MINORITY WOMEN AND TOBACCO: IMPLICATIONS FOR SMOKING CESSATION INTERVENTIONS[1,2]

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ABSTRACT

Quitting smoking is the single most important preventive health behavior a woman can perform to significantly reduce her chances of morbidity and premature mortality. Minority women are an extremely important population to target for smoking cessation intervention. Rates and risk factors for cardiovascular diseases and cancer are markedly higher among women of certain minority groups. In addition, smoking prevalence rates in women of some ethnic groups are elevated relative to the majority population of women, and specific groups have displayed slower rates of decline in smoking. Furthermore, minority women tend to have less access and appear to be less responsive to smoking cessation programs aimed at the majority culture. Thus, consideration of the practical and cultural needs of ethnic minority women is imperative when designing smoking intervention programs. This article describes the smoking behaviors of African–American, American Indian and Native Alaskan, Asian and Pacific Islander, and Hispanic women smokers, in order to gain a greater understanding of the treatment needs of these women. Information on prevalence rates and smoking patterns, barriers to quitting, and findings from intervention studies within each population are reviewed as well as recommendations for smoking cessation treatment.

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INTRODUCTION

Although smoking is the most preventable cause of morbidity and mortality, it is associated with 434,000 premature deaths per year (1). Smoking is particularly problematic for women. Not only do women face the same increased risks for a variety of cancers and coronary and pulmonary disorders as men who smoke (2), women smokers are uniquely susceptible to cervical cancer, early menopause, and osteoporosis (3,4). In addition, smoking exacerbates the increased risk of coronary heart disease that women experience with the onset of menopause (5). Smoking also adversely impacts reproductive functioning through reducing fertility and increasing the rates of spontaneous abortions, premature births, and low birth weight infants (4).

Minority women are increasingly more important to target for smoking cessation intervention for several reasons. First, minority women have markedly higher rates and risk factors for cardiovascular diseases and cancer. Cancers related to smoking, such as cervical cancer, are more likely to be advanced, and survival rates from smoking-related cancers are lower in African–American and American Indian women as compared to White women (6,7). Research has also demonstrated elevated levels of both cotinine and carcinogen-protein adducts in children of Hispanic and African–American mothers who smoke (8), and data suggest that African–Americans may have increased susceptibility to the carcinogenic effects of smoking. Second, minority women face several unique barriers to quitting smoking, including certain cultural health beliefs, language difficulties, and inadequate access to health care. Women of minority status are also overrepresented in lower socioeconomic levels which, in turn, is associated with greater smoking prevalence and less access to treatment.

Smoking prevalence rates in women of certain ethnic groups are elevated relative to the majority population of women, and specific groups have displayed slower rates of decline in smoking. The Year 2000 Objectives Supplement of the National Health Interview Survey (NHIS-2000) uses a random sample of non-institutionalized adults aged ≥18 years to obtain self-report information about smoking. NHIS-2000 data from 1994 (N = 11,435 women) indicated that women of American Indian or Alaskan Native descent have the highest smoking rates (33.1%) followed by Whites (24.7%), African–Americans (21.8%), Hispanics (15.2%), and Asians/Pacific Islanders (7.5%) (9) (see Figure 1). However, the overall prevalence rates for women are misleading because they mask differences within each ethnic subgroup. In addition, rates of cigarette smoking among certain groups of ethnic women have not followed the decreasing trend observed in general (10). Within each minority or ethnic subgroup, there is substantial variation in smoking rates resulting from multiple factors including socioeconomic diversity, acculturation, and geographic location.

Smoking cessation interventions that are effective for the majority culture appear to be inadequate for ethnic minorities and women. Rates of participation for ethnic minorities in smoking cessation studies and clinic-based programs are low, especially among those of lower education (11,12). The application of nomothetic smoking cessation principles without regard for the cultural beliefs and values of particular subgroups may contribute to these low participation rates. In addition, while physician advice to quit has been shown to be an efficacious and cost-effective smoking cessation intervention for the majority culture (13), minorities are less likely to visit a doctor, and when they do, they are less likely to receive advice to quit (14). Furthermore, these patients typically utilize health care to treat existing medical

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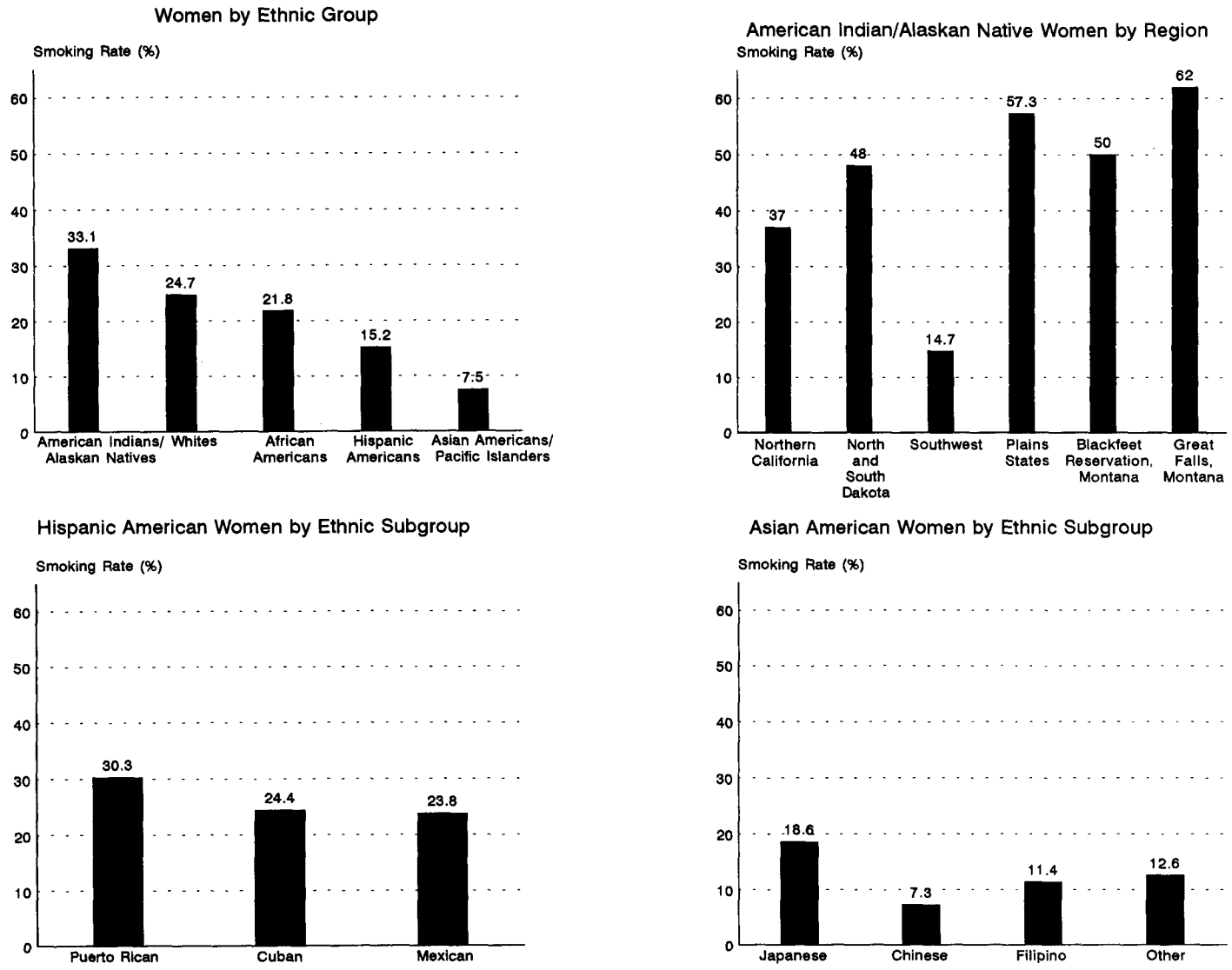

FIGURE 1: Smoking rates among women by ethnic group and ethnic subgroups or geographic region.

conditions and are less likely to seek out and receive preventive services such as smoking cessation programs.

In summary, minority women have increased health risks associated with smoking, face unique barriers to quitting, and have less access and appear to be less responsive to smoking cessation programs aimed at the majority culture. Thus, it is imperative that researchers, clinicians, and policymakers include in their agenda consideration of the practical and cultural needs of ethnic minority subgroups when designing smoking intervention programs. While it is recognized that other groups are also important for targeting smoking cessation interventions, this article limits its focus to minority women. The goal of this article is to review the literature for certain minority populations of women smokers including African–Americans, American Indian and Native Alaskans, Asian and Pacific Islanders, and Hispanic women in order to gain a greater understanding of the treatment needs of these women. Information on prevalence rates and smoking patterns, barriers to quitting, and findings from intervention studies within each population are reviewed, as well as recommendations for smoking cessation treatment. While recognizing the importance of primary prevention among youth, this article limits its scope to secondary prevention among adult minority women smokers. The literature for this review was based on a computer search of English-language publications in psychological and medical data bases and articles located through citations.

AFRICAN–AMERICANS

African–Americans are currently the largest minority in this country, representing 12% of the U.S. population (15). African–American women show higher rates of most smoking-related diseases as compared to White women, and the age-adjusted death rates for coronary heart disease, stroke, and cancer are all higher among African–American women (16). Differences between African–American and White women in disease rates undoubtedly reflect a number of factors, including differences in primary and secondary preventive health behaviors and access to health care. Nevertheless, they highlight the importance of smoking cessation in African–American women.

Smoking Prevalence

While smoking rates among African–American women were virtually unchanged from 1965 to 1985 (showing only a 1%

decrease from 33% to 32%), smoking rates over the last ten years have declined. According to National Health Interview Survey (NHIS) findings, between 1985 and 1994, smoking rates among African–American women dropped 10% from 32% to 21.8% (9,17,18). Similar results were generated by the Behavioral Risk Factors Surveillance System (BRFSS), which utilizes random digit dialed telephone surveying. Combined data from 1991 and 1992 from the BRFSS yielded a sample of 10,465 African–American women with a smoking prevalence of 19.4 (19). It should be noted that data from the BRFSS has two major limitations: smoking behavior is based on self-report, and households without telephones are excluded.

Despite recent trends, smoking remains a major problem for many African–American women, especially those of lower socioeconomic status (SES) (20–22). In addition, prevalence rates of smoking are often misleading, because important variations within African–American women based upon income, education, and urban versus rural residence can be missed. For example, some studies suggest that urban African–American women of lower socioeconomic status show elevated rates of smoking that exceed those of White women (21,23). NHIS data from 1985 (N = 19,027 females, 16.2% African–American) indicated that urban African–American women were more likely to smoke than urban or rural White women or rural African–American women, with the latter group having the lowest prevalence of smoking (specific rates were not given) (23).

Smoking Patterns

Numerous studies report a distinctive African–American pattern of smoking which includes fewer cigarettes smoked per day and a preference for high-nicotine, mentholated cigarettes (15,24–26). For example, BRFSS data from 1988 indicated that African–American women smoked on average 13.3 cigarettes per day as compared to 19.3 cigarettes per day for White women (27). Despite their lower daily smoking rates, some evidence suggests that African–Americans may be more prone to nicotine dependence than Whites (15,24).

In addition to smoking fewer cigarettes per day, African–American women tend to initiate smoking at later ages than White women (20,26–28). Data from the 1991 Youth Risk Behavior Survey indicated that only 1.9% of female African–American high school students reported frequent use of cigarettes, as compared to 15.8% of White high school girls (29). It should be noted, however, that certain subpopulations of African–American women, such as urban women of lower socioeconomic status, have been found to initiate smoking significantly earlier than other African–American women and to smoke significantly more cigarettes per day (21). These data highlight the fact that both initiation and patterns of smoking may vary significantly by socioeconomic status and geographical region.

Quit Rates

Several studies suggest that African–Americans may be less likely to quit and more likely to relapse than Whites (e.g. 15,26). Although it is unclear whether gender has a differential influence on quit rates (22), the interaction between race and gender may produce smaller quit ratios among African–American women as compared to White women (20,25,30). Quit ratios are defined as the percentage of those who have smoked at least 100 cigarettes during their lifetimes who no longer smoke. One study estimated a quit ratio of 29.7% for African–American women versus 43.3% for White women (30). Thus, the declining prevalence rates of smoking in African–American women appear to be more a function of decreased initiation rates than increased quit rates.

Pregnancy

Rates of smoking during pregnancy vary across African–American subpopulations and overall rates are not available. A number of studies report lower rates of smoking during pregnancy in African–American women as compared to White women (e.g. 28,31). One study utilizing Missouri live birth certificates from 1978 until 1990 (N = 990,042) reported that the rate of smoking among African–American pregnant women in 1978 was 37% versus 30.3% for White women. In 1990, however, the rate for African–American women dropped to 21.5% and was lower than that of White pregnant women (25.6%). In addition, the same study noted that the decrease in smoking among African–American women during this twelve-year period was largely attributable to decreased rates of smoking in African–American teenage girls, which was 7.2% as compared to 34.6% among pregnant White teenagers. BRFSS data collected in 1985 and 1986 using a sample of women randomly selected from 25 states and the District of Columbia indicated that smoking during pregnancy occurred in 16% of the African–American women as compared to 22% of the White women (31). However, there are data suggesting that urban African–American women are more likely to smoke cigarettes during pregnancy than White women (32). Findings from one study suggest that pregnant African–American women may receive less advice to quit smoking than White women (33), although the reasons for this are unclear.

Smoking during pregnancy has been shown to be associated with an increase in low birth weight, especially among African–Americans. Smoking may increase the risk of low birth weight in African–American infants to a greater degree than in Whites (32). One study suggested that the elimination of smoking during pregnancy would decrease the incidence of low birth weight by up to 35% in African–Americans as compared to 18% in Whites (34). These data highlight the importance of developing effective smoking cessation programs targeted to African–American pregnant women, especially those residing in urban areas.

Cultural Health Beliefs and Other Barriers to Quitting

Studies of urban, low-income African–American women indicate that they face a substantial number of barriers to quitting, including health beliefs, lack of information about how to quit, high prevalence rates, weak norms, lack of support for quitting, high stress, other urgent life priorities, lack of financial resources, social isolation, and the common perception that smoking is a preferable coping strategy compared to other available options, such as drinking and drug use (21,35,36).

Education level has been shown to be inversely associated with belief in the harmful effects of smoking in general, and this appears to hold true with African–American women (22,36,37). For example, research suggests that although African–American women living in public housing believe that smoking is bad for their health in general, they tend to doubt that a specific link exists between smoking and such illnesses as cancer (e.g. 36). Even in the presence of smoking-related problems (such as emphysema), these women tend to blame such environmental factors as their hazardous living situations rather than attributing their illness to smoking. African–American women are also more likely to acknowledge the dangers of passive smoking and that smoking is harmful for their children than to acknowledge the personal risks of smoking (21,36,38). In general, African–American women who smoke tend

to be either unaware of or to minimize, depersonalize, and discount the specific health risks of smoking (21,36,38).

As with other populations, lack of information about the process of cessation is a significant barrier to quitting for many African–American women, especially those of lower socioeconomic status (21,35,36,38). In a study of low-income, urban, African–American women, many participants reported having been advised to quit smoking by their health care providers, however, they had been given minimal information on how to quit (35). In addition, data suggest that African–American women lack information about the process of quitting and are prone to believe that willpower and determination are the primary factors influencing cessation (21,36). Thus, African–American women may have greater difficulty quitting than other populations due to lack of information.

Depression and smoking are more common among individuals of lower socioeconomic status, and African–American women are overrepresented in this regard. Although additional studies are needed, it appears that African–American women, particularly those of lower socioeconomic status, may be at risk for depression (39). Both depression and negative affect have been shown to be barriers to quitting and may pose a particular risk for African–American women, especially in those who use smoking to manage their mood. Several studies suggest that African–American women are likely to smoke for mood management benefits (21,36,38). For example, among a sample of urban, low-income African–American women, coping with stress was their foremost concern, and smoking was viewed as a means of coping with the overwhelming pressure in their lives (36). Similarly, in a study utilizing focus groups to analyze African–American women's attitudes about smoking, all current and ex-smokers reported using cigarettes as a means to cope with stress, escape worries, and relax (38). Women who were current smokers and had never been able to quit for longer than three months scored the highest on the Beck Depression Inventory and had the lowest education level.

Intervention

A number of programs targeting African–American women smokers are currently being developed and tested. For example, the Chicago schools' Head Start program has been utilized to reach low-income, urban African–American women smokers. Although most smokers attended only a few classes of the eight-session smoking cessation program, schools with the intervention had an 11% cessation rate as compared to 3% in the control schools (40).

Available data suggest that African–American women may have some specific needs in regard to smoking cessation, and programs designed to facilitate quitting should address these needs. Although few studies address the issue of recruiting African–American women into cessation programs, active participation of and recruitment via already established institutions (e.g. churches), community residents, and leaders may extend reach to underserved populations (21,35,36,38,41). Focus group data suggest that the content of programs may need to address a broad spectrum of issues in order to be of interest to African–American women who identify stress, not smoking, as their biggest health problem (21,35,36,38). Since African–American women may be more prone to nicotine dependence, programs targeting these women may also need to provide additional information and help around nicotine dependence and withdrawal. Finally, prevention programs that typically target adolescents may not adequately address African–American women's smoking given their later average age of initiation and difficulty quitting. Regardless of the mode of intervention, however, it is important to remember that African–American women are a heterogeneous group, and their needs will vary substantially according to such factors as socioeconomic status, urban versus rural residence, and age.

AMERICAN INDIANS AND NATIVE ALASKANS (NATIVE AMERICANS)

According to the 1990 census, the American Indian/Native Alaskan (AI/NA) population consists of over 1.9 million people, just under 2% of the total U.S. population (42). Because of its high prevalence rate among many American Indian tribes and Native Alaskans, tobacco is probably the greatest threat to the health of Native American women. Heart disease is the leading killer of American Indian women and cancer is the leading cause of death for women native to Alaska (43). Eskimo women have the highest rate of lung cancer ever recorded (44).

Smoking Prevalence

Few, if any, ethnic groups exemplify the great variation in smoking rates which can occur within a defined ethnic/racial population as well as Native Americans. The highest rates of smoking in women are found among Alaska Natives, Eskimos, and Northern Plains women (43), while Southwestern American Indians have some of the lowest smoking rates (45). Several factors are associated with differential smoking rates among subgroups of Native American women, including tribal affiliation, geographic residence, living in urban versus rural areas or on a reservation, and socioeconomic status (see Table 1).

Native American women's smoking prevalence rates vary dramatically by tribe and region (see Figure 1). Tribes who use tobacco in ceremonies tend to have higher smoking rates (50). Thus, ceremonial use may serve as a gateway to recreational use and nicotine dependence. In addition, Native American women living in urban areas have higher smoking rates than those living on the reservation (46). However, unlike other minorities, these higher smoking rates do not appear to be a function of SES, since American Indians living on the reservation tend to be more disadvantaged than off-reservation Indians (43). It may be a function of acculturation, however, in that the ceremonial use of tobacco may graduate to recreational use as Native American women become more acculturated into mainstream society. In addition, while smoking prevalence appears to decrease as education increases, education does not appear to provide the same buffering effect as in other cultures given the very high prevalence of smoking in college-educated American Indians (48). Contrary to findings in other ethnic groups and the majority culture, income does not appear to be as strongly associated with smoking prevalence rates in Native American women (48).

Despite documented high smoking rates, Native American women's smoking may actually be underestimated. Most of the prevalence surveys utilized telephone data which may not have resulted in valid smoking prevalence data. Prevalence data based on telephone surveys is especially problematic with Native American populations, since 74.5% of reservation populations do not have access to a telephone (43). Using samples from Indian Health Services (IHS) is also problematic in that over 50% of American Indians do not utilize these services (43). Tribal enrollment lists are likely to produce more representative samples and have been utilized by a few studies (e.g. 47,49). Employing Indian interviewers is another possible strategy for increasing the validity of the data gathered (e.g. 49).

TABLE 1
Prevalence Surveys of Cigarette Smoking for AI/NA Women

Population	Year(s) of Data Collection	Survey Method	Prevalence
823 Northern California IHS Women Patients (46)	1991	Volunteers who completed a questionnaire while waiting for a clinic appointment (91% participation rate).	37%
881 Sioux Tribal Women in North and South Dakota (ages 45–74) (47)	1989–1992	Volunteers who completed a health assessment as part of a cancer screening study (55% participation rate).	48%
3,102 U.S. American Indians and Native Alaskans[1] (48)	1987–1991	BRFSS standardized, multistage, cluster sample design telephone survey.	26.6%
127 American Indian Women residing in the Southwest (45)	1985–1988	BRFSS standardized, multistage, cluster sample design telephone survey.	14.7%
193 American Indian Women residing in the Plains States (45)	1985–1988	BRFSS standardized, multistage, cluster sample design telephone survey.	57.3%
116 Women from the Blackfeet Reservation in Montana (ages 15–49) (49)	1987	Systematic sampling with a random start stratified by sex using face to face interviews by trained same-sex American Indian interviewers.	50%
116 American Indian Women residing in Great Falls, Montana (ages 15–49) (49)	1987	Systematic sampling with a random start stratified by sex using face to face interviews by trained same-sex American Indian interviewers.	62%

[1]Number of women respondents not reported.

It should also be noted that smoking rates may underestimate actual tobacco use, since Native Americans have a high rate of smokeless tobacco use. Indian and Native women use smokeless tobacco at higher rates than majority and other minority culture women, especially young girls (51,52). A review of nine studies reported alarming rates of regular smokeless tobacco use by Native American kindergarten girls (23%–45%) (53). In another study, 68.9% of sixth-grade Native American girls from IHS sites reported experimenting with smokeless tobacco compared to 8.7% of girls from non-IHS sites (54). Smokeless tobacco use seems to be most common among those 15–24 years of age, with prevalence rates sharply decreasing among women over age 24 (49). Thus, while smokeless tobacco use varies by tribe and region, it is consistently higher in Indian females than in the general female population. Given high smoking rates among Native American women, it is quite possible that American Indian girls who use smokeless tobacco switch to smoking cigarettes during adulthood.

In conclusion, more prevalence studies employing appropriate methodologies are needed. While it is clear that Native American women living in the Southwest have lower smoking rates than Native American women living in the North, more specific smoking prevalence rates for women of different geographic regions and tribes would be of value. For example, little data are available on Native American women living in the Northeast. Finally, the high rates of smokeless tobacco use in Native American female youth is cause for concern, not only because of the health risks involved with smokeless tobacco use, but also because it may lead to regular cigarette use.

Smoking Patterns

Relative to other Americans, Indian and Native people in this country initiate smoking earlier and concurrently with use of other harmful substances, such as alcohol (51). Several variables have been theorized to play a role in the initiation of tobacco use in Native Americans, including factors specific to American Indians (e.g. the spiritual value attributed to tobacco) as well as factors which apply to other ethnic groups (e.g. stress associated with acculturation). In addition, many of the explanations for initiation of tobacco use which have been applied to the majority culture have also been theorized to apply to American Indians, such as peer pressure, adult modeling, stress reduction, rites of passage, and specifically to women, the use of tobacco to control weight (51).

Smoking patterns among Native Americans share similarities to other ethnic minority groups. Like African–Americans, Native Americans smoke fewer cigarettes per day but show a moderate to high level of dependence. For example, BRFSS data from 1987–1991 (49) indicated that the average number of cigarettes smoked per day was lower for American Indian and Alaska Native women (15.5) than for White women (17.4). Information suggestive of high levels of dependence include smoking a median of 30 minutes after awakening (55) and smoking unfiltered king-sized cigarettes and inhaling the smoke (56).

Data collected in 1985 by the National Center for Health Statistics indicated that 15% of Native American women report smoking greater than 20 cigarettes per day (43). Smoking rates also vary for specific tribes or geographic location. For example, Sioux tribal women aged 45–74 reported an average of 11.5 cigarettes smoked per day (47), while 45% of Indian women residing in Minneapolis reported smoking 20 or more cigarettes per day (56). Unlike White women, the number of cigarettes smoked per day by Native American women does not decrease with increases in education or income (48). Thus, the finding that Native American women smoke fewer cigarettes per day may be confounded by SES. Given their lower economic standing, American Indians may be more efficient with their cigarettes resulting in fewer cigarettes smoked per day. In conclusion, Native American women in comparison to the majority culture appear to initiate earlier and to smoke fewer cigarettes per day but demonstrate a moderate level of dependence. However, the great variation in the number of cigarettes smoked per day suggests the need to examine ethnic and economic subgroups of Native American women separately when investigating smoking patterns.

Quit Rates

The limited data available on quit rates for Native American women suggest that they are significantly less likely to quit than White women. Montana American Indian women 15 to 49 years old residing in Great Falls, Montana are reported to have a cigarette quit ratio of 19, and American Indian women residing on the Blackfeet Reservation have a quit ratio of 22 compared to 41 for Montana women in general (49).

Pregnancy

Data concerning smoking behavior among pregnant Native American women are limited. However, it does appear that Native American women are more likely to smoke during pregnancy than White women. Data from Washington state birth certificates from 1984 through 1988 indicated that 39.8% of all Native American women ($N = 7,089$) smoked during pregnancy, compared to 25.9% of White women ($N = 28,637$) (57). In contrast to White women, smoking prevalence remained elevated for pregnant women in older age groups and in women who were married. Although birth certificate data is limited in terms of generalizability, it may produce more accurate results than telephone surveys, since so many Native American households do not have telephones. Using both published and unpublished data, another study estimated smoking prevalence during pregnancy to be approximately 50% among Native Americans in the Aberdeen (North and South Dakota, Nebraska, Iowa) and Alaska IHS areas and 13% in the Navajo IHS area (Arizona, New Mexico, Utah) (58).

Maternal cigarette smoking during pregnancy has been found to be an important risk factor for Sudden Infant Death Syndrome (SIDS). Epidemiologic studies have found a particularly high incidence of SIDS in American Indians and Alaska Natives (58). However, there is a remarkable difference in the incidence of SIDS between Indians residing in different regions. The incidence of SIDS follows the incidence of smoking, with Northern Indians showing a much higher incidence of SIDS than Southwestern Indians. Furthermore, Indian infants in the North are more than twice as likely to die from SIDS than White infants living in the same region (58). Differences in smoking prevalence among different tribes may explain these differences in the prevalence of SIDS. These data strongly point to the need to develop effective smoking cessation programs targeted to Native American women of reproductive age.

Cultural Health Beliefs and Other Barriers to Quitting

American Indian women face numerous barriers when trying to quit smoking. Similar to other minority groups, poverty, low education, and cultural beliefs are all likely to impact smoking patterns. Indian families are larger than those of any other ethnic group (averaging 4.6 members) and are twice as likely as the total U.S. population to be subsisting at or below the poverty level. Cultural influences may also interfere with appropriate smoking interventions. American Indian women are socialized to concentrate on others' concerns. Women as the central caregiver of the Indian family and kin networks (59) may not have the time or support necessary for smoking cessation interventions.

Psychiatric comorbidities such as depression and substance abuse are also barriers to quitting among Native American women. Native American women have high rates of depression and suicide rates twice that of other women in the United States (60,61). In addition, a large proportion of Native American women seeking mental health services report being victims of sexual assault and coping with these problems with drugs and alcohol (60).

Greater acceptance of smoking in many American Indian societies may be a function of both the ceremonial significance of tobacco and profit from the sale of tobacco on reservations. Although the use of tobacco historically was reserved for ritual occasions, the ceremonial and financial significance of tobacco may serve as a gateway to smoking initiation or result in more favorable attitudes toward the recreational use of tobacco. In fact, tribes which do not use tobacco for ceremonial purposes, such as those in the Southwest, have lower smoking rates (62). In addition, while Indians understand the harmful effects of smoking, they hold lenient attitudes about smoking and begin smoking at an early age (46). The cultural significance of tobacco may also result in less desire to quit and less recognition in American Indian social contexts of its addictive qualities (50). In conclusion, Native American women are among the least researched groups in our society (63). Nonetheless, there is enough data to suggest that American Indian women face many barriers to quitting including putting other family members' health needs before her own, stress related to high poverty levels, psychiatric comorbidity (especially depression and substance abuse), and cultural attitudes which are lenient toward tobacco use.

Intervention

Tribes are sovereign nations having not only their own governmental procedures and philosophies but also differences among themselves in how tobacco has been used historically and whether they derive income from the sale of tobacco. Thus, developing procedures and interventions that are appropriate for different Indian tribes is both challenging and important (64). Currently, there are several National Cancer Institute (NCI) supported projects to reduce the risk of cancer in American Indian women. These projects focus on medical screenings and avoidable mortality, such as cervical cancer (43). There is also a physician-assisted smoking cessation program for American Indians utilizing IHS clinics (46). However, as stated previously, over 50% of American Indians do not utilize IHS services (43). While smoking cessation and prevention programs are being implemented in Indian communities and many tribal nations are developing smoking policies that reduce environmental tobacco smoke exposure in public buildings, no smoking cessation programs have been developed specifically for American Indian or Native American women.

The literature on tobacco use in American Indians in general suggests several recommendations for tobacco researchers and clinicians who wish to intervene with Native American women. The American Indian Cancer Control Project surveyed current and former male and female smokers on their methods of quitting. The most popular method was "cold turkey" which was reported by 78% of former smokers and 60% of current smokers. Fifty percent of current smokers tried decreasing their intake of cigarettes and 32% of former smokers did so. The least popular method of quitting was following instructions in a book or pamphlet (46). Therefore, self-help methods may not be a particularly effective strategy with this population. However, given that self-help materials are developed for the majority culture, specifically targeting Native Americans in the material may increase acceptance. Self-help materials targeted to a specific population have been found to improve quit rates over generic materials (65).

Other important considerations are the poverty and educational levels of Native Americans. As with all other minority groups within the broad American population, poverty and education greatly affect not only smoking rates but also perceived

importance of tobacco interventions. An intervention which generates employment by training Indians to do the assessments will likely have a greater chance of being accepted by the Indian community than one that does not improve the general welfare of the Indian community. Intervention materials must not only take into account low education levels but must also be culturally sensitive. For example, materials should recognize the distinction between sacred and secular tobacco and recognize that tribes differ significantly in regard to current and historical tobacco usage. Researchers also need to take into account the overall health of the Native American community. Native American communities may not endorse a smoking cessation intervention when other issues appear to be more pressing (e.g. unemployment, alcohol abuse). Multiple risk factor interventions may be received more favorably. Finally, community models based on a belief that people have a right and a duty to participate in their health care planning are recommended when developing interventions for American Indians (66).

ASIAN AND PACIFIC ISLANDERS

The 1990 Census designations of Asian Americans includes those who self-classify themselves to be Asian Indian, Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Laotian, Thai or Vietnamese, or "other Asian." The term Pacific Islander refers to populations of Hawaii, Guam, Mariana Islands, Chamarro, American Samoans, and the peoples of the Pacific Islands. Data on the health status of Asian and Pacific Islanders (AAPIs) are quite inadequate, and unfortunately the myth that this group is a model minority has been applied erroneously to their health status. On the contrary, it is expected that the mortality rates of this group will perhaps exceed the mortality rates of other U.S. racial groups in lung cancer and possibly cardiovascular disease in the next 20 years (67).

Prevalence and Patterns of Smoking

The smoking prevalence rates for AAPI women are estimated to be 10% based on NHIS data from 1979, 1980, 1983, and 1985 (68); this is the lowest prevalence rate for all racial/ethnic groups. However, it is expected that acculturation effects may increase the smoking among AAPI women. For example, within the AAPI category, smoking rates for younger women (18–44 years) are higher than for older women (45–65 years) (69). Data collected on 13,031 Asian Americans from 1978 until 1985 (members of the Kaiser Permanente system) indicated that Japanese women have the highest prevalence of smoking (18.6%) when compared to Chinese (7.3%), Filipino (11.4), and other Asian women (12.6%) (70) (see Figure 1). While this is one of the largest data sets on Asian Americans, its representiveness is problematic in that Asian Americans are the least likely among all racial or ethnic groups to see a physician (61).

As part of the BRFSS, a face-to-face survey was conducted from June 1989 through February 1990 on a representative sample of 296 Chinese residing in Oakland, California. Only 1.2% of the women interviewed reported they were smokers (71). Similarly, in a statewide sample of Vietnamese residing in California, only 2 of the 454 women interviewed reported that they smoked (71). While these results suggest very low smoking rates, prevalence surveys may be especially problematic with Asian women. For example, a recent study of 620 adult Southeast Asian women immigrants residing in Central Ohio compared self-reported smoking rates (5.6%) to smoking status by saliva cotinine assay (14.8%) (72). These findings suggest that smoking prevalence rates may be underestimated in Southeast Asian women, perhaps because of cultural taboos against women smoking (73).

Data concerning smoking patterns have been collected from the Kaiser Permanente system. The data indicated alcohol use to be strongly positively related to smoking among Asian Americans, while college education showed a negative relation to smoking (70). Interestingly, health risks in the American-born subgroups were compared to those born in China, Japan, the Phillipines, and other Asian countries. Men born in the U.S. were less likely to smoke than their peers born in Asia. In contrast, Asian American women born in the U.S. (except for Japanese women) compared to peers born in Asia were more likely to smoke (odds ratio for Chinese Americans 2.4; Filipino Americans 1.8) and reported heavier smoking (odds ratio for Chinese Americans 4.9; Filipino Americans 3.1), after controlling for age, marital status, education, alcohol intake, and Body Mass Index (BMI). Rebellion against parents and against role stereotypes may account for the higher prevalence of smoking in U.S. born AAPI women (particularly younger women) than their peers born in Asia. Young Asian Americans appear to resemble other ethnic groups in that smoking is almost equally prevalent in both sexes. Hence, although smoking rates are much higher in AAPI men than women, it is expected that the gap between AAPI men and women will narrow given AAPI womens' increased adoption of smoking.

Quit Rates

Due to the small sample sizes of AAPIs participating in epidemiological surveys and smoking cessation programs, there is a void of information on quit rates and associated factors. In one of the few studies examining ethnic differences in smoking behavior and attitudes among patients at physician practices, Asian smokers (men and women) reported more pressure from friends to quit and more concern regarding the effects of smoking on non-smokers and children (74). Additionally, they were more likely to cite keeping their children from being exposed to smoking as a reason for quitting.

Barriers to Quitting

Currently, little is known about the culture-specific barriers that AAPI women encounter in quitting smoking. Speculations about the gender differences in prevalence of smoking in AAPIs include the social stigma that is attached to AAPI women smoking. Such cultural taboos may lead to underreporting of smoking and may serve to inhibit women from seeking public smoking cessation services. There are data to suggest that the AAPIs least fluent in English are the most likely to be current smokers (75). The linguistic barrier may also account for the lack of knowledge of the health hazards of smoking, particularly among Southeast Asian men (76).

Psychiatric comorbidity may also serve as a barrier to quitting for some groups of Asian women smokers. There has been documentation of exposure to war trauma and posttraumatic stress disorder particularly among the Cambodians and Vietnamese (e.g. 77). The relationship between such disorders and prevalence of smoking is worthy of exploration.

Despite data supporting the effectiveness of physician-delivered counseling for smoking cessation, AAPI smokers encounter two important barriers. First, they are the least likely among all racial or ethnic groups to see a physician (42% did not visit a physician over the past year versus 33.4% for Whites) (69). Second, they have the lowest rates of all racial or ethnic groups to

have had a doctor ever advise them to quit smoking (33% for all AAPIs versus 50% for all other races) (67).

Intervention

When channels of health education and disease prevention are considered, it is clear that disease prevention efforts in AAPI women are sorely lacking. To date, there have been two Federally-funded public interventions targeted at Southeast Asian men, one of which specifically focused on smoking cessation (76).

The importance of scientific validity, ethnic approval of the intervention approach, and linguistically appropriate intervention messages must be underscored in the development of effective smoking cessation efforts in these "hardly-reached" groups. For example, a survey of 1,300 Filipinos in California revealed an association between smoking status and rental of videotapes. Filipino smokers were found to rent two more videotapes per month than non-smokers and reported smoking while watching the videotapes. A similar relationship between smoking status and videotape rental was identified in a survey of Chinese smokers in California. This led to the insertion of anti-smoking messages on Filipino and Cantonese videotapes to promote smoking cessation (75). Other creative channels of access should continue to be developed. The themes of quit smoking programs should also be derived from information of the relevant motivations to quit. Southeast Asian men have indicated saving money as a major motivation not to smoke, suggesting that a disease-focused anti-smoking message may not be sufficiently effective for this group (76).

Mistrust of the majority culture and institutions which have prevented other minority groups from participating in research programs may also interfere with recruitment efforts in this group. Public health programs have long demonstrated that delivering effective community-based programs is facilitated when studies involve community members in the design, recruitment, and implementation of intervention programs (the "indigenous" model for health education) (75). In conclusion, data on smoking in AAPI women are sparse, perhaps the result of an erroneous belief that the health status of this minority group is not at risk. AAPI women who appear to be at the most risk for smoking are those who are younger and U.S. born. However, like other ethnicities, there are important differences in smoking across ethnic subgroups.

HISPANICS

At 24 million, Hispanics are the second largest minority population in the United States and the fastest growing (78). Despite its size, few interventions for smoking cessation have been developed to target this population. Smoking behavior among Hispanic women, in particular, has not been adequately addressed. One reason may be that some studies have shown lower smoking rates among Hispanic versus White women (79), perhaps creating a misperception that smoking is less problematic among Hispanic women. However, the incidence of Chronic Obstructive Pulmonary Disease (COPD) among Hispanic women is similar to that of White men (80); breast cancer is increasing in Hispanic women at a rate three times greater than for non-Hispanic White women (81); and Puerto Rican women have greater smoking prevalence than Whites, a difference that is more pronounced during childbearing years (82). Therefore, it is important to identify factors which promote the initiation and maintenance of smoking among Hispanic women.

Smoking Prevalence

Hispanics have previously been thought to have lower smoking rates than most other ethnic groups. For example, NHIS-2000 1991 data (N = 20,860) found a lower smoking prevalence among Hispanics (20.4%) than all other racial/ethnic groups except for Asians (83). This low smoking rate may be due to large gender differences, since only 12.7% of Hispanic women were smokers versus 28.3% of Hispanic men. However, several caveats exist in interpretation of these data: (a) smoking status was self-reported and underreporting of smoking in Hispanics has been documented (84); (b) overall smoking rates may mask variations in smoking prevalence by country of origin; and (c) lack of bilingual materials and interviewers may have produced unreliable data. In contrast, the Hispanic Health and Nutrition Examination Survey (HHANES) 1982–1984 (N = 5,411) addressed these methodological issues and found that when Hispanics were stratified by country of origin, smoking rates among certain Hispanic subgroups were similar to the rates found among non-Hispanic Whites in the NHIS-2000 (85). Specifically, the smoking rates among the subgroups of women in the HHANES study were Puerto Rican (PR) 30.3%, Cuban–American (CA) 24.4%, and Mexican–American (MA) 23.8%.

Sociodemographic factors such as age, education, and income are associated with greater smoking prevalence among Hispanic women. Specifically, across the three subgroups of Hispanic women, greater prevalence of smoking is found among those with less than a high school education, those with low income, and those between the ages of 18 and 28 (10,85,86). Furthermore, the factors which are related to increased smoking prevalence in the general population, such as low education and income (87), are especially prevalent among Hispanics. Only slightly more than one-half (50.9%) of all Hispanics compared with 78.4% of Whites have completed high school (88), and as many as 25% of Hispanics are below poverty level versus 10% of Whites (89).

Degree of acculturation is also associated with differential smoking prevalence by country of origin. In one study, acculturation and smoking were positively related, such that smoking rates were lower in less acculturated Mexican–American women (19%) than in more acculturated women (28%) (85). However, acculturation does not seem to influence smoking rates among other Hispanic subgroups (85,90) and has the reverse relationship among men, such that less acculturation is related to greater smoking prevalence (78).

The prevalence of smoking among Hispanic women appears to be on the rise. This may be a function of either greater initiation rates of smoking, lower rates of cessation, or a combination of both. Birth cohort analyses have shown that, while recent cohorts of Hispanic men have reduced their smoking, Hispanic women have made little progress toward quitting. As reported in the NHIS survey, 21.4% of White women were former smokers, compared to 12.5% of Hispanic females. In contrast, 21.6% of Hispanic men were former smokers, compared to 32.5% of White men (cited in 91). Furthermore, smoking among Hispanic women appears to be on the rise, especially among women of childbearing age and those of PR descent (10). In terms of smoking among pregnant low-income women, data from the Centers for Disease Control (CDC) Pregnancy Nutrition Surveillance System showed that far greater White women were smokers (42.3%) than Hispanic women (12.8%) (92). However, these data were not analyzed according to specific subgroups of Hispanic women.

In terms of smoking initiation, data from the United States Youth Risk Behavior Survey 1991 indicated that 5.7% of female

Hispanic high school students reported frequent cigarette use, which was higher than African–American girls (1.9%) but lower than White girls (15.8%) (29). Escobedo and colleagues (93) computed initiation rates based on the reported age at smoking onset for 18- to 35-year-old respondents in the 1987 NHIS ($N = 14,764$) and the HHANES studies and found that the initiation rate of PR women less than 18 years of age (38%) was greater than African-American women (24%) and comparable to Caucasian women (38%). The rates of initiation among MA and CA women were 21% and 28%, respectively. Further, Hispanic women have made less progress than White women in reducing their smoking initiation rates since the 1960s (94). These data suggest that Hispanics may concomitantly experience a rise in smoking-related morbidity and mortality in the coming years. In sum, differences in smoking prevalence according to country of origin and sociodemographic factors may be important to understanding why Hispanic women smoke, estimating future trends in smoking prevalence, and developing interventions that target the needs of each ethnic subgroup.

Smoking Patterns

In general, Hispanic women initiate smoking later (94) and are more likely to be light smokers than White women (95–97). Hispanic women smoke an average of 8 cigarettes per day versus an average of 19.1 cigarettes per day for White women (95). However, as with overall prevalence rates, daily cigarette consumption rates for Hispanic women may be misleading because they mask important differences within ethnic subgroups. For example, one-third of PR and one-half of CA women smoke 20 or more cigarettes per day (85). Mexican–American women, however, smoke less per day than White women, but their prevalence of smoking is not declining as fast as White women or other Hispanic subgroups of women (93–95). One explanation for this difference may be that MA women do not perceive themselves as vulnerable to the health effects of smoking given their lower daily smoking rates. Unfortunately, there is very little information concerning quit rates for Hispanic women, including rates of quitting during pregnancy.

Cultural Health Beliefs and Other Barriers to Quitting

Hispanic women smokers report beliefs about smoking that may foster both increased initiation and maintenance of smoking. First, Hispanic women's beliefs about the health effects of smoking may inhibit their quitting. Specifically, they tend to perceive a lack of control over the likelihood that they will contract cancer; they question whether smoking cessation affects longevity; and they demonstrate a lack of preventive health care knowledge (98). While knowledge deficits regarding the health effects of smoking contribute to higher rates of smoking in general, this is especially so among less-educated Hispanic women (99).

Second, acculturation may be another barrier to quitting, since Hispanic women with a high degree of acculturation have greater daily smoking rates and a lower age of smoking initiation and may be more dependent upon cigarettes (100,101). In contrast, less acculturated women report more plans to quit and are more knowledgeable about where to obtain cessation information than more acculturated women (90). The gender-specific effect of acculturation may be due to the perception that smoking symbolizes greater status equality with men (100). Also, as Hispanic women increase their acculturation and acceptance of the majority culture values, it is possible that concern about weight gain after quitting smoking may pose a significant barrier to quitting or remaining quit, as has been found for White women (102).

A third barrier to quitting in Hispanic women may be the presence of negative affect and/or depressive symptoms. Among Hispanics, depressive symptomatology is higher among current smokers than former or ex-smokers (103), an effect that may be more pronounced in Hispanic women (104). However, prospective studies that examine the effect of depression or depressive symptoms on smoking cessation in Hispanics are needed. In summary, health beliefs, low SES, acculturation, and psychiatric comorbidity may all serve as important barriers to address when intervening with Hispanic women smokers.

Interventions

Interventions which directly target Hispanic women are scarce. Many of the interventions that have been designed to target Hispanic smokers are predicated on the assumption that Hispanics are generally lighter smokers and therefore will respond to minimal interventions. One community intervention utilized a self-help smoking cessation guide *Guia Para Dejar de Fumar,* which included a TV and radio campaign, posters and flyers, community involvement, a quit-smoking contest, individual telephone consultations, and mood management (105,106). While smoking prevalence decreased over four years from 13.9% to 9.9% in less acculturated women and from 23.1% to 19.5% in more acculturated women, cessation rates were not related to exposure to the intervention. However, exposure was related to variables that may mediate cessation. For example, those who were exposed to the intervention reported a greater number of quit attempts as well as greater knowledge about where to obtain smoking cessation information.

Community-based interventions have taken into account the attitudes and beliefs of Hispanics, as well as socioeconomic barriers to quitting smoking. The "A Su Salud" project was an anti-smoking media campaign conducted in one Texas border community with mostly MAs (98). The intervention utilized bilingual interventionists for anti-smoking community activities, community-wide interpersonal communication, a mass media program, and local smokers who were trying to quit smoking as role models. Self-reported quit rates were 16.9% for the experimental community versus 7.4% for the control community after four years (107).

To our knowledge, only one clinic-based study has targeted Hispanic smokers (108). Ninety-three subjects of minimal bilingual competence, most of whom were high school graduates, were randomized to either a multicomponent behavioral program (MMB) or minimal contact control. The latter consisted of the provision of a self-help manual in conjunction with follow-up phone calls. Despite the large dropout rate, 21% of MMB versus 6% of controls were quit at posttreatment (biochemically verified). Group differences, however, were not maintained at either six or twelve months follow-up.

Clearly, there is a need for randomized controlled trials which vary in treatment intensity, that is, from minimal self-help interventions at one end of the spectrum to intensive clinic-based interventions at the other end of the spectrum. Factors that may warrant a higher level of treatment intensity among Hispanics include psychiatric comorbidity, lower levels of education, higher levels of acculturation, and substance abuse. However, Hispanics with these characteristics may not be receptive to intensive clinic-based programs and may be either difficult to recruit or have high attrition rates (e.g. 11). Perhaps interventions at worksites would

be useful for future study, especially in light of Hispanics' emphasis on social ties and the importance of social support in quitting (109). Furthermore, it is equivocal as to which level of intensity is appropriate for particular subgroups of Hispanics. Most of the intervention studies have included predominately MAs and Central Americans; few have evaluated PRs and CAs. While large-scale community-based studies may be best suited for MAs given their lighter smoking, such minimal contact interventions may not be efficacious among PRs, who have a higher prevalence of smoking and tend to be heavier smokers than Whites.

Matching Hispanics to health education treatment according to a two-factor model has been suggested given findings that health beliefs and attitudes vary according to levels of acculturation and education (110). For example, those with high education and acculturation would benefit from the same approaches used with Whites, while those of low acculturation and education would require more emphasis on cultural values, simple messages, bilingual interventionists, a focus on the present, and a focus on the family.

In light of their high rates of psychiatric comorbidity, increased smoking prevalence during childbearing years, and increasing trends in smoking prevalence, the development of culturally appropriate programs which take Hispanic women's stressors and needs into account is imperative. Since Hispanics, especially lower-educated females, do not respond well to risk factor interventions that are not designed for them (111), interventionists need to take into account the heterogeneity within each ethnic group to enhance the likelihood that subgroups will be effectively targeted and relevant cultural issues will be addressed.

One method of integrating the beliefs of Hispanics with smoking cessation is through "Cuentos," or culturally meaningful stories or folktales, which can incorporate smoking cessation as a theme and thus tailor treatment according to the beliefs of Hispanics in general (112) as well as among Hispanic subgroups. However, additional research needs to be conducted on the variations of beliefs within particular Hispanic subgroups and the differential effect of these beliefs on smoking cessation.

DISCUSSION

The development of smoking cessation programs that would be effective with minority women is seriously needed. Several barriers to quitting smoking appear common across different ethnic groups including poverty, lack of adequate information on health risks and where to obtain help for quitting, language difficulties, cultural health beliefs, and psychiatric comorbidity. The role of sociodemographic factors in the prevalence of smoking should alert interventionists to not only consider ethnicity but also country of origin, degree of acculturation, educational level, and income when designing smoking cessation interventions for minority women. Although overall prevalence rates are important, trends in prevalence may have greater importance for developing interventions to meet the needs of the smokers of the future.

It should be noted that several groups of ethnic women have lower smoking rates than White women. For example, AAPI women currently have lower smoking rates than the other groups. This suggests that characteristics of certain minority groups may actually promote not smoking. Future research should identify the cultural factors associated with not smoking so that interventions can strive to preserve or build on these factors.

A key issue in the development of programs is tailoring interventions to be sensitive to culturally specific beliefs and values, given the diversity within the major ethnic groups. It is important to identify the religious and cultural beliefs, moral values, and use of folk medicine which could prevent participation in smoking cessation programs. The use of focus groups may be a useful research strategy for identifying these variables and thereby contribute to appropriate smoking cessation programs for minority women smokers. In addition, recruitment rates may be enhanced by the use of bilingual materials and recruiters, as well as use of materials that target the educational level and heterogeneity of all ethnic subgroups. Recruitment at cultural events, gathering places, and worksites may also present opportunities for enhancing participation rates in smoking programs.

Until participation rates of ethnic minority women in clinical trials increase, our understanding of appropriate smoking cessation treatment is limited. Studies on minority groups in general suggest that they are less informed about clinical trials, which could be partially explained by linguistic barriers (113). It is also evident that the exclusionary criteria necessary for methodological rigor in clinical trials may decrease participation rates of underserved women. Minority women are likely to have poorer health, which is likely to result in their exclusion from many clinical trials. In addition, there should be additional consideration given to criteria of smoking rates. Criteria such as smoking at least ten cigarettes a day may exclude in greater proportion particular ethnic groups who are likely to have different smoking patterns.

In conclusion, some of the key issues or questions that need to be addressed include, first and foremost, the current paucity of interventions targeted to ethnic minority women. It is clear that effective outreach to minority women is warranted and requires appropriate messages and programs tailored to their needs. Second, what role does psychiatric comorbidity play in these groups of women smokers? Rates of depression, stress-related disorders, and substance abuse are higher than the majority culture for certain groups of minority women. For example, women, minorities, and those of low SES are at greater risk for the development of depression (39,114); therefore, depression may be a significant barrier to smoking cessation among these populations. It is important to examine the prevalence of psychiatric comorbidity among minority women smokers in order to develop more effective interventions. Third, what is the role of acculturation in smoking behavior among minority women? There are some data which suggest that smoking rates in certain groups of ethnic women increase with increased acculturation. On the other hand, it is possible that poorer English proficiency may represent a barrier to understanding the dangers of smoking, resulting in higher rates of smoking. Fourth, what theoretical models for smoking cessation are effective for different minority groups? Are theoretical frameworks such as Social–Cognitive Theory (115) and the Stages of Change Model (116), which have been applied to smokers in general, applicable and effective among different minority groups? Finally, the pros and cons of designing interventions for specific groups of minority women versus removing the barriers minorities may face when seeking smoking cessation treatment for the general public need to be delineated. The lessons learned from projects already underway suggest that innovative and creative approaches are needed. For example, preliminary research suggests that addressing practical and logistic barriers, such as childcare and transportation, is beneficial in increasing participation rates of minority women (117). In addition, the churches in African–American communities have been found to be significant partners in the promotion of cardiovascular health (41); similar avenues should be explored to promote anti-smoking messages in other minority groups as well.

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