moking and the Health Gap in Minorities

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TRACT *Over the past decade, tobacco companies have targeted minority populations when advertising and promoting their products, containing the most widely available, legal addictive drug in the United States. This has contributed to a greater prevalence of cigarette smoking among some minorities and lower-income groups. Black males are more likely to smoke than white males and more often they smoke high-tar cigarettes. They are also less likely to quit smoking. Compared to the national average, a greater proportion of Hispanic males smoke, but not Hispanic females. Smoking prevalence rates among Asians and Native Americans are available from local surveys but there are no reliable national estimates. Blacks experience substantially higher rates of mortality and morbidity from all causes, heart disease, stroke, and smoking-related cancers as well as adverse pregnancy outcomes. Substantially lower rates of death from heart disease, stroke, and cancers are observed among Asians and Native Americans than among whites. Disparities in cigarette smoking among racial and ethnic groups do not mirror the observed racial and ethnic disparities in mortality. Other health risk factors, access to medical care and premature death from other causes, may partially explain the morbidity/mortality gap between minorities and nonminorities. Reliable national estimates on smoking prevalence and morbidity and mortality among minorities are needed. The role of tobacco use in the etiology of diseases that are disproportionatly prevalent among minorities should be studied. Culturally sensitive and acceptable smoking interventions should be developed with the involvement of minorities. Ann Epidemiol 1993;3:159–164.*

KEY WORDS: Cigarette smoking, minorities, mortality/morbidity gap.

TRODUCTION

hen the first Surgeon General's report was released in 964, tobacco use was referred to as "habituating" (1). By 979, when considerably more research had been conted, smoking was called "the prototypical substanceuse dependency" (2). The 1988 Surgeon General's report nicotine addiction concluded that smoking is addicting. icotine, the principal pharmacologic agent in all forms of bacco, is a powerful addicting drug . . . The pharmacologic nd behavioral processes that determine tobacco addiction re similar to those that determine addiction to drugs such s heroin and cocaine" (3). Despite the scientific evidence hat nicotine is highly addictive, the similarities in depennce on widely available, legal, "domesticated" cigarettes nd on illicit "hard" drugs have not been well accepted (4). Today, tobacco use remains the most prevalent form of substance abuse in this country and is the number one cause of premature death in the United States (5).

Nevertheless, some progress has been made since the first report on smoking and health was issued in 1964. Per-capita cigarette consumption in the United States has declined from a peak of 4266 per year in 1961 to 1962 to approximately 2800 per year in 1988 to 1989. The prevalence of adult smokers has also decreased from 40% in 1965 to 29% in 1987 (5). However, the decline in cigarette use has not been equal in all groups; it has been substantially slower among the less educated and among females. The result is a change in smoking patterns: The greatest prevalence is now found among those without a high school diploma and there is a narrower gender difference. While the decline has been similar in blacks and in whites, blacks continue to have a higher smoking rate. This has raised growing concern among public health professionals because of its implications for the already disproportionate burden of morbidity and mortality borne by the nation's poor and minority populations.

MINORITY POPULATIONS

There are four predominant minority populations in the United States: blacks, Hispanics, Asians, and Native Americans. Their demographic and socioeconomic characteristics are summarized in Table 1 (6, 7). Blacks make up 12% of the US population and are the largest minority group. Hispanics comprise the second largest minority, with subgroups originating from Mexico, Puerto Rico, Cuba, and other Central and South American countries. The Asians

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TABLE 1. Selected demographic and socioeconomic characteristics of minority populations in the United States, 1980

Characteristics	Blacks	Hispanics (1985)	Asians	Native Americans	Total population
% of US population	12.0	7.2	2.1	0.7	
Age					
% under 15 y	29.3	29.9	24.9	30.9	22.6
% over 64 y	7.8	4.8	6.1	5.2	11.3
% Foreign born		28.6	62.1	2.5	6.2
Education (25 y+)					
% Less than high school	48.8	52.1	24.7	44.5	33.5
% Completed high school	51.2	47.9	75.3	55.5	66.5
% College graduate	7.9	8.5	34.3	7.7	16.2
% Lived in urban area	81.0	90.0	92.0	50.0	75.0
% Family with female head	40.3	23.0	10.2	22.7	13.9
Median family income	$18,000	$18,800	$23,100	$13,700	$19,900
% Persons below poverty index	31.0	25.2	13.1	28.2	11.7
Unemployed rate (%)	14.3	11.3	4.6	13.2	6.5

Data from US Bureau of the Census (6, 7).

are the nation's third largest minority group and the most diversified. They represent the major ethnic groups of Asian Indian, Chinese, Filipino, Japanese, Korean, Laotian, and Vietnamese and speak over 30 different languages. About 70% of Asian Americans are immigrants, mostly from Southeast Asia as refugees. These immigrants are very different from US-born Asians who have been socially and economically established for generations. The Native Americans represent the smallest of the defined minority groups (0.7%) and diversities are also observed among different Indian tribes and Alaska natives (6, 7). Since socioeconomic status, life-style habits, and disease patterns vary significantly among subgroups, combined data for any one minority population may not accurately reflect those of subgroups.

In general, all minority groups are younger than the nation as a whole. With the exception of Asians, these minority groups attain lower levels of education, their families are often headed by a female member, and most have a lower socioeconomic status and a higher unemployment rate. They are also more likely to live in urban areas and often the inner cities, which are typified by poverty, poor schools, crowded housing, unemployment, exposure to a pervasive drug culture and periodic street violence, and generally high levels of stress.

SMOKING PATTERNS IN MINORITIES

Minority populations have been a target of tobacco companies over the past decade. Tobacco is advertised heavily in magazines popular among the minorities and extensively on billboards in minority neighborhoods. Furthermore, new cigarette products aimed especially at minorities are being marketed. In recent years, there has been a shift from traditional advertising to promotional activities that are aggressively aimed at blacks and Hispanics, blue-collar workers, women, and young adults (8, 9). The recent reports of DiFranza and coauthors (10) and Fischer and associates (11) demonstrate the success of tobacco companies at targeting children. Camel's share of the cigarette market segment among children increased from 0.5% to 32.8% after the advertising and promotion of the Old Joe cartoon character (10). Children as young as 3 to 6 years old were able to recognize the cigarette brand logo Old Joe the Camel (11).

Smoking prevalence has been consistently higher in blacks than in whites since 1966 and the reverse pattern is observed for smoking cessation. In 1987, 34.0% of black adults (male and female) smoked, compared to 28.8% of whites, and 46.4% of whites who ever smoked had quit, compared to only 31.5% of black smokers (5). Although blacks are more likely to be smokers and less likely to quit after they begin smoking, they tend to smoke fewer cigarettes per day. The proportion of heavy smokers (25 or more cigarettes/d) among current smokers is lower in blacks than in whites (5). Furthermore, blacks may tend to initiate smoking at a later age. In the 1986 survey of high school seniors, 44% of blacks reported never smoking, compared to 30% of whites, and only 8% were daily smokers, compared to 21% of whites (12). This is consistent with the Youth Risk Behavior Survey on high school students conducted in 1990, which showed that black students were less than half as likely as white students to have used any tobacco during a 30-day period preceding the survey (16.8% versus 41.2%) (13). These findings parallel the dramatic decline in smoking noted among young black adults in the National Health Interview Surveys (NHIS) of 1985 and 1987. The 1985 survey reported for the first time that young black adults (ages 20 to 24) smoked less than their white counterparts (5).

The 1982 to 1984 Hispanic Health and Nutrition Examination Survey (HHANES) reported a smoking prevalence of about 40% among Hispanic men, which exceeds that for the entire US population and for non-Hispanic whites (14). The smoking rate of 26% among Hispanic women is considerably lower than that for men, but a birth cohort analysis of HHANES data showed an increase of smoking rates among successive cohorts of women (15).

There is no reliable national estimate of smoking prevalence among Asians although local surveys have been conducted in some geographic regions. While smoking rates are high among the new immigrant groups (Southeast Asian refugees: Vietnamese men, 55 to 65%; Cambodian men, 71%; and Laotian men, 92%) (16), rates for Asian women and the more established Asians are relatively low (17). In 1986, Japanese and Filipinos living in Hawaii had smoking rates (29% and 25%, respectively) similar to the rate for Caucasians (28%) and the national average (30%) (18).

Smoking varies considerably among Native American groups. Surveys on Indian tribes and Indian reservations have found smoking prevalence to be highest among Northern Plains Indians (42 to 70%) and Alaskan Natives (56%), greatly exceeding the national average. Much lower rates have been reported for Indians from the Southwest (13 to 28%) (19).

The higher smoking prevalence in most minority populations has been suggested to be partially explainable by socioeconomic status and other factors associated with poverty (20). College graduates have consistently smoked the least, and their smoking rates have been reduced by half from 1966 (33.7%) to 1987 (16.3%), while individuals without a high school diploma have the highest smoking rates and the prevalence has not changed appreciably during the same period. This has resulted in an increasing and very substantial gap in smoking rates between college graduates and those without high school diplomas. Individuals without high school diplomas not only are more likely to smoke, but also are less likely to quit if they do smoke. In addition, blue-collar and service workers (40%) and unemployed men (44.3%) have higher smoking rates than do white-collar professionals (28%) (5, 21).

Choice of cigarettes also varies by race. More than three-fourths (78.0%) of black smokers use high-tar cigarettes (> 15 mg/cigarette) compared to 56% among whites and 69% among other races (5). The prevalence of high-tar cigarette use among current smokers is also inversely proportional to the level of education. Blacks are three times more likely than other racial groups to smoke menthol cigarettes (75.5% versus 23.1% for whites and 24.9% for other groups) (22).

SMOKING-RELATED MORTALITY AND MORBIDITY IN MINORITIES

Cigarette smoking is the single most important preventable cause of death and disease in the United States. It is responsible for more than one out of six deaths or approximately 430,000 deaths yearly. Tobacco accounts for 30% of all cancer deaths, 87% of lung cancer deaths, 21% of deaths from heart disease, 18% of deaths from stroke, and 82% of deaths from chronic obstructive pulmonary diseases (5). In addition, cigarette smoking during pregnancy accounts for 20 to 30% of low-birth-weight (LBW) babies, 14% of preterm deliveries, and about 10% of all infant deaths (23).

Blacks experience substantially higher rates of mortality and morbidity than other minority groups and nonminorities. The death rate of blacks from all causes is about 50% higher than that for whites and Native Americans and is more than double the rate for Asians (17). Mortality from stroke is approximately twofold higher. Blacks compared to whites also experience higher death rates from coronary heart disease and cancer; this is more evident when the rates are compared to those of Asians and Native Americans (Tables 2 and 3). In addition, site-specific incidence and mortality statistics reveal excessive rates among blacks of cancers for which cigarette smoking is the major cause or a major cause (24). While some proportion of the excess in incidence and mortality rates of tobacco-related cancers (e.g., lung cancer) among black males could be attributed to higher tobacco use, disparities in smoking patterns between black and white women do not mirror the extent of the mortality disparity between them. Health risk factors, such as high blood pressure, comorbidity, obesity, poor nutrition, and substance abuse, are more common among blacks than among whites (17, 25). Furthermore, blacks have less access to medical care and do not receive enough early, routine, and preventive health care. A higher proportion of blacks have no medical insurance and no usual source of health care, compared to whites. They use hospital clinics and emergency rooms as their usual source of care more often than whites do, and have less access to cancer screening tests (17, 26).

TABLE 2. Average annual age-adjusted (US 1940) mortality rates per 100,000 for selected causes, by sex and race or ethnic group,[a] 1978–1981

Cause of death	Blacks	Asians	Native Americans	Whites
All causes				
Male	1085	450	740	736
Female	612	244	408	405
Heart disease				
Male	319	146	178	274
Female	194	62	93	132
Cerebrovascular disease				
Male	76	34	33	41
Female	60	27	25	35
All cancers				
Male	228	106	81	159
Female	127	67	59	107

[a] National mortality rates for Hispanics are not available.
Data from the US Department of Health and Human Services (17).

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TABLE 3. Age-adjusted (US 1970) incidence and mortality rates per 100,000 for selected smoking-related cancers, 1978–1981

Rate	Blacks	Hispanics	Asians	Native Americans	Whites
Incidence (SEER)					
All sites	372.5	246.2	222–253[a]	164.2	335.0
Lung					
Males	119.0	34.3	38.1–62.6	14.6	81.0
Females	30.5	13.0	14.1–31.2	3.1	28.2
Esophagus	11.5	1.6	2.4–3.6	2.4	3.0
Larynx	6.6	2.6	1.8–2.6	0.9	4.6
Mortality (USA)					
All sites	208.5		69.7–131.5	87.4	163.6
Lung					
Males	91.4		20.0–48.2	28.0	69.3
Females	20.1		6.8–21.2	8.6	20.2
Esophagus	9.0		1.9–3.3	2.1	2.6
Larynx	2.5		0.2–0.4	0.9	1.3

[a] Range of rates (lowest to highest) for Asian subgroups.
SEER = Surveillance, Epidemiology, and End Results.
Data from the National Cancer Institute (24).

Substantially lower rates of death from heart disease, stroke, and cancers are observed among Asians and Native Americans. They also experience a lower risk for tobacco-related cancers than either blacks or whites, although their smoking rates reported in local surveys are similar or higher than the national averages. Premature deaths from unintentional injuries, cirrhosis, homicide, suicide, pneumonia, and complications of diabetes could explain partly the observed low rates in tobacco-related morbidity and mortality among native Americans (17, 27). Low prevalences of alcohol use and obesity, dietary differences, genetic factors, and higher socioeconomic status are possible reasons for the low rates observed among the Asians (17, 28).

Maternal cigarette smoking during pregnancy retards fetal growth and is associated with an increased incidence of LBW infants, prematurity, stillbirth, and infant mortality (20). The relative risk of having a LBW infant among maternal smokers is about 1.8 for all minority groups but slightly higher among whites, at 2.1. Although pregnant black mothers smoke less than half as much as pregnant white mothers (19.8% versus 42.3%), they suffer more adverse effects than whites (Table 4) and experience the highest percent of LBW infants among all groups regardless of their smoking status (29, 30). This suggests that factors other than smoking disparities may play a role in adverse pregnancy outcomes, including teenage pregnancy, access to prenatal health care, nutrition, and host susceptibility (26).

NEEDS AND RECOMMENDATIONS

In order to establish the relationship between smoking and the morbidity/mortality gap between minorities and non-

TABLE 4. Infant mortality rates, low birth weight, and smoking prevalence by racial or ethnic groups

	Blacks	Hispanics	Asians	American Indians	Whites
A. Linked birth–infant death files, 1983–1985					
Infant mortality rate/1000 live births	18.7	7.8–12.9[a]	8.6	14.3	9.1
% Low birth weight	12.7	5.7–8.9[a]	6.5	6.1	5.6
B. Pregnancy nutrition surveillance system, 1978–1988					
% Low birth weight	9.3	5.0	5.5	4.2	6.1
Smokers	14.3	8.1	8.6	7.0	8.7
Nonsmokers	8.1	4.6	5.2	4.0	4.1
Relative risk	1.8	1.8	1.7	1.8	2.1
Prevalence of smoking (%) among pregnant women	19.8	12.8	7.8	6.8	42.3

[a] Ranges (lowest to highest) for different Hispanic subgroups.
Data from the Centers for Disease Control (29, 30).

minorities, and to assess its impact, there are several high research priorities.

1. Reliable data on the prevalence of tobacco use and morbidity and mortality rates among minorities:
   a. Tobacco use: Standardized, systematic surveillance of tobacco use and its health impact among adults and adolescents for all states and at the national level needs to take place. Surveys should be conducted periodically and include a consistent core of data. The same definitions and criteria developed by a working committee should be used in all national, state-based, or local surveys to ensure comparability. Minorities and their subgroups should be adequately represented.
   b. Minorities: Uniformity in recording race and ethnicity in surveys, birth and death certificates, as well as in the census is greatly needed. Morbidity and mortality rates for minorities cannot be accurately computed without uniform definition. Currently, not all states report Hispanic ethnicity on death certificates. Rates also need to be age-adjusted to the same standard or reference population. At present, cancer rates published are adjusted to either the 1940 or the 1970 US population. This has created confusion and lack of comparability.
2. Etiologic research on diseases that are disproportionately prevalent among minorities: Diseases for which minorities have a higher risk or excessive mortality should be identified and studied. The role of tobacco use in the etiology of these diseases and its interaction effect with other risk factors should be examined so that its impact on morbidity and mortality among minorities can be evaluated.
3. Smoking and tobacco control intervention programs: Intervention research is needed to continue to identify factors that lead to the initiation of smoking and the barriers to smoking cessation for each minority group or subgroup. Martin and colleagues (31) and other researchers (32) have found significant ethnic differences in smoking behavior and attitudes. Black smokers tend to have more friends who are smokers, and they rely on cigarettes as a way to cope with life's stresses. Hispanic and Asian smokers have fewer spouses and friends who smoke and they are more concerned about the effect of smoking on their children (31, 32). Therefore, culturally sensitive and acceptable intervention channels should be developed with the involvement of minorities at all levels.

CONCLUSIONS

When testifying before the Interagency Committee on Smoking and Health in 1987, the Surgeon General stated that "we must place cigarette smoking in the total context of minority health, but in doing so, we must give it its proper place in the hierarchy of risk . . . I submit that no public or private effort aimed at improving the health of blacks and other minorities can omit the reduction of cigarette smoking as one of its major goals." As we work toward narrowing the morbidity/mortality gap between minorities and nonminorities, let us keep in mind that cigarette smoking is a high-priority health problem faced by minorities. We need better and consistent definitions of race and ethnicity on data collected (for both the numerator and the denominator). We need reliable national estimates on smoking behavior and its health impact among minorities and their subgroups.

Numerous aggressive programs for the control of tobacco use have been developed in the last 10 years (33). These include two large-scale, multicenter community trials, COMMIT (Community Intervention Trial for Smoking Cessation) and ASSIST (American Stop Smoking Intervention Study), as well as minority targeted programs (Black Smoker Intervention and Hispanic Smoker Intervention). The minority intervention programs are designed to obtain a better understanding of the smoking knowledge, attitudes, and behavior of black and Hispanic smokers and exsmokers, and to develop cost-effective smoking prevention and cessation programs specifically oriented to the needs of black and Hispanic smokers and those at high risk of beginning smoking. Preliminary findings have identified intervention channels that are culturally acceptable and specific to minority groups (33).

Progress in curtailing smoking must continue, and ideally accelerate, to enable us to further reduce smoking-related morbidity and mortality. If not, the impact of smoking on minority health will remain, if not exacerbate. Smokers, compared to nonsmokers, are still disproportionately found among the less educated, the unemployed, blue-collar workers, and lower socioeconomic groups, all of which are characterized by a high proportion of minorities. Greater resources and efforts are needed to target minority populations in order to reduce smoking and improve health.

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