, whites were somewhat more likely than blacks to be long-term quitters (BM, 90; WM, 93; BW, 87; and WW, 92 percent). The mean number of years since quitting among long term quitters was significantly greater for white men (16 years) than black men (13 years) (95 percent CL of mean difference 1, 5), but the mean years since quitting was not different for white and black women. Conversely, more black than white quitters tended to be recent quitters. Among recent quitters, the mean number of previous cessation attempts, when the subject was able to quit cigarettes for a week or more, was two for black men, three for white men and black women, and six for white women.

Table 2 shows the race-, sex-, age- and education-

Table 1. Age-adjusted prevalence of cigarette smoking among black and white men and women, aged 35 to 74 years, by percents (Minnesota Heart Survey)

Category	Men				Women			
	Black (N = 459)	White (N = 763)	Black-white difference	95 percent CL	Black (N = 593)	White (N = 811)	Black-white difference	95 percent CL
Never smoked .....	26	30	-4	-9, 1	49	46	3	-2, 8
Former smoker .....	30	44	-14	-20, -8	18	29	-11	-16, -6
Current smoker .....	43	25	18	13, 23	33	24	9	4, 14
Ratio of former smokers to those who ever smoked .....	41	64	-23	-30, -16	35	54	-19	-26, -12

NOTE: CL = confidence limits.

Table 2. Age- and education-specific prevalence of current cigarette smoking among black and white men and women, (Minnesota Heart Survey)

Population	Black		White		Black-white difference	
	Percent	Number	Percent	Number	Percent	95 percent CL
<i>High school or less</i>						
<b>Men:</b>						
35-54 years .....	51	138	35	138	16	4, 28
55-74 years .....	43	105	26	119	17	5, 29
<b>Women:</b>						
35-54 years .....	41	184	27	205	14	5, 23
55-74 years .....	29	154	33	166	-4	-14, 6
<i>More than high school</i>						
<b>Men:</b>						
35-54 years .....	41	147	23	371	18	9, 27
55-74 years .....	32	69	23	135	9	-4, 22
<b>Women:</b>						
35-54 years .....	32	187	23	332	9	1, 17
55-74 years .....	24	68	12	108	12	1, 23

NOTE: CL = confidence limits.

Table 3. Current smokers' smoking cessation behaviors, in percents (Minnesota Heart Study)

Behavior	Men		Women	
	Black (N = 197)	White (N = 195)	Black (N = 195)	White (N = 199)
<b>Changes attempted in last year:</b>				
Tried to reduce number of cigarettes .....	70	76	73	80
Tried brand with lower tar or nicotine .....	29	33	27	37
Tried to quit .....	52	63	56	58
Tried to quit and able to stay off cigarettes a week or more .....	25	30	27	22
<b>Changes anticipated in next year:</b>				
Quit completely .....	36	47	35	38
Try to quit .....	14	21	19	17
Reduce number of cigarettes per day .....	17	8	17	18
Switch to brand with lower tar or nicotine .....	2	0	2	0
No change anticipated .....	32	24	26	27
Other .....	0	0	1	1

NOTE: Percents may not add because of rounding.

specific prevalence of current cigarette use. More black men and women were smokers than their white counterparts in every age-education group except one. Differences in prevalences by age groups and education levels between blacks and whites ranged from minus 4 to 18 percent and were statistically significant for most age-education strata. After adjusting for age and education, the prevalence of current cigarette smoking remained significantly higher among black men (41 percent) than white men (27 percent) (95 percent CL of difference 9, 19), and higher among black women (32 percent) than white women (25 percent) (95 percent CL of difference 2, 12).

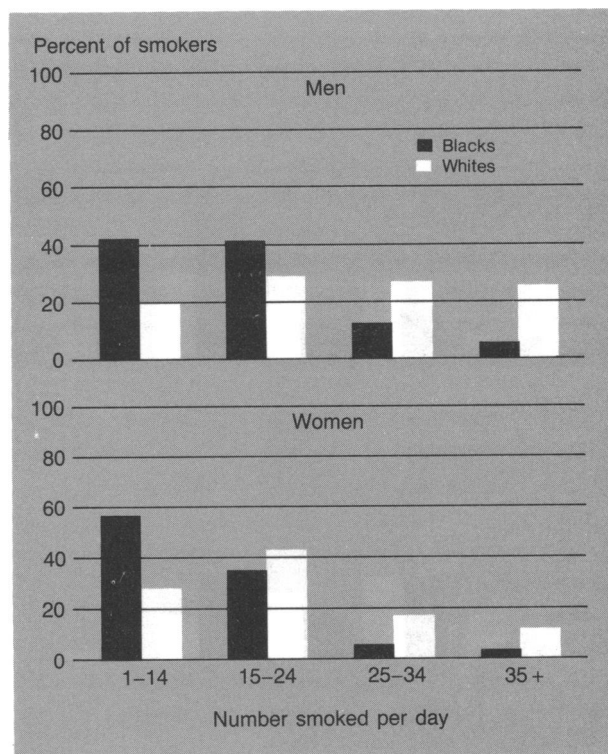
While the prevalence of cigarette smoking was higher among blacks, the mean age- and education-adjusted number of cigarettes smoked per day among smokers was significantly higher among white men than black men (25 compared with 16) (95 percent CL of mean difference 7, 11), and higher among white women than black women (20 compared with 13) (95 percent CL of mean difference 4, 8). Racial differences in the distribution of the number of cigarettes smoked by current smokers for men and women are shown in figure 1. A significantly higher percentage of black men than white men (83 and 48 percent; 95 percent CL of difference 26, 44), and black women than white women (92 and 71 percent; 95 percent CL of difference 13, 29), usually smoked less than 25 cigarettes per day.

As a validation tool for measuring smoke exposure, we examined serum thiocyanate concentrations in the blood of 2,487 persons, representing 95 percent of our sample. Among whites, the sensitivity (percent of smokers detected) was 87.9 percent, and the specificity (percent of nonsmokers correctly classified) was 96.3 percent. Among blacks, the sensitivity was 86.7 percent and the specificity was 91.8 percent, using a serum thiocyanate cutpoint of 80 micromols per liter. Similarly, correlations between serum thiocyanate concentrations and the number of cigarettes smoked among smokers were higher for whites than blacks, 0.49 and 0.37.

Information on the brand of cigarette usually smoked was available for 95 percent of the current smokers. More whites smoked low tar cigarettes than blacks (figure 2). Similar racial differences were observed for nicotine and carbon monoxide ratings, since all three products were highly correlated. In general, men tended to smoke cigarettes which were higher in these products than did women. Within sex-race groups, participants with higher education levels were more likely than those with lower education levels to smoke low yield cigarettes.

**Cessation behaviors.** Less than 10 percent of recent quitters reported quitting with outside help, and only 3

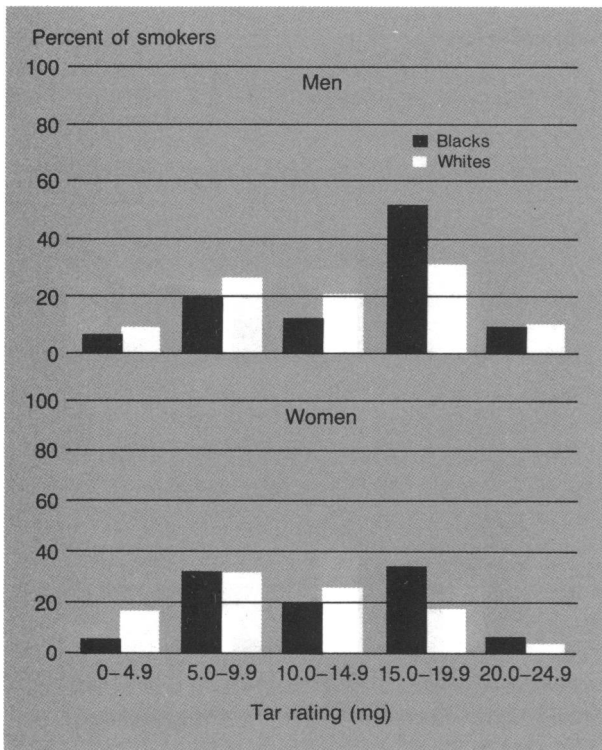
Figure 1. Distribution of number of cigarettes smoked per day by current smokers, by sex and race



percent reported participating in a quit smoking program during the year that they quit. Six percent of current smokers reported participating in such a program in the past year. Higher percentages of both black and white current smokers reported other cessation efforts, although whites reported more of these behaviors (table 3). Whites were more likely than blacks to have reduced the number of cigarettes smoked in the past year. A significantly greater percentage of white women (37 percent) than black women (27 percent) had tried brands lower in tar and nicotine in the past year (95 percent CL of difference 1, 19). Differences in cessation attempts were only significant between races among men. A higher percentage of white men (63 percent) than black men (52 percent) had tried to quit smoking in the past year (95 percent CL of difference 1, 21). Equivalent percentages of black and white smokers had tried to quit smoking during the previous year and were able to avoid cigarettes at least 1 week.

Almost 80 percent of both black and white current cigarette smokers indicated that they would like to quit smoking, but only 35 percent of blacks and 42 percent of whites definitely planned to quit in the next year (table 3). Differences in the distribution of intended changes for the next year showed that 68 percent of white male smokers and 50 percent of black male

**Figure 2. Distribution of tar rating of brands of cigarettes smoked by current smokers, by sex and race**



smokers planned either to quit completely or to try to quit (95 percent CL of difference 8, 28), whereas proportionately more black men planned either to reduce the number of cigarettes smoked per day, switch to a brand lower in tar or nicotine, or make no change. Such differences were not observed between black women and white women.

## Discussion

The prevalence of smoking in the Twin Cities was higher among black than white adults, although blacks were less likely to be heavy smokers. In addition, blacks smoked cigarettes higher in tar and nicotine content than whites. These findings corroborate national data (1-5, 10-17). Despite the inclusion of younger age groups in national estimates of smoking behaviors (14, 15), differences between these and our estimates suggest that white adults in the Twin Cities were more likely to try cigarettes and quit, while black adults in the Twin Cities were more likely to start smoking and to continue smoking than their national counterparts.

Other factors related to smoking patterns were differences in sex, age, and education level, which have been widely substantiated (1-4, 10-17). Unlike the nationwide data, however, differences in age and education level do not explain smoking differences

between blacks and whites in our study. For instance, in Remington and coworkers' study of smoking behavior in selected States, the Behavioral Risk Factor Surveys, smoking differences were no longer significant between black men and white men and between black women and white women after adjusting for age and education (10). Since blacks in our study still had higher smoking levels after stratifying on level of education, it is unlikely that a difference in awareness of the hazards of smoking explains why they differ from whites in smoking cessation behaviors.

Other cultural phenomena may play a role. One recent study (18) found that the three biggest factors preventing participants from quitting smoking were a high number of cigarettes smoked per day, a lack of desire to stop, and a belief about the difficulty of quitting. In our study, blacks smoked fewer cigarettes than whites and an equivalent percentage of blacks and whites expressed a desire to quit smoking (80 percent). Blacks may have stronger beliefs about the difficulty of quitting, but we have no data to support this. Other factors that might impede cessation among blacks are low socioeconomic status and weak social support (17). Stronger levels of smoking addiction (17) contributing to variable degrees of quitting difficulty are possible, since blacks smoke cigarettes with higher nicotine yields than whites.

A greater percentage of whites than blacks tried low tar cigarettes and attempted to quit smoking, although the recidivism rates between blacks and whites attempting to quit were similar. Whites were more likely than blacks to have tried to reduce the number of cigarettes smoked.

Among men, more whites than blacks reported planning to quit completely or planning at least to try to quit sometime in the next 12 months. However, black men planned to try other cessation behaviors in the next year, such as reducing the number of cigarettes smoked or switching to a brand lower in tar. If smoking cessation behavior is viewed as a continuum of strategies involving cigarette reduction, followed by a change to brands lower in tar, attempts to quit, and actual cessation, blacks lag behind whites.

Certain aspects of our study may have influenced the results we obtained. First, our sample selection procedures were different for blacks and whites. The 1985-86 general survey included only one age-eligible from each household, while all age-eligibles per household were included in the black study. Since most of our analyses were stratified by sex, however, the design differences would have less impact. Although little data are available for observed smoking and smoking cessation behaviors by race, the household clustering effect of smoking may have produced artificial smoking and

smoking cessation rates among blacks, making comparisons between the two groups difficult.

A second potential problem was our use of self-reported data to determine smoking and smoking cessation estimates. However, we determined that the sensitivity and specificity of serum thiocyanate concentrations against self-reporting in our sample were high. Although the reliability of the smoking and smoking cessation questions in our questionnaire were unknown, the reliability of questions assessing smoking behavior (current, former, never smoker) has been determined elsewhere and at least one source found it to be quite high (19). The consistency of self-reported cigarette consumption over a period of time has been demonstrated as well (20).

A third potential problem is lower response rates in the black survey, limiting the comparability of our results. The 3 percent difference between the two response rates was small, however, and the effect that this difference had on the results was probably minimal.

Smoking remains a problem for both blacks and whites. Racial differences in smoking and cessation behaviors, however, suggest the need for studies to identify factors impeding smoking cessation among blacks as well as programs to enhance quitting behavior.

## Conclusions

The following points summarize what we know about racial differences in cigarette smoking.

- A greater percentage of blacks than whites smoke cigarettes.
- White smokers smoke more cigarettes per day than do black smokers.
- Blacks smoke cigarette brands higher in tar and nicotine content than whites do.
- A greater percentage of whites than blacks are former smokers.
- Men smoke more than women.
- People with more than a high school education smoke less than people with a high school education or less.
- Whites are more likely than blacks to undertake smoking cessation behaviors.
- Among men, whites are more likely than blacks to be planning to quit in the next year, while blacks are more likely to be planning to undertake other cessation behaviors.

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