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Contribution of Smoking to Excess Mortality in Harlem

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The New York City neighborhood of Harlem has mortality rates that are among the highest in the United States. In absolute numbers, cardiovascular disease and cancer account for the overwhelming majority of deaths, especially among men, and these deaths occur at relatively young ages. The aim of this research was to examine self-reported smoking habits according to measures of socioeconomic status among Harlem men and women, in order to estimate the contribution of tobacco consumption to Harlem's remarkably high excess mortality. During 1992–1994, in-person interviews were conducted among 695 Harlem adults aged 18–65 years who were randomly selected from dwelling unit enumeration lists. The self-reported prevalence of current smoking was strikingly high among both men (48%) and women (41%), even among highly educated men (38%). The 21% of respondents without working telephones reported an even higher prevalence of current smoking (61%), indicating that national and state-based estimates which rely on telephone surveys may seriously underestimate the prevalence of smoking in poor urban communities. Among persons aged 35–64 years, the smoking attributable fractions for selected causes of death were larger in Harlem than in either New York City as a whole or the entire United States for both men and women. Tobacco consumption is likely to be one of several important mediators of the high numbers of premature deaths in Harlem. *Am J Epidemiol* 1998;147:250–8.

blacks; educational status; mortality; poverty areas; smoking; social class; urban health

McCord and Freeman (1) helped focus attention on the high excess mortality in Harlem, New York City, when they reported that in 1980, men in Bangladesh had a greater chance of surviving to age 65 than did black men living in Harlem. In comparison, women in Harlem fared somewhat better, primarily because of social conditions that resulted in poor survival of girls aged 5 years or less in Bangladesh. Notably, 87 percent of the 2,421 excess deaths in Harlem for the three years 1979–1981 were deaths of persons under age 65 years (1).

By 1990, the situation in Harlem had further deteriorated. Among the 16 areas in the United States selected for study by Geronimus et al. (2), Harlem had the lowest probability of survival to age 65 for 15-year-old residents: 0.37 for boys and 0.65 for girls. Despite sizable increased excess mortality from acquired immunodeficiency syndrome and other infectious diseases in the past decade, diseases of the circulatory system and cancer together accounted for 25 percent of the excess deaths among Harlem men aged 15–64 years for the three years 1989–1991 (2). Among women, the percentage was even higher (36 percent).

In response to these sobering statistics, the Harlem Center for Health Promotion and Disease Prevention, which is operated jointly by the Columbia School of Public Health and Harlem Hospital Center, conducted the Harlem Household Survey in order to ascertain what risk factors might be contributing to the excess mortality experienced by Harlem residents. Measuring and comparing distributions of risk factors in populations is essential in predicting future disease burdens (3). The aim of this study was to examine self-reported smoking habits according to measures of socioeconomic status among men and women in Harlem. In addition, the smoking attributable fraction in Harlem—that is, the fraction of all premature deaths in Harlem that would be prevented if there were no cigarette smoking—was computed and compared with overall New York City and US estimates.

MATERIALS AND METHODS

During October and November of 1991, a team of trained community enumerators listed all dwelling units on 46 randomly selected blocks in the central

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Abbreviation: BRFS, Behavioral Risk Factor Survey.

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Harlem health district. From the more than 22,000 units thus enumerated, a base sample of 1,300 dwellings was randomly selected. Of these, 963 units were inhabited and contained an adult respondent at the time of a first interview. This respondent answered a brief questionnaire and was asked to list all persons usually residing in the household.

From the household composition list thus provided, persons aged 65–18 years were listed from oldest to youngest. One adult was then randomly selected for possible participation in the risk factor prevalence survey used here, according to a procedure developed by Kish (4). Household members were eligible for the survey if they were 18–65 years of age, spoke English, and were able to answer the interview questions. Of the 963 adults selected, 695 successfully completed the interview, for a response rate of 72 percent. All interviews were conducted in person by trained community residents using a structured questionnaire, and lasted for 60–90 minutes. Respondents were paid $10 for their participation.

With regard to smoking habits, respondents were asked, "Have you ever smoked one or more cigarettes per day for at least 1 month?" and "Have you smoked at least 100 cigarettes in your entire life?". These questions were identical to those asked in the New York State Behavioral Risk Factor Survey (BRFS). Respondents answering "yes" to either of these questions were then further queried as to whether or not they "smoke[d] cigarettes now"; the average number of cigarettes smoked per day; whether or not they had stopped smoking for a week or more sometime during the past year; the total number of years for which they had smoked cigarettes; and the age at which they first started smoking. Brand of cigarette smoked was not ascertained.

For analytic purposes, measures of smoking were constructed according to criteria used by Zhu et al. (5). Current smokers were defined as persons who reported having smoked 100 or more cigarettes in their lives in addition to currently smoking. Former smokers were defined as persons who had smoked 100 or more cigarettes in their lives but did not currently smoke. "Ever smokers" comprised both current and former smokers. "Never smokers" were persons who had never smoked or had not smoked 100 cigarettes in their lives. Pack-years of smoking were computed by dividing the reported average number of cigarettes smoked per day by 20 and multiplying this value by the reported number of years smoked.

Prevalence estimates for categorical variables were calculated separately for men and women. For continuous measures, 10th, 50th, and 90th percentiles were determined in addition to means and standard deviations, by sex, in order to gain a fuller description of the data distributions (6). Analyses were conducted using SPSS software (7) unless otherwise indicated.

Results for various smoking items were then stratified according to indicators of socioeconomic status: education (both years of education and highest degree earned) and household income (in self-reported categories). Findings were generally consistent across socioeconomic status measures; results using highest academic degree earned are emphasized here, since the survey data were most complete for this variable. In addition, previous studies have shown that educational level is a major predictor of whether or not an individual will smoke cigarettes (8, 9). In examining trends across categories of socioeconomic status, the Cochrane-Armitage test for categorical variables was used. Calculations were performed with SAS software (10). Analysis of variance was used for continuous measures.

Data from the 1992, 1993, and 1994 New York State BRFS's were used to compare smoking habits in New York State overall and among non-Hispanic blacks only with the habits of persons living in Harlem (persons aged 18–65 years only). Pooled estimates for the years 1992–1994 were calculated for the New York State BRFS to correspond to the years in which the Harlem Household Survey was conducted and to allow for stable estimates among non-Hispanic black respondents. Percentages for the New York State BRFS were weighted to account for survey design effects, and they represent New York State population estimates. The New York State BRFS employs a telephone sampling scheme which involves use of clusters of telephone exchanges and oversampling of certain groups to ensure adequate representation of subpopulations, notably non-Hispanic blacks. Percentages for the New York State BRFS and the Harlem Household Survey were then directly standardized to the 1990 US Census population using Stata software (11) to adjust for age effects. Comparisons of the percentage of current smokers among ever smokers, as well as the percentage of former smokers among ever smokers, were also made among the three populations considered.

The Centers for Disease Control and Prevention's SAMMEC software (12) was used to estimate smoking attributable fractions for Harlem, New York City overall, and the entire United States. The smoking attributable fraction is the fraction of premature deaths that would have been prevented if there were no cigarette smoking. The SAMMEC program computes smoking attributable fractions for 24 smoking-related causes of death on the basis of age- and sex-specific prevalence rates among current and former smokers, as well as a corresponding set of relative risks for these

smoking-related causes of death. The relative risks used are based on a 4-year follow-up study (1982–1986) of 1.2 million persons in the American Cancer Society's Cancer Prevention Study II (13). Smoking attributable fractions were calculated for the age group 35–64 years, as the excess mortality in Harlem is largely confined to persons in this age range. Population estimates by sex and 10-year age group were obtained from 1990 US Census estimates for the central Harlem health district and for New York City overall (14). Age- and sex-specific prevalence rates of smoking were obtained from the Harlem Household Survey for Harlem subjects aged less than 65 years. For the overall New York City calculations, age- and sex-specific prevalence rates of smoking were obtained from pooled 1992–1994 New York State BRFS estimates for the five New York City boroughs (all races/ethnicities combined). Smoking attributable fractions for Harlem and New York City overall were compared with smoking attributable fractions for the entire United States provided in the SAMMEC program. US smoking prevalence rates for all races/ethnicities combined were derived from the 1990 National Health Interview Survey, which asked the same basic questions regarding smoking as did the Harlem Household Survey and the New York State BRFS.

Finally, numbers of Harlem and New York City deaths due to the 24 specified causes of death listed in the SAMMEC package were obtained from 1990 New York City vital statistics (unpublished data), courtesy of the New York City Department of Health, and were examined. Even after grouping of data from the years 1988–1990, numbers were too small to provide reliable estimates of smoking attributable deaths using SAMMEC. Thus, those analyses are not presented here.

RESULTS

A description of the study population by sex is provided in table 1. The majority of survey participants were women (59 percent) and non-Hispanic blacks (86 percent), which is generally consistent with US Census estimates of the demographic makeup of central Harlem (13). Because of the low numbers of respondents of other racial/ethnic backgrounds and the desire to examine the community of central Harlem as a whole, separate analyses by race/ethnicity were not conducted.

While there was diversity among study participants across measures of socioeconomic status, most respondents had earned a high school diploma or less (80 percent), reported yearly household incomes of $15,000 or lower (58 percent), and were unemployed (52 percent). With regard to health insurance coverage, significantly more men than women reported having no coverage (26 percent vs. 14 percent), whereas significantly fewer men than women reported having Medicaid coverage (35 percent vs. 45 percent). The few respondents reporting Medicare coverage in this age group (6 percent of men and 3 percent of women) were probably disabled.

The smoking habits of respondents are presented by sex in table 2. A critical result was the alarmingly high prevalence of current smoking in Harlem among both

TABLE 1. Characteristics (%) of the study population, by sex: Harlem Household Survey, 1992–1994

	Men (*n* = 287)	Women (*n* = 408)	Overall (*n* = 695)	*p* value*
Age group (years)				0.15
18–24	9.4	12.1	11.0	
25–34	32.1	30.0	30.9	
35–44	26.8	22.9	24.5	
45–54	15.0	21.2	18.6	
55–65	16.7	13.8	15.0	
Race/ethnicity				0.14
Non-Hispanic black	87.5	85.8	86.5	
Hispanic black	3.8	3.7	3.7	
Non-Hispanic white	2.1	0.5	1.2	
Hispanic, not otherwise specified	5.9	9.8	8.2	
Other	0.6	0.2	0.4	
Highest academic degree earned				0.90
None/technical certificate (no high school diploma)	32.7	31.6	32.1	
High school diploma/General Equivalency Diploma	46.6	48.0	47.4	
Post-high school technical certificate				
2-year college degree	6.0	5.0	5.4	
4-year college degree or higher	14.6	15.4	15.1	
Annual household income (dollars)				0.46
<7,000	28.5	32.9	31.1	
7,001–11,000	17.5	17.4	17.4	
11,001–15,000	9.5	9.1	9.3	
15,001–25,000	13.7	16.0	15.1	
25,001–50,000	22.1	19.8	20.7	
50,001–90,000	6.1	3.5	4.6	
>90,000	2.7	1.3	1.9	
Employment status				0.02
Unemployed	45.8	55.7	51.6	
Employed part-time	13.3	8.4	10.4	
Employed full-time (≥40 hours/week)	40.9	36.0	38.0	
Health insurance coverage				<0.01
No coverage	25.8	14.2	19.0	
Medicaid coverage	35.2	45.1	41.0	
Private insurance	33.4	37.3	35.7	
Medicare coverage	5.9	3.4	4.3	

* χ^2 test (men vs. women).

TABLE 2. Cigarette smoking among residents of central Harlem, by sex, 1992–1994

	Men ($n = 287$)	Women ($n = 408$)	Overall ($n = 695$)	p value*
Smoking status (%)				0.13
Never smoker	38.1	45.7	42.6	
Current smoker	47.6	41.0	43.7	
Former smoker	14.3	13.3	13.7	
Recent sustained attempt to quit (%)†,‡	47.1	52.1	49.8	0.38
Mean no. of cigarettes/day‡	13.9 (9.1)§	11.9 (8.7)	12.8 (8.9)	0.05
10th percentile	3.0	3.0	3.0	
50th percentile	10.0	10.0	10.0	
90th percentile	26.5	20.0	20.0	
Mean pack-years smoked‡	15.4 (14.1)	12.9 (14.6)	14.1 (14.4)	0.14
10th percentile	2.3	1.5	1.9	
50th percentile	12.0	7.4	9.0	
90th percentile	37.7	34.7	35.0	
Mean age (years) at starting smoking¶	17.1 (5.2)	17.7 (6.2)	17.4 (5.7)	0.25
10th percentile	12.0	13.0	13.0	
50th percentile	16.0	16.0	16.0	
90th percentile	24.0	24.0	24.0	
Mean no. of years smoked¶	19.8 (11.7)	18.5 (12.7)	19.1 (12.0)	0.31
10th percentile	5.0	4.0	5.0	
50th percentile	29.0	15.0	17.0	
90th percentile	35.4	36.0	36.0	

* χ^2 test (for categorical variables) or t test (for continuous variables) comparing men with women.
† Respondent stopped smoking for at least 1 week during the past year.
‡ Among current smokers (136 men, 167 women).
§ Numbers in parentheses, standard deviation.
¶ Among ever smokers (177 men, 221 women).

men (48 percent) and women (41 percent), for an overall rate of 44 percent. In separate analyses, it was found that young adults aged 18–24 years reported a much lower prevalence of smoking (16 percent), but older age groups reported consistently high frequencies of smoking that decreased only slightly with increasing age (50 percent for ages 25–34 years, 48 percent for ages 35–44 years, 47 percent for ages 45–54 years, and 40 percent for ages 55–65 years).

While there were few former smokers in the sample (14 percent), 50 percent of those who currently smoked reported having made a sustained attempt to quit during the past year. The median number of cigarettes smoked per day was fairly low (about 10) and was identical for both sexes; however, examination of the 90th percentiles revealed that more men than women in Harlem were heavy smokers (≥25 cigarettes/day).

Harlem men reported having smoked longer than women (a median of 29 years for men vs. 15 years for women). Together with the fact that more Harlem men than women were heavy smokers (6), this yielded a distribution of pack-years smoked that was shifted importantly upward for men as compared with women (note the higher values for the 10th, 50th, and 90th percentiles among men). While the median age at which Harlem residents first began to smoke was 16 years, the 10th percentile values (12 years for men and 13 years for women) revealed that substantial numbers of smokers in Harlem had initiated the habit at a younger age.

Table 3 presents smoking habits stratified according to highest academic degree earned, separately for men and women. There were few respondents in the two upper educational strata. Nonetheless, several patterns were evident. First, there was a strong trend of fewer current smokers with increased education for both men and women. Even among Harlem men with a 4-year college degree, however, the prevalence of current smoking was remarkably high (38 percent). Among men, those with higher degrees were more likely to have made a sustained attempt to quit smoking during the past year. For women, the small numbers of current smokers among those with higher degrees may be responsible for the lack of a relation between education and sustained quitting attempts. Men with high school diplomas or less were more likely to have smoked heavier and longer than were men with college degrees (as evidenced by the higher 90th percentiles for cigarettes smoked per day, years smoked, and pack-years smoked among men in the lowest two educational strata vs. men in the highest two educa-

TABLE 3. Cigarette smoking among men and women in central Harlem, by educational level, 1992–1994

	No high school diploma	HS*/GED*/ technical certificate	2-year college degree	4-year college degree	p value†
		Men			
	(*n* = 92)	(*n* = 131)	(*n* = 17)	(*n* = 40)	
Current smoker (%)	55.4	45.0	47.1	37.5	0.06
Ever smoker (%)	69.6	60.3	52.9	50.0	0.02
Recent sustained attempt to quit (%)‡,§	31.4	50.8	50.0	73.3	<0.01
Mean no. of cigarettes/day§	13.1 (8.5)¶	15.6 (10.4)	9.9 (6.5)	12.5 (6.8)	0.24
10th percentile	4.2	3.0	3.0	2.2	
50th percentile	10.0	15.0	10.0	10.0	
90th percentile	29.0	30.0	20.0	20.0	
Mean pack-years smoked§	14.5 (11.7)	18.4 (17.1)	8.7 (8.2)	10.6 (9.5)	0.10
10th percentile	2.2	3.0	0.2	1.3	
50th percentile	12.1	15.0	7.3	7.5	
90th percentile	34.0	45.0	24.0	30.0	
Mean age (years) at starting smoking#	16.0 (5.6)	16.8 (3.5)	18.0 (6.6)	21.4 (6.1)	<0.01
10th percentile	11.0	13.0	11 0	13.2	
50th percentile	15.0	17.0	18.0	21.0	
90th percentile	22.5	21.0	32.0	39.9	
Mean no. of years smoked#	21.4 (12.4)	19.8 (11.4)	13.6 (8.0)	17.8 (10.2)	0.22
10th percentile	6.0	5.0	1.0	5.0	
50th percentile	20.0	20.0	14.0	15.5	
90th percentile	40.5	35.0	24.0	32.7	
		Women			
	(*n* = 127)	(*n* = 192)	(*n* = 20)	(*n* = 62)	
Current smoker (%)	43.3	49.5	35.0	11.3	<0.01
Ever smoker (%)	55.9	58.3	50.0	40.3	0.04
Recent sustained attempt to quit (%)‡,§	48.3	60.2	42.9	0.0	0.24
Mean no. of cigarettes/day§	11.7 (8.5)¶	12.2 (9.0)	9.4 (9.6)	12.7 (7.2)	0.86
10th percentile	3.0	3.6	1.0	1.0	
50th percentile	10.0	10.0	6.0	13.0	
90th percentile	20.0	20.0	30.0	20.0	
Mean pack-years smoked§	11.7 (15.0)	13.2 (14.2)	12.1 (16.9)	13.9 (12.0)	0.94
10th percentile	2.0	1.2	1.3	1.8	
50th percentile	6.8	7.5	6.6	10.0	
90th percentile	27.0	35.0	49.5	32.5	
Mean age (years) at starting smoking#	16.5 (3.5)	18.6 (7.7)	18.2 (4.8)	17.3 (3.9)	0.17
10th percentile	13.0	14.0	13.1	11.6	
50th percentile	16.0	16.5	17.0	18.0	
90th percentile	22.0	25.0	29.1	23.0	
Mean no. of years smoked#	18.3 (11.7)	18.3 (12.6)	20.4 (11.8)	17.4 (11.7)	0.93
10th percentile	6.0	3.0	3.2	3.8	
50th percentile	15.0	15.0	22.0	16.0	
90th percentile	38.0	36.7	34.8	35.4	

* HS, high school; GED, General Equivalency Diploma.
† *p* value from Cochrane-Armitage test for trend for categorical variables (two-tailed) or analysis of variance for continuous variables.
‡ Respondent stopped smoking for at least 1 week during the past year.
§ Among current smokers (136 men, 167 women).
¶ Numbers in parentheses, standard deviation.
# Among ever smokers (177 men, 221 women).

tional strata). Again, no relation between education and smoking intensity was apparent among women. Finally, among both men and women, lower educational level was associated with an earlier age of starting to smoke, although the trend was statistically significant only among men.

Table 4 compares smoking habits among all respondents and non-Hispanic blacks only in the 1992, 1993, and 1994 New York State BRFS with those of respondents in the Harlem Household Survey. Adjusting for age by direct standardization had little effect on the results. Harlem residents were almost twice as likely to be current smokers as New York State residents or New York State non-Hispanic blacks, but they were about as likely as New York State non-Hispanic blacks to be former smokers (half as likely as New York State residents overall).

A more compelling comparison is that of percentage of ever smokers who currently smoked: 50 percent in New York State overall, 63 percent among non-

TABLE 4. Cigarette smoking habits (%) reported by adults aged 18–65 years in the New York State (NYS) Behavioral Risk Factor Survey (BRFS) and the Harlem Household Survey, 1992–1994

	NYS BRFS* (unweighted n = 5,857)		NYS BRFS* (non-Hispanic blacks only) (unweighted n = 752)		Harlem Household Survey (n = 695)	
	Crude	Age-adjusted†	Crude	Age-adjusted	Crude	Age-adjusted
Smoking status						
Never smoker	50.2	49.3	61.1	59.1	42.6	43.8
Current smoker	24.9	24.6	24.4	24.5	43.7	41.7
Former smoker	24.9	26.0	14.5	15.9	13.7	14.3
Mean no. of cigarettes/day‡						
<10	18.6	17.4	33.8	30.4	33.7	35.1
10	18.2	16.4	20.1	17.6	24.1	22.6
11–19	13.3	12.5	19.6	17.8	11.6	14.4
20	31.8	30.1	23.6	21.9	22.8	20.8
21–40	16.1	14.8	3.0	2.8	7.6	7.2
40–80	2.0	2.2	0.0	0.0	0.3	0.3

* NYS BRFS estimates are weighted to account for survey design effects and represent NYS population estimates.
† Directly standardized to the 1990 US Census population (14) by 10-year age group using Stata software (11).
‡ Among current smokers.

Hispanic blacks in New York State, and 76 percent in Harlem. This means that comparatively few ever smokers in Harlem had stopped smoking: 50 percent in New York State overall, 37 percent among non-Hispanic blacks in New York State, and only 24 percent in Harlem. Among current smokers, however, New York State non-Hispanic blacks and Harlem residents reported smoking fewer cigarettes per day than did New York State smokers overall.

Table 5 presents the smoking attributable fractions in Harlem, New York City as a whole, and the entire United States for five different causes of death. In the age group 35–64 years, smoking attributable fractions were consistently higher in Harlem than in either New York City overall or the United States. For example, among Harlem women, smoking was responsible for 84 percent of premature deaths from cancers of the trachea, lung, and bronchus, compared with 76 percent in New York City women and 78 percent in US women. Among Harlem men, 52 percent of ischemic heart disease deaths could be attributed to smoking, as compared with 38 percent in New York City men and 46 percent in US men.

DISCUSSION

Despite considerable public health efforts over the past several decades, cigarette smoking continues to be the largest single preventable cause of death and disability in the United States (15, 16). The most shocking statistic presented in this report is the dramatically high prevalence of current smoking among 18- to 65-year-old residents of Harlem (44 percent). This falls far short of the national health objective for the year 2000 of reducing the prevalence of smoking among African-American adults to no more than 18 percent (17). In comparison, the prevalence of current smoking among respondents aged 18–65 years in the

TABLE 5. Smoking attributable fractions* for various smoking-related causes of death among persons aged 35–64 years in Harlem, New York City overall, and the entire United States, by sex, 1992–1994†

Cause of death	Harlem	New York City	United States
Women			
Cancer of the trachea, lung, or bronchus	0.841	0.765	0.780
Ischemic heart disease	0.482	0.351	0.372
Cardiac arrest/other heart disease	0.244	0.159	0.171
Cerebrovascular disease	0.629	0.484	0.508
Pneumonia, influenza	0.363	0.258	0.274
Men			
Cancer of the trachea, lung, or bronchus	0.927	0.878	0.906
Ischemic heart disease	0.521	0.385	0.455
Cardiac arrest/other heart disease	0.335	0.221	0.276
Cerebrovascular disease	0.595	0.412	0.494
Pneumonia, influenza	0.384	0.280	0.337

* Computed using SAMMEC software, version 3.0 (12). See "Materials and Methods" for details.
† All races/ethnicities combined.

1993 New York State BRFS was 25 percent (24 percent among non-Hispanic blacks).

Because the New York State BRFS is a telephone survey, it underrepresents certain subgroups of the population, including urban residents who are young, male, poor, and unemployed, who are also more likely to smoke (18, 19). In the Harlem Household Survey, the 21 percent of participants without working phones were half again as likely to report current smoking (61 percent) as were participants with working phones (39 percent). Furthermore, the Harlem Household Survey data probably underestimate actual tobacco use in Harlem, since the nonrespondents (28 percent of eligible participants) were presumably more likely to be poor and unemployed—populations previously shown to smoke more frequently (18–20). National and state-based smoking estimates that rely on telephone surveys may therefore underestimate the prevalence of smoking in poor urban communities and the contribution of tobacco use to excess mortality in these populations.

The inverse relations found between current smoking and highest academic degree earned were expected on the basis of earlier reports (8, 9). Still, especially among men, smoking rates in Harlem were unacceptably high regardless of educational attainment, implying that most Harlem residents have yet to benefit from knowledge about the health consequences of smoking.

There are several plausible explanations for the sharply higher self-reported tobacco use in Harlem as compared with other communities. First, there is remarkably easy access to tobacco in Harlem, even among young people who cannot legally purchase cigarettes. Baseline data from a recent intervention study demonstrated that 98 percent of stores in Harlem sold cigarettes to 12- to 13-year-olds and 70 percent sold single or "loose" cigarettes, an illegal practice regardless of the age of the buyer (21). A second reason is likely to be heavy point-of-purchase advertising. Although it has not been quantified, visits to Harlem bodegas and grocery stores indicate that a high proportion of advertising messages seen by customers promote tobacco use. Further exacerbating this situation is a conspicuous lack of counter-tobacco messages in the Harlem community. Other potential contributors to the high smoking rates in this predominantly poor and African-American community include substantial levels of unemployment, increased stress, including racism in the larger society (22), elevated rates of depression (23), less support for quitting smoking, and limited access to effective treatments and public information.

One encouraging and noteworthy finding was the average age of smoking initiation among Harlem residents: 16 years, as compared with ages as low as 13 years in other US surveys (24). Major progress in reducing the prevalence of smoking among US African-American adolescents and young adults was achieved during the period 1974–1985; then progress slowed somewhat from 1985 to 1991 (25). Renewed antismoking efforts directed toward youth are needed, however; national statistics indicate a recent trend of increased smoking among young people under age 21 (26).

Another favorable finding was that Harlem smokers consumed fewer cigarettes per day than New York State smokers overall, but about as many as non-Hispanic black smokers in New York State. Previous reports have also found that among smokers, African Americans smoke fewer cigarettes per day than do white Americans (27–29). In addition, African Americans are more likely to smoke higher tar, higher nicotine, and more mentholated cigarettes than are white Americans—differences not explained by sociodemographic or smoking-related characteristics (28).

Consistent with other studies which found that African Americans were less likely to quit smoking than white Americans (30–32), regardless of socioeconomic status (8), Harlem residents who had ever smoked were far less likely to be former smokers (24 percent) than were New York State residents overall (50 percent) or non-Hispanic blacks statewide (37 percent). This makes it all the more essential to prevent the initiation of smoking in poor communities of color.

In recent decades, US death rates have fallen, but the improvement has not been shared equally (33). Rates of heart disease have declined so much more rapidly among whites than among blacks that heart disease is by far the greatest contributor to the widening gap in life expectancy between the two major ethnic groups (34).

In Harlem, among the various categories of cardiovascular death, hypertension accounts for the largest excess in comparison with New York City deaths overall. For example, 1990 death rates per 100,000 population among men aged 45–64 years were 170.2 in Harlem and 32.8 in New York City; comparable rates for women were 80.0 in Harlem and 17.2 in New York City (unpublished data).

Various social and medical factors contribute to hypertension, including: uncontrolled high blood pressure and obesity, due in part to inadequate access to and use of preventive health care; poor diet, compounded by low incomes, large numbers of single-adult households, and the wide availability of fast food; lack of physical activity, due at least in part to

limited recreational facilities and unsafe neighborhoods (35); and other environmental factors, including high levels of air pollution, deteriorated housing stock, and psychosocial factors such as depression and racism (36). One mechanism by which socioeconomic factors such as poverty, joblessness, and lack of education may contribute to increased death rates in Harlem is the influence of powerful intermediate factors, including cigarette smoking. In addition, the above risk factors, exacerbated by poverty, often potentiate each other; e.g., uncontrolled hypertension, aggravated by poor primary care, amplifies the adverse effects of smoking on coronary artery disease and stroke.

Overall, the Centers for Disease Control and Prevention estimates that 20 percent of all US deaths in 1990 were attributable to smoking (37). Race and sex differences in smoking and associated lung cancer risks have been previously described (38–41). The findings presented here on smoking attributable fractions clearly show that the higher prevalence of current smoking and ever smoking in the younger Harlem residents (persons aged 35–64 years) was responsible for a larger fraction of premature deaths in Harlem than in comparable New York City or US populations.

Strengths of the Harlem Household Survey include the fact that it was population-based, that it possessed a credible response rate of 72 percent (notwithstanding the difficulties encountered in conducting an in-person survey in a poor urban community), and that it included individuals who did not have working telephones. Limitations of the survey include the cross-sectional nature of these data, which prohibited examination of trends over time. In addition, the exclusion of individuals who could not complete the interview in English tended to underrepresent recent immigrants to Harlem, mainly persons from the Caribbean and West Africa. It is also possible that men were less likely than women to participate, given the larger numbers of women interviewed. Finally, data on brand preference, specifically on the smoking of mentholated cigarettes, were not obtained.

Given the patterns of cigarette smoking reported here (amount, duration, and resultant pack-years) and the undisputable link between smoking and future mortality, substantially high rates of death from lung cancer and possibly other smoking-related diseases are projected to continue well past the year 2000 in Harlem (42). Notwithstanding the need to consider other factors which contribute to premature mortality in Harlem, a high priority should be given to research, policies, education, and surveillance programs designed to reduce smoking in this vital yet impoverished community.

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