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Panel III: Behavioral Risk Factors Related to Chronic Diseases in Ethnic Minorities

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This article reviews the evidence on 5 risk behaviors: cigarette smoking, dietary intake, being overweight, limited exercise, and alcohol consumption among African Americans, Asian/Pacific Islanders, Latinos, and Native Americans. Although there is little basis for believing that these high-risk behaviors are any less significant as contributors to chronic disease risk in any ethnic group, the limited information available, especially for Asian/Pacific Islanders and Native Americans, indicates that there may be significant within- and between-group differences in the prevalence of these behaviors. Therefore, some of the ethnic group differences in morbidity and mortality for chronic diseases are partly attributable to differences in behavioral risk profiles. Limited basic health behavior information on most ethnic minority groups delay the development of effective health promotion interventions.

Key words: alcohol, smoking, diet, obesity, exercise, chronic diseases, ethnic minorities, risk factors

This article focuses on the prevalent patterns of tobacco smoking, dietary intake, being overweight, exercise, and alcohol consumption by African Americans, Asian/Pacific Islanders, Latinos, and Native Americans. There is substantial evidence linking these five behavioral risk factors to chronic diseases found in most of these populations. Thus, there is little justification for believing that any ethnic group is impervious to the detrimental effects of these risk factors.

There are substantial group differences in the availability of relevant information on health risk behaviors for each group; therefore, there are limits to the conclusions that can be drawn about the health risk factor profiles for the respective groups. In the case of Latinos, Asian/Pacific Islanders, and Native Americans, inadequate differentiation of subgroups (i.e., by birthplace, tribal origin, age cohorts, or geographic region) is an additional complication. Accordingly, there is inadequate appreciation of the important differences in morbidity and mortality across subgroups.

The results of our review disclose a substantial need for careful research that documents health status and health care needs within each major ethnic subgroup. In turn, these data can establish the evidentiary base on which culturally appropriate health promotion and disease prevention programs can be built. To be effective, future programs must be suitable for the range of ethnocultural groups that are subsumed under the heading of *ethnic minorities.*

Health Risk Behaviors in African Americans

There is substantially more information available on the health behaviors of African Americans than on any other ethnic group other than White Americans. These data indicate that African Americans suffer from a disproportionate burden of morbidity and mortality from chronic diseases and that this excess is partly attributable to a more detrimental health behavior profile (Kumanyika & Golden, 1991; U.S. Department of Health and Human Services, 1985).

Diet

An excess intake of dietary fat and an inadequate intake of dietary fiber are typical of a high-risk dietary pattern. National survey data do not indicate a higher-than-average percentage of fat in the diets of African Americans compared with White Americans (Kumanyika, 1993; Schoenborn, 1988), although there is some question about whether more commonly used dietary assessment techniques yield equally reliable estimates of the fat sources in the diets of African Americans as in White Americans (Borrud, McPherson, Nichaman, Pillow, & Newell, 1989). However, consistent with the similar percentage of dietary calories as fat, elevated cholesterol, which reflects dietary fat intake, has about the same prevalence among

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African Americans as among White Americans (Division of Disadvantaged Assistance, 1990). Data from the National Health and Nutrition Examination Survey indicate that African Americans have lower fiber intake (Block & Lanza, 1987; Block & Subar, 1992). Sources of dietary fat and fiber differ between African Americans and White Americans. White Americans consume more high-fiber cereals and fruits than do African Americans and are more likely to report consuming more whole grains as a cancer prevention strategy (Cotugna, Subar, Heimendinger, & Kahle, 1992). Although African Americans consume more green, leafy vegetables and legumes than do White Americans, they also consume more high-fat foods such as fried foods, bacon, and sausage (Block & Lanza, 1987; Borrud et al., 1989). Some of these differences in food consumption are evident regardless of income, which suggests that cultural factors also may be implicated in the racial differences in diets observed (Hargreaves, Baquet, & Gamshadzahi, 1989).

Insufficient data are available to indicate the extent to which African Americans are attempting to modify their diets for health reasons, although such changes are more likely to be observed among more educated and affluent African Americans. Similar to White Americans, African Americans who reported that they had not made dietary changes for health reasons stated enjoyment of food, thought that their existing diets were already healthy, and felt that there were too many recommendations about what to eat or not to eat as a basis for not making changes. More African Americans than White Americans noted that making changes was too costly (Cotugna et al., 1992). Thus, there is substantial evidence that the dietary habits of African Americans, especially among women, are influenced by sociocultural and socioeconomic factors and are an important contributor to the significant burden of excess morbidity experienced by this group.

Obesity

Prevalence data on obesity (Najjar, Rowland, & Rowland, 1988) among women indicate that 60% of 45- to 74-year-old African American women are overweight (i.e., a body mass index >27.3 kg/m^3 for all women aged 25–74 years). Among men, African American and White American men have a similar prevalence of being overweight, except those between the ages of 35 and 54 years, when the prevalence is higher in African American men (approximately 40% in African American men vs. 30% in White men). Recent evidence also indicates a disproportionate prevalence of obesity in African American children and young adults and differences in the risk factors that contribute to these group differences (Must, Gortmaker, & Dietz, 1994). Weight control practices (e.g., the duration and effectiveness of dieting) among African American women may be influenced by cultural attitudes in which being overweight is not considered synonymous with being unattractive (Thomas & James, 1988). For example, a substantial proportion (about 40%) of 25- to 64-year-old overweight African American women (including a severely overweight subgroup) surveyed in Washington, DC, considered their figures attractive or very attractive (Kumanyika, Wilson, & Guilford-Davenport, 1993). These results are not considered an artifact because all of the women who were objectively overweight recognized that they were overweight. Whether African American men share this view and the extent to which being overweight adversely affects the quality of life and life opportunities of African American women are unknown. In summary, the prevalence of obesity, especially in African American women, may be a by-product of ethnic differences in dietary habits and is a significant additional health risk for African Americans. Cultural factors may be implicated in both dietary preferences and in the acceptance of excess weight among African Americans, and these may influence the relative effectiveness of dietary modification and weight reduction efforts in this population (Kumanyika, 1993; Savage & Harlan, 1991).

Exercise

Data on several physical activity variables are available for African American respondents from the 1985 National Health Interview Survey (NHIS; Schoenborn, 1988). Participation in regular exercise or sports was reported with decreasing frequency as age increased for both male and female African Americans and White Americans. Among men, more African American men than White American men reported regular exercise or sports participation at ages 18–29, but the decline across age was greater in African American men than in White American men. Fewer African American than White American men reported regular exercise at ages 45–64, especially at age 65 and older. However, African American women were less likely than White American women to report regular exercise or sports in all age groups. The percentage of NHIS respondents who had walked for exercise within the past 2 weeks was relatively consistent across age, race, and gender (around 40% in men and 50% in women in both groups). Recent data indicate that this sedentary pattern is established early because of excessive TV watching and suggest that the future generations will be at greater risk for obesity and its adverse health consequences (Durant, Baranowski, Johnson, & Thompson, 1994). In summary, what data are available on exercise among African Americans indicate that the prevalence of exercise is lower than desirable in men older than 40 and in women of all ages. This combination of poor dietary habits, limited exercise, and the prevalence of obesity constitutes a major health risk complex for African Americans and deserves special attention.

Smoking

The prevalence of smoking is similar in African American and White American women, but it is higher in African American than in White American men (40% vs. 31%; Division of Disadvantaged Assistance, 1990). However, the number of cigarettes smoked per day is lower among African Americans than White Americans of both sexes. For example, approximately 60% of African American men and women who smoke report smoking less than 15 cigarettes per day, compared with 22% and 33% of White American men and women, respectively. However, many more African American men and women smoke higher tar and menthol cigarettes compared with White American men and women (Kabat, Morabia, & Wynder, 1991). When these variables are taken together, the

overall pattern of cigarette use in African Americans differs substantially from that of White Americans. This different pattern of smoking may predict certain differences between African Americans and White Americans in the occurrence or nature (i.e., histological type) of tobacco-related cancers. African American respondents in the NHIS were slightly less likely than their White American cohorts to recognize that smoking increases the risk of heart disease, but the overall percentage of respondents who recognized this hazard was more than 80% except above age 65 (Schoenborn, 1988). At age 65+, the ethnic differences in recognizing smoking as a heart disease risk factor was substantial among women, with fewer African American women recognizing this risk.

The research evidence on smoking among African Americans continues to grow, but the availability of effective intervention and prevention programs to curtail smoking in this population remains inadequate. The need for such efforts is especially significant in light of the well-documented evidence of targeting of African American communities by cigarette advertisers (e.g., KOOL cigarettes) (Chen, 1993).

Alcohol Consumption

In the 1985 NHIS, the percentage of people who reported consuming more than two alcoholic drinks per day was much lower among women than among men (10–15% among men vs. 5% or less among women; Schoenborn, 1988). The percentage of African American men reporting drinking two or more drinks per day was lower than among White American men at ages 18–44 but similar to White American men at age 45 and older. Among women, drinking was similar among African American and White American women aged 18–44 and was lower among African American women over the age of 45. In the same survey, drinkers were asked if they had consumed more than five drinks in one day more than five times in the past year. Among male drinkers, African American men were less likely to report this type of heavy alcohol consumption in the 18–44-year-old age range but were equally or more likely to report this at age 45+. Among female drinkers, a similar percentage of African American and White American women reported this level of heavy drinking, except at ages 18–29, when African American women were less likely to report such heavy drinking. Drinkers also were asked about their awareness that heavy drinking increases the risk of throat cancer. At all ages and in both sexes, African Americans were more likely than White Americans to report such awareness (i.e., more than 50% of African Americans compared with about 40% of White Americans).

Alcohol consumption is the one risk behavior in which African American women evidence some advantage, although African American men remain at comparable or higher risk than White American men. Additional research on the alcohol consumption habits of young African American men and women is still needed, especially among urban teens, and more attention should be given to developing more culturally appropriate prevention and treatment strategies (Brown, 1993).

Health Risk Behaviors in Asians/Pacific Islanders

Asian/Pacific Islander Americans is a broadly inclusive category for a diverse group of cultures. This group historically has been overlooked in health studies because of its relatively small size in relation to the total population, yet the Asian/Pacific Islander group is now the fastest growing minority group in the United States. They now number 7,273,662, or about 3% of the population.

Policymakers and researchers have held the erroneous assumption that this group overall is healthier than the general public. This misconception has been supported by the belief that low utilization of health services should be equated with health, which has been further compounded by the distortion that occurs when health status is measured by aggregated data on the subgroups within this population. Thus, estimating the relative behavioral risk status of Asian/Pacific Islanders is limited by the relative paucity of data on health risk behaviors for most of these groups. In fact, except for some limited information on smoking and alcohol consumption among more acculturated Japanese, Chinese, and Filipino people, there is virtually little useful information on health risk behaviors in Asian/Pacific Islanders.

In the 1990 U.S. Census (U.S. Bureau of the Census, 1992), the federal government listed 16 Asian/Pacific Islander groups: Asian, Indian, Chinese, Filipino, Guamanian, Japanese, Hawaiian, Korean, Samoan, Vietnamese, and "other." Application of these categories in other national and federally funded surveys has not been specified. Therefore, as indicated by the data that follow, a major priority for future research must be to collect basic information on the health status and health risk behaviors on at least these 11 of the more than 60 groups that are currently recognized as Asian/Pacific Islanders. Researchers and service providers would then be able to document the health problems of these groups and design services to meet their health needs.

Diet

Traditional Asian/Pacific Islanders' diets are generally believed to be "healthier" than the traditional White American diet because the diets are high in complex carbohydrates and grain proteins and low in animal fat and protein. However, this belief must be treated with caution because there are several technical problems that impede the reliable assessment of the nutritional content of the diets of Asian/Pacific Islanders. Although analyses of the nutritional content of the diets of Asian/Pacific Islanders may be possible for the indigenous foods in their home countries, it is not always likely that these foods will be available or affordable in the United States. Moreover, in their home countries, meats are usually lean. In the United States, women appear to be selecting cuts with higher fat content, although the size may remain similar. The style of cooking and eating also make estimating individual portions difficult. For example, many Asian/Pacific Islander groups prepare dishes that are a combination of food sources (e.g., a mixture of vegetables, meat or fish, and noodles). These foods are not cooked as discrete entities, and individuals serve themselves from common serving bowls. Therefore, it is difficult to determine how much each person consumes. Substantial work is needed to overcome this technical obstacle so that more precise estimates of actual dietary intake can be obtained for each of the Asian/Pacific Islander groups. This need is especially acute in the groups that are known for their

girth and for whom mainly self-report data are available (e.g., Native Hawaiians, Samoans; Aluli, 1991; McGarvey, 1991).

Diabetes is often associated with obesity and nutritional patterns, and it is a significant predisposing factor to heart and cardiovascular disease. Japanese Americans have twice the rate of diabetes (type II) as White Americans and four times the rate of Japanese in Japan. The Samoan rate of diabetes is three times that of the White American population. For Japanese Americans, the cause of the increased rate is unclear because obesity does not appear to be a prevalent problem in this population; however, for Samoans, obesity and high-fat "Westernized" diets have been implicated (Crews, 1994). One intervention program with obese Native Hawaiians was successful in reducing both weight and all chronic disease indicators when the participants adopted an indigenous Native Hawaiian diet (Crews, 1994).

Exercise

A recent paper by Han (1990) on exercise in the Korean population noted that 14% of Koreans exercise, with twice as many men reporting regular exercise (23%) as women (11.5%). These levels are only one third and one fifth the proportion of White Americans, who report regular exercise. No information is readily available about exercise levels in the other Asian/Pacific Islander groups. Therefore, there is little empirical basis on which to develop and implement intervention programs designed to increase the exercise habits of the various Asian/Pacific Islander groups.

Smoking

Available evidence indicates that there is an 18% higher rate of lung cancer among Southeast Asian men compared with White American men, which is reflected in the pattern of higher rates of smoking in these groups. For example, the U.S. smoking average for adults is 30%, and the rates for the more acculturated Asian/Pacific Islanders are comparable (i.e., the rates for the Japanese, Chinese, and Filipinos are 37%, 28%, and 20%, respectively) (Chen, 1993). However, the rates for Southeast Asians are substantially higher; the smoking rate for Laotians is 92%, for Kampucheans it is 70.7%, and for Chinese Vietnamese it is 54.5% (Han et al., 1989; Levin, 1985; Rumbaut, 1989; Sasao, 1992). Immediate and effective antismoking programs should be instituted for the Southeast Asian population to reduce the anticipated magnitude of lung diseases, including cancer, in this population.

Alcohol Consumption

Despite growing numbers and the diversity of various Asian/Pacific Islander groups in the United States, specifically in California, empirical data that document alcohol and other drug use and abuse problems in these groups are severely limited (Sasao, 1992). However, there are several studies that have documented the significant use of alcohol by male Asian/Pacific Islanders. These data indicate that although overall alcohol consumption among Asians is lower than among White Americans (Rachal et al., 1975), recent immigrants from Japan have a much higher proportion of heavy drinkers than do White Americans (Higuchi, Parrish, Dufur, & Hartford, 1994; Kitano, Hatanaka, Yeung, & Sue, 1985). By contrast, later-generation Chinese are likely to consume more alcohol than are immigrant Chinese (Sue, Zane, & Ito, 1979). Information on alcohol consumption among the less frequently studied Asian/Pacific Islander groups, especially as they struggle to acculturate to the United States, is sorely needed.

Health Risk Behaviors in Latinos

One of the mysteries about the health of America's Latino population is its relatively favorable profile despite the population's relatively low socioeconomic status (SES). This is particularly the case with Mexican Americans, who are concentrated in the Southwestern United States (Markides & Coreil, 1986). This relatively favorable mortality profile appears to be the result of low death rates from heart disease and cancer. However, these lower death rates appear to be confined to male Latinos.

Explaining this advantage is not simple. In addition to the population's low SES, Southwestern Latinos have high rates of diabetes and obesity and engage less in exercise. The population's traditionally low cigarette smoking rates may contribute to the group's favorable heart disease and cancer mortality rates. However, studies conducted during the 1970s and 1980s suggest that smoking rates, at least for men, have increased in recent decades and are now equal to or even higher than rates for men in the general population (Marcus & Crane, 1985; Markides, Coreil, & Ray, 1987). Therefore, Latinos may be losing their earlier health advantage, especially Latino men. The smoking rates continue to be low among Latinos; therefore, they continue to benefit from this favorable health behavior pattern.

Smoking

Data from the Hispanic Health and Nutrition Examination Survey (HHANES) conducted between 1982 and 1984 confirmed high smoking rates in Mexican American men and comparably high rates in Puerto Rican and Cuban American men. These data also confirmed that Mexican American men smoke fewer cigarettes than other groups, whereas Cuban American men smoked the greatest number of cigarettes, which is consistent with their higher lung cancer mortality rates. Smoking rates among women are comparably low in all three Latino groups, with Mexican American women smoking fewer cigarettes than other Latinas (Rogers, 1991; Chen, 1993).

Predicting smoking among Latinos has not proved easy. Analysis of the HHANES data revealed that the most consistent predictor of smoking in Mexican Americans was the presence of other smokers in the household. The level of acculturation also was found to be associated with greater smoking, particularly among women. Moreover, the presence of other smokers in the household was negatively associated with quitting, as were higher income and education (Coreil, Ray, & Markides, 1991). In an earlier multigenerational study of Mexican Americans, the smoking rates of younger Mexican Americans, especially women, were associated with smoking

by their parents, a finding that underscores the importance of family influences in health behaviors (Markides et al., 1987). This evidence suggests the need for more focused research on the changing smoking habits of Latino men and women in each of the major subgroups and the changing pattern of influences this health risk has on the health profile of each group. Such information also will be essential in designing and implementing smoking cessation programs for each subgroup.

Alcohol Consumption

Another important health behavior relevant to the health status of Latinos is alcohol consumption. It appears that Mexican American and Puerto Rican men exhibit similar patterns of heavy but infrequent consumption of alcohol, whereas Cuban American men exhibit patterns of use more consistent with those of the general population (Rogers, 1991). Data for Mexican American men indicate continued heavy use in late middle age but low rates in old age (Markides et al., 1988; Markides, Ray, Stroup, & Trevino, 1990). Women in all groups exhibit low rates of consumption, with Cuban American women having the lowest rates.

Research has consistently shown that alcohol consumption in Latinas, especially in younger women, is positively associated with their level of acculturation (Black & Markides, 1993; Caetano, 1987; Gilbert & Cervantes, 1986). No such patterns are observed among men. In fact, some research shows that low levels of acculturation may be associated with greater consumption by middle-aged Mexican American men (Cervantes, Gilbert, Salgado de Snyder, & Padilla, 1990–1991; Markides, Krause, & Mendes de Leon, 1988), suggesting a possible acculturative stress effect.

Analysis of the HHANES data yielded other interesting predictors of the drinking practices of Mexican American women, including marital status, poverty, and employment status. Employed women were more likely to be drinkers and frequent drinkers but less likely to be heavy drinkers than nonemployed women. Women living in poverty were less likely to be drinkers and less likely to be frequent drinkers. However, among drinkers, women living in poverty drank more frequently and drank more heavily than did women not living in poverty. Finally, unmarried Mexican American women drank more frequently and more heavily than did married women (Markides et al., 1990). These findings underscore the importance of social integration in the family, economy, and society in general in promoting responsible alcohol consumption in Mexican American women.

A multigenerational study of Mexican Americans cited earlier (Markides et al., 1988) reported evidence of a strong association between the drinking practices of younger Mexican Americans and the practices of their middle-aged parents. As with smoking, the associations were particularly high in the case of women, suggesting that the health behaviors of younger women are influenced more by the health behavior of their parents than is the case among younger men.

The high rates of smoking and alcohol consumption among Latino men, particularly Mexican Americans, are not consistent with the population's relatively low mortality from heart disease and cancer. However, these high rates are relatively recent; thus, one may expect mortality from these diseases to rise in the future among Mexican American men. Because acculturation appears to be associated with greater smoking and alcohol consumption among younger Latinas, one also may predict increases in mortality from heart disease and cancer among these women. Health behavior interventions aimed at influencing the health behavior of Latinos must take into account the complex range of social, economic, and cultural factors that appear to be implicated in these behaviors. Of particular significance is how acculturation, poverty, and family integration appear to exert different effects on the acquisition of smoking and drinking in Latino men and women in the various subgroups.

There is inadequate information on diet and exercise among Latinos, although there is substantial anecdotal and observational evidence of a high prevalence of obesity and limited physical exercise among Latinas, especially among poor women of childbearing age (Haffner, Stern, Mitchell, & Hazuda, 1991; Pawson, Marorell, & Mendoza, 1991). Additional work in this area for both men and women and for each of the major Latino subgroups should be an important research priority.

Health Risk Behaviors in Native Americans

Native Americans[1] constitute slightly less than 1% of the nation's population, but about 300 different Native American groups are recognized. Although well over one half of the American Indian population resides in urban areas, their numbers are comparatively small and adequate health surveys would require local oversampling. Therefore, Native Americans are not typically included in major national health surveys such as NHANES (Beckwick, 1992). As a result, limited information is available about Native Americans, and what is available is mainly about those groups served by the Indian Health Service. Both baseline data and routine monitoring systems are needed to meet federally established health objectives (Nobmann et al., 1992). These gaps and limitations have been recognized, and collaboration has begun among the Indian Health Service, other federal agencies, and tribal authorities.

The predominant health problems among American Indians and Alaska Natives stem from risk behaviors directly related to injuries and chronic diseases (Rhoades, Hammond, Welty, Hanadler, & Amler, 1987; Sugarman, Warren, Oge, & Helgerson, 1992). As might be expected, there is an unmet need for a variety of interventions and health services for Native Americans both on and off reservations (Beckwick, 1992). Common problems for adults include lack of prenatal care, lack of access to substance abuse or diabetes treatment, and excess deaths from cigarette smoking and alcohol abuse (Porter, 1987). Common problems for adolescents include lack of access to substance abuse treatment or other mental health care and excess deaths from suicide (Blum, Harmon, Harris, Bergeisent, & Resnick, 1992).

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[1] The terms *Native Americans* and *American Indians* are used interchangeably here because there continues to be considerable discussion about which of these two terms is the most appropriate designation for this population.

Diet and Exercise

Diet and physical activity are important to Native Americans throughout their life cycle. However, more information is available about the prevalence of diabetes mellitus (type II diabetes) among Native Americans than about obesity, hypertension, anemia, or nutritional deficiencies (Nobmann et al., 1992). For example, one third of outpatient visits to the Indian Health Service in 1989 were related to diabetes (Walden, 1992). Both weight reduction and increased exercise are involved in the treatment of this chronic disease. Unfortunately, however, many Native Americans are found to be noncompliant with their treatment regimens.

Major studies have focused on the complex interconnections among diet, obesity, diabetes, and pregnancy in Southwestern Indians, especially the Pima Indians. Both genetic and environmental factors have been implicated (Howard, Bogardus, Ravussin, Foley, & Lillioja, 1991; Knowler et al., 1991). Longitudinal studies have shown that Pima adults currently weigh more than their ancestors did at the turn of the century and that young adults weigh more than their elders. A higher body mass index predicts risk for type II diabetes, which is familial and related to lower metabolism and affects about one half of the Pima people. However, gestational diabetes mellitus is widespread among Native American women and can lead to higher birth weight babies as well as type II diabetes in mothers (Attico, Smith, Waxman, & Ball, 1992).

In a regional study of behavioral risk factors, about 25–30% of Native American men and 25–35% of Native American women were found to be overweight (body mass index > 27.8 kg/m^2 in men and 27.3 kg/m^2 in women) in contrast to about 16–23% of White American men and 16–20% of White American women (Sugarman et al., 1992). A sedentary lifestyle (less than three 20-min sessions of leisure time physical activity per week) was reported by about 44–60% of Native American men and 40–65% of Native American women and 50–60% of White men and women (Sugarman et al., 1992). In 1989, one study reported that poor health status was linked to being overweight and to poor body image among 95% of American Indian youth (Blum et al., 1992). Thus, although data about diet, obesity, and exercise habits among Native Americans are scant, evidence indicates that Native Americans run a disproportionate burden of morbidity and mortality due to obesity and a sedentary lifestyle, and this unfavorable health profile is probably compounded by inadequate and unhealthy dietary habits. As has been noted for other risk factors, there is a substantial need for more well-designed studies to document the behavioral risk factor profile for Native Americans and to design more effective, culturally appropriate intervention programs to target these problems.

Smoking

Although cigarette smoking among Native Americans has received comparatively little attention, the known rates of smoking are higher than for White Americans (Chen, 1993). In California in 1989, 40% of all deaths of Native Americans of both sexes were attributable to cigarette smoking, compared with 17.8% and 12.4% of White American men and women, respectively (Beckwick, 1992). However, there is considerable variation in smoking rates among Native Americans according to geographic region. In four regions from 1985 to 1988, current cigarette smoking among Native Americans ranged from 18% to 48% of men and from 14% to 58% of women, in contrast to about 25% of both White American men and women. The highest rates were found in the Plains region, and a separate study of four Indian communities in Montana between 1987 and 1989 showed current smoking rates of 50.7% for men and 54.5% for women (Sugarman et al., 1992). In 1989, poor school achievement was linked to cigarette use among 31% of American Indian youth (Blum et al., 1992). One form of tobacco use, smokeless tobacco, which is associated with increased risk for oral cavity cancer, is especially prevalent among Native Americans. Among Plains Indian men, rates of 15–20% have been reported, compared with about 5% of White American men (Sugarman et al., 1992).

Therefore, although there is a growing body of evidence on smoking and tobacco use among Native Americans, this evidence is limited and largely restricted to a few groups. Clearly, a more comprehensive research strategy to document the prevalence of this and other health risk behaviors among Native Americans nationwide is needed to design and implement a coherent and effective health care program for this population.

Alcohol Consumption

To our knowledge, no broad-scale drinking practices or drinking problems surveys have included samples across tribes or communities. It would be necessary to obtain permission from each tribe in the sample to conduct a national survey, and this is a frequently cited obstacle to conducting such a study (Oetting & Beauvais, 1990). However, high rates of both heavy drinking and abstinence occur among American Indians (Weibel-Orlando, 1989). May (1982, 1989) found that large disparities in consumption rates were reported for four different reservation groups with reputations for "hard drinking." Compared with the 67% rate for the general United States population, 52–84% of all adults on these reservations reported drinking at least once a year. Abstinence was highest among Navajo (70%), followed by Standing Rock Sioux (42%), and was lowest in Ute (20%) and Ojibwa (16%).

The highest alcohol use occurs among men aged 16–29 years and usually diminishes after age 35 or 40, so that 30–50% of middle-aged Native American male abstainers are former moderate or heavy drinkers (May, 1989). However, the number of women who drink may be increasing (Kunitz, 1983; Weibel-Orlando, 1989). Rural and urban populations also differ. A comparison of 105 American Indians of various tribes who lived in Los Angeles with 86 American Indians who lived in rural California (Weibel-Orlando, Long, & Weisner, 1982) indicated that urban American Indians were about three times more likely to drink two or more times daily than their rural counterparts (16.2% vs. 5.8%).

The seriousness of alcohol abuse among Native Americans is reflected in rates for alcoholism-related deaths (i.e., deaths attributable to alcohol dependence, alcoholic psychoses, liver cirrhosis, and chronic alcoholic liver disease). In 1987, the

Table 1
Summary of Evidence on High-Risk Behaviors by Ethnic Group

Ethnic group	Diet	Obesity	Exercise	Smoking	Alcohol consumption
African Americans	+++ (F)	+++ (F)	+ (F of all ages, M older than 40)	++ (M older than 40)	++ (M, F)
Asians/Pacific Islanders	+	+++ (PIs)	+	++ (Immigrant M)	+ (SE M)
Latinos	+	++ (F)	+ (F)	++ (High M, low F)	+ (M)
Native Americans	+	++ (F)	?	++ (M)	++ (M, F)

Note. + = Some evidence of risk; ++ = strong evidence of risk; +++ = substantial evidence of disproportionate risk; ? = evidence is unclear or missing; ?+ = limited or mixed evidence; (M) = males are at the greatest risk; (F) = females are at the greatest risk; PIs = Pacific Islanders; SE = Southeast Asians.

death rate for Native Americans was 25.9 per 100,000, compared with 6.0 per 100,000 for all Americans (Indian Health Service, 1990). Deaths from auto crashes are threefold higher among Native Americans, and an unknown but substantial proportion are alcohol related (Wallace & Smith, 1992). In one community, almost 20% of men and 10% of women acknowledged drinking and driving (Sugarman et al., 1992). Fetal alcohol syndrome (FAS) is disproportionately observed in Native American infants. May, Hymbaugh, Aase, and Samet (1983) found the lowest FAS rates (1.3 per 1,000) among Navajo women. A much higher rate occurred among Plains Indian women (10.3 per 1,000), and 25% of all Plains women with one child with FAS also gave birth to others with FAS. In a study of the school performance of 13,454 American Indian youths in 1989, poor school achievement was linked to weekly to daily alcohol abuse among 20% of the youth (Blum et al., 1992).

Thus, there is substantial evidence of the high prevalence and detrimental effects of alcohol use and abuse among Native Americans. However, it cannot be overemphasized that the availability of basic information is not uniform for the various Native American groups. Thus, considerable research on alcohol use is needed for the less visible and understudied Native American groups.

Summary and Implications

In this article we have reviewed the evidence on five behavior risk factors among African Americans, Asian/Pacific Islanders, Latinos, and Native Americans (see Table 1 for a descriptive summary of current knowledge on health behavior). Although there is little basis for believing that these high-risk behaviors are any less significant as contributors to chronic disease risk in any ethnic group, the limited information available, especially for Asian/Pacific Islanders and Native Americans, indicates that there may be significant within- and between-group differences in the prevalence of these behaviors. Therefore, some of the ethnic group differences in morbidity and mortality for chronic diseases such as cardiovascular disease, diabetes, and cancer may be attributable, at least partly, to differences in behavioral risk profiles (Kumanyika, 1990; Chen, 1993). However, the relative absence of basic health behavior information for most groups of people of color limit both the conclusions that can be drawn and the development of necessary culturally appropriate and effective health promotion and disease prevention intervention programs. Such programs need to target the behaviors of greatest concern for each ethnic group and to accommodate culturally based attitudes and habits that influence the ability to intervene effectively on each problem behavior.

In addition, studies on sociodemographic, age, and gender subgroups within each ethnic group are needed and would help to identify the extent to which these risk factor profiles transcend regional, income, and age differences within each population. The separation of cultural influences from primarily socioeconomic or age cohort influences also is needed and would help to clarify the determinants of these behaviors and inform approaches for modifying them.

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