

Cancer in Asian American Women

INTRODUCTION

Asian Americans represent more than 25 ethnicities with origins in East Asia, Southeast Asia, the Indian subcontinent, Polynesia, Melanesia, and Micronesia. According to the 2000 Census, there are 11.9 million people in the United States who identify themselves as either Asian alone or in combination with some other race, and they constitute about 4.2 percent of the U.S. population (U.S. Census Bureau, 2001). This population count is up 72.4 percent, from 3.0 percent of the U.S. population in 1990.

Although the combined Asian American population is the fastest-growing U.S. ethnic group (Asian and Pacific Islander Center for Census Information and Services, 1992, 1993), relatively limited cancer data have been collected on Asian Americans, and many of the data have aggregated various Asian American and Pacific Islander groups into a single "API" category. This chapter focuses mainly on four of the largest subgroups with the greatest representation of information in health research: Chinese Americans, Filipino Americans, Japanese Americans, and Vietnamese Americans (see Table 1). Information about other Southeast Asians and smaller Asian American groups, for whom published data increased substantially in the previous 5 years, is included where possible.

This chapter provides an overview of cancer epidemiology and cancer screening among Asian Americans. Through an understanding of the existing data and the identifiable problems experienced by this population, further research and health planning can be carried out effectively. Also, because most published research data are limited to four of the largest Asian American groups in the United States, the gaps in data for other Asian subgroups highlight additional research opportunities.

Chinese

The first influx of Asian immigrants were the Chinese from southern China's Guangdong Province. They arrived in the 1840s and 1850s after the discovery of gold in California and worked primarily on farms and railroads (Daniels, 1988; King and Locke, 1980). In 1882, the Chinese Exclusion Act blocked Chinese immigration, and it was not until the 1965 Immigration Act that Chinese were again allowed to immigrate to the United States. Most of these later immigrants were students from Hong Kong and Taiwan. A third wave of Chinese immigration occurred in 1975 after the resumption of diplomatic ties with the People's Republic of China in 1972.

Filipinos

Filipino migration also occurred in three waves. The first group, called Manongs, was made up of mainly farm workers and arrived before 1930. The second group was made up of scholars who migrated during the 1930s and 1940s. The third group, which came during the 1970s, was made up of professionals (Cardova, 1993). Filipino immigration continues at a high rate to the present, especially to Hawaii and California.

Japanese

Japanese people immigrated to the United States from 1890 to 1924, and then again during the postwar period from 1945 to the present. Between 1924 and 1945, the 1924 Immigration Act stopped all Japanese immigration (Kitano, 1969). After World War II, most new Japanese immigrants arrived in Hawaii from rural southern Japan and worked on farms (Haenszel and Kurihara, 1968).

Vietnamese

Since the reunification of North and South Vietnam in 1975, nearly 600,000 refugees have arrived in the United States from Indochina; the 1990 Census gave a total Vietnamese population of 614,547. Nearly half of these refugees (46 percent) settled in California (U.S. Census Bureau, 1991).

Other Asian Americans

As shown in Table 1, other large Asian American groups include Koreans, other Southeast Asians (Laotian, Cambodian, Thai, and Hmong), and Asian Indian and Pakistani groups.

Asian American Characteristics

Asian Americans, who immigrated at different times and from different places, are culturally and linguistically diverse. Some are fourth- and fifth-generation Asian Americans, while 75 percent are recent immigrants and refugees. Some immigrants have assimilated to U.S. culture, while others have maintained native traditions. Family orientation and traditional attitudes about health and illness may differ from the contemporary Western perspective. This diversity of lifestyles, languages, and beliefs offers unique challenges and opportunities for health research, which must be addressed by any health planning agenda for Asian Americans.

BACKGROUND

Demographics

Compared with other Americans, when aggregated, Asian Americans tend to be somewhat younger than Whites. In 1999, 29 percent of APIs were under 18 compared with 24 percent of Whites. Only 7 percent were aged 65 and older, compared to 14 percent of Whites (Humes and McKinnon, 2000). However, these numbers obscure the population age distribution of subgroups—Japanese tend to be among the oldest ethnic groups; Chinese, Filipinos, and Koreans are somewhat younger; and Vietnamese and other Southeast Asian groups

are much younger (Miller et al., 1996). The API category also includes Native Hawaiians and other Pacific Islanders (NH/PI), who tend to be younger, because they were not reported as a separate racial/ethnic group until the 2000 Census. NH/PI persons comprise about 10 percent of APIs where these groups are aggregated. (Separate chapters in this monograph discuss Native Hawaiian and American Samoan women.)

The male-to-female ratio is almost identical for Asian Americans and Whites, with 51 percent of the population being female. Thus, there are an estimated 4.8 million Asian American adult females based on the total racial category, age, and gender distributions in the 2000 Census data.

The majority of Asian Americans live in a small number of states, predominantly in the West (Humes and McKinnon, 2000). Census 2000 data indicate that almost 70 percent of all Asian Americans live in seven states, with California and New York continuing to be states with the largest number of Asian American residents (Table 2A). This clustering of Asian Americans in a few major states facilitates sampling for Asian health studies.

The most recent subgroup data are from the 1990 Census. Approximately 60 percent of Chinese in the United States live in California and New York, whereas about 66 percent of Japanese and 64 percent of Filipinos live in California and Hawaii (see Table 2B). Nearly half (46 percent) of all Vietnamese in the United States reside in California, although Texas has the second greatest concentration of Vietnamese (11 percent) (data on Vietnamese not shown in Table 2B.) Hawaii has by far the highest concentration of Asian Americans, with 41.6 percent of its residents indicating Asian race only; 10.9 percent of the resident population of California report being Asian American only (U.S. Census Bureau, 2001). Most Asian Americans (45 percent) live in central cities, twice the proportion of Whites (Humes and McKinnon, 2000).

The 1999 median income of API households was \$51,205, the highest median income of any racial group (U.S. Census Bureau, 2001). However, while one third of API households reported incomes of \$75,000 or more in 1998, one fifth had incomes of less than \$25,000. Despite high household income, per capita income tends to be lower, because API households tend to be larger, with an average of 3.2 persons per household for Asian Americans compared with 2.5 for Whites (U.S. Census Bureau, 2001). Among Asian Americans aged 16 and older, 75 percent of males and 60 percent of females work—rates similar to those for Whites.

The poverty rate for APIs in 1999 was 10.7 percent, down from 12.5 percent in 1998 and the lowest ever measured for this racial group. The most recent subgroup data on poverty are from the 1990 Census. A higher proportion of Vietnamese and Chinese lived in poverty than did Japanese or Filipinos (see Table 3). This is a good example of how statistics for “Asians” often mask important differences among subgroups. Poverty is associated with an excess of health problems and may be related to other factors, such as immigration status.

According to the 1990 Census, 63.3 percent of Chinese, 64.7 percent of Filipinos, 28.4 percent of Japanese, and 90.4 percent of Vietnamese were foreign-born. In addition, 80.7 percent of Vietnamese, 72.5 percent of Chinese, 59.9 percent of Filipinos, and 40.6 percent of Japanese speak a language other than English at home. Language often presents a barrier to effective health care and to the collection of complete and reliable health data.

Asian Americans overall are a highly educated group (see Table 3), with 44 percent aged 25 and over having at least a bachelor's degree in 2000, compared to 28 percent of Whites. Eighty-six percent of Asian Americans are high school graduates. One million Asian Americans, or 1 in 7 of those over age 25, held advanced degrees in 2000; and 18 percent of all doctorates in engineering awarded in 1998 went to Asian Americans. Further, in 2000, 54 percent of the Nation's Asian adults 18 and over had accessed the Internet in the previous 30 days (U.S. Census Bureau, 2001).

A survey of 1,500 Chinese adults in the San Francisco Bay area (Lee et al., 1992) found that 20 percent had no medical insurance. Among those younger than 65, 13 percent had no insurance, a figure slightly lower than the 15.7 percent of all Americans younger than 65 who did not have medical insurance, as reported by the National Health Interview Survey (NHIS) (National Center for Health Statistics [NCHS], 1991). Between 15 and 40 percent of Vietnamese in the San Francisco Bay area were reported to have no health insurance, and 55 percent were covered by MediCal (the program in California that implements the federal government's Medicaid program) or Medicare (Jenkins et al., 1990; McPhee et al., 1992). Liu and Yu (1985) cited a report from the Los Angeles area documenting that 50 percent of the sampled Asian Americans of all ages had no health insurance. Only 8 percent of the Chinese in that study used MediCal. One can speculate that Asian Americans, particularly recent immigrants, are not aware of the medical benefits available to them, with the possible exception of the Vietnamese who reside in the San Francisco Bay area. In contrast, 90 percent or more of Asian Americans residing in Hawaii have health insurance, due in part to the state's law that requires employers to provide health insurance for employees who work at least half time. The California data are now more than 10 years old, and no more current data are available to the public. Also, there are no data on the extent of health insurance for Asian Americans or Asian subgroups throughout the United States.

Health Status

The leading causes of death among Asian American women are (in descending order) cancer, heart disease, cerebrovascular disease, injuries and accidents, diabetes mellitus, and chronic liver disease and cirrhosis (NCHS, 2000) (see Table 4). Overall, Asian American women are healthier than women of other U.S. ethnic groups. Their age-adjusted mortality rates are 274 per 100,000, compared with 481 per 100,000 for the United States overall across all age groups. Also, the life expectancy of Chinese (86.1 years), Japanese (84.5 years), and Filipino women (81.5 years) is greater than for women of all races (79.5 years) (National Center for Health

Statistics, 2000). However, the aggregate data do not allow for specifying the place of birth, which may be an important factor in considering mortality. Yu and colleagues (1985) reported that, for the 10 leading causes of death, the mortality rate of foreign-born Asian Americans was at least twice the rate of U.S.-born Asian Americans across all age groups.

Some of the most pressing health concerns of Asian American women are access to health care, along with tuberculosis, hepatitis B, breast and cervical cancer, suicide, and osteoporosis (National Women's Health Information Center, 2000). The issue of access to health care relates to cultural, linguistic, and other social barriers. Tuberculosis is a serious infectious disease that is 13 times more common among Asian populations, especially those from Southeast Asia and the Philippines. Suicide is the eighth leading cause of death for Asian American women, principally in the 15- to 24-year-old age group and for those over age 65 (NCHS, 2000).

Another major health concern for the Asian American community is hepatitis B infection (Muraskin, 1993). Seventeen percent of Asian Americans, compared with 1 percent of Whites, are chronic hepatitis B carriers (have tested positive for hepatitis B surface antigen [HBsAg] activity) (Asian Americans Health Forum, Inc., 1990; Beuhler et al., 1989; Centers for Disease Control [CDC], 1991a). Vertical transmission of the hepatitis B virus (HBV) occurs from mother to infants either in utero or shortly after birth (Shapiro and Margolis, 1992). In one study, about 9 percent of Asian American women were reported to be chronic hepatitis B carriers (Gaston, 1986). Levels of horizontal transmission among children and among sexually active HBV carriers also are significant (Hadler and Margolis, 1992; Franks et al., 1989), thus perpetuating an infection source. Hepatitis B may be the primary factor in the development of hepatocellular carcinoma (liver cancer) in as many as 80 percent of affected patients. Two studies reported that those infected with hepatitis B were 200 times more likely to develop liver cancer (Beasley et al., 1981; Beasley and Huang, 1984).

Safe and effective vaccines for HBV have been developed and are available in pediatric practices (Hwang et al., 1991). Thus, screening for HBsAg and subsequent immunization of neonates born to carriers of HBsAg are essential for the primary prevention of liver cancer in this high-risk group. In 1987, the Centers for Disease Control and Prevention (CDC) reported that only 2 percent of Southeast Asian refugees in the United States had been immunized against hepatitis B (CDC, 1991a). The prospects for prevention are encouraging (CDC, 1991b), but careful evaluation of HBV in the Asian community is needed.

CANCER STATISTICS

The common belief that cancer is relatively rare among Asian Americans is untrue. Although overall Asian American cancer rates are lower than White, Black, and Hispanic rates, cancer is now the leading cause of

death among Asian American women (NCHS, 2000). Although Asian American women have relatively low cancer incidence rates compared to other racial groups, and have among the lowest overall rates of cancer mortality, the toll of cancer on Asian American women is both substantial and highly variable across groups from various countries of origin (Miller et al., 1996).

Cancer data for Asians in the United States come primarily from tumor registries in geographic areas with large concentrations of Asians. Since 1973, the San Francisco Bay area and the state of Hawaii have collected population-based tumor data for the three largest Asian American groups as part of the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program. Data on the Vietnamese and Korean populations have been available since 1988. Five SEER registries contribute most of the data on Asians and cancer to the national SEER database—three registries with more than 500,000 Asians in their regions (San Francisco/Oakland, Los Angeles, and Hawaii), and two registries with more than 100,000 Asians (San Jose/Monterey and Seattle/Puget Sound). While the established SEER areas cover just 14 percent of the total U.S. population, they include 60 percent of the Japanese population, 49 percent of the Filipino population, 43 percent of the Chinese population, 34 percent of the Korean population, and 31 percent of the Vietnamese population (Miller et al., 1996). The reach of the California Tumor Registry was extended by law in 1987 to cover the entire population of California through 10 regional population-based registries, which now track nine Asian subgroups (Reynolds, 1993). The California Cancer Registry was added to the SEER program in 2000, and another SEER expansion registry in New Jersey will contribute significantly to coverage of Asian American populations. With the new SEER areas, the Chinese, Japanese, and Filipino ethnic groups will have the highest proportional coverage of all racial groups (<http://www-seer.ims.nci.nih.gov>, 2001).

The major concerns in collecting ethnicity-specific cancer statistics include potential misclassification in both the numerator (the number of people with cancer) and the denominator (the total number of persons at risk). Denominator data are derived primarily from U.S. census data and from projected estimates. Thus, both accurate and complete reporting of cancer cases and accurate census assessments of subpopulations are essential for useful estimates of incidence rates. For example, the Northern California Cancer Center conducted a telephone survey to determine the magnitude of ethnic misclassification among cancer patients (personal communications, D. West and S. Glaser, 1994-95). Also, the Hawaii Tumor Registry conducts a Health Surveillance Program household survey to refine and update denominator data for Hawaii's ethnic groups (see chapter on Cancer in Native Hawaiian Women).

Incidence Rates

Table 5 provides a summary of age-adjusted incidence rates (1992-98), mortality rates (1992-98) and 5-year relative survival data (1988-97) for all SEER registries combined, comparing Asian and Pacific Islander women (APIs) combined with Whites. With respect to cancer incidence, APIs generally have significantly lower age-

adjusted cancer incidence rates compared with Whites, with some important exceptions. For cancers of the stomach, liver and intrahepatic bile duct, and cervix, API cancer incidence rates are significantly higher compared with Whites. A more detailed analysis of cancer among Asian groups within California for the period 1992 through 1996 is displayed in Table 6.

The top five cancers for the most populous groups of Asian American females in California represented about two thirds of all female cancer cases in those groups (Perkins et al., 1997) (see Table 6). Breast cancer was the most commonly diagnosed cancer, followed by colorectal cancer and lung cancer. Other major cancer sites were the ovary for the Chinese; uterus for Filipinos, Chinese, and Japanese; and stomach for the Japanese. Among Vietnamese, Korean, Asian Indian, and Cambodian women, the breast was again the most common cancer site. Cervical cancer was the first or second most common cancer for Vietnamese, Laotian, and Cambodian women, and thyroid cancer was common among Vietnamese and Cambodian women as well as for Filipinos.

Because cancer incidence increases with age and because populations vary within age structures, age-adjusted rates are necessary for comparing ethnic groups or geographical areas. Age-adjusted cancer incidence rates for Chinese, Japanese, and Filipino women in the San Francisco Bay area for 1978 to 1992, and across SEER registries for 1992 to 1996, are shown in Table 7. Although not reported in Table 7 across all time periods, incidence rates for Vietnamese women were available for the period from 1992 to 1996. Overall age-adjusted cancer incidence for Vietnamese women during that period was 273 per 100,000 women; the rates were higher than in other groups for cancers of the stomach (25.8 percent), lung (31.2 percent), cervix (43.0 percent), and ovary (13.8 percent), and lower for cancers of the breast (37.5 percent), colon/rectum (17.1 percent), and uterus (8.4 percent) (Miller et al., 1996).

Table 8 shows incidence and mortality trends for APIs compared with Whites for the most recent reporting period (1992-98). For all cancer sites combined, API women experienced a 1.2 percent annual increase in incidence rates. For cancers of the pancreas (2.2 percent), esophagus (8.7 percent) and breast (3.9 percent), API women had significantly higher annual percent increases in age-adjusted incidence rates compared with Whites, and for the latter two cancers these increases were also significantly different from zero. For stomach cancer, API women experienced a 3.1 percent decrease in annual incidence rates. Another site where API had a significantly different percent change in incidence rates compared with Whites was for liver and intrahepatic bile duct, where API women had no change and White women experienced a 5.5 percent annual percent increase in incidence. More Asian population-specific data from California are described below.

Both breast cancer and lung/bronchus cancer have increased in incidence among Asian American women in California from 1978-82 to 1988-92, but decreases in breast cancer among Chinese and Filipino women, and in

lung-brochus cancer for all three groups, were observed from 1992 to 1996. Breast cancer rates increased substantially during the earlier reporting periods, and decreased for Chinese and Filipino women from 1992 to 1996, though they increased slightly for Japanese women during those years. As a rule, the all-site cancer incidence rates increased over time up to 1988-92 for all three groups and decreased by 1992-96.

Several investigators have compared cancer incidence among Japanese and Filipinos living in Hawaii with the incidence among their ethnic counterparts living in Japan and the Philippines (Tominaga, 1985; Kolonel et al., 1986). These studies reveal that among Hawaiian, Japanese, and Filipino subgroups in Hawaii, rates for most cancer sites were higher than those of native Japanese and Filipinos in their respective home countries and lower than for Whites living in Hawaii. An exception to this trend is a higher incidence of thyroid cancer in Filipino women living in Hawaii. For most cancer sites, incidence rates among Chinese Americans fall between those for Chinese in Asia and for U.S. Whites (Parkin et al., 1992). For example, the colon cancer rates among Chinese American females are double those among Chinese females in Asia and about four fifths of the White rates. Similar but less pronounced patterns hold for rectal cancer (Whittemore, 1989; Whittemore et al., 1990). Comparing incidence rates between the country of origin and the host country provides important etiological clues about cancer development, such as environmental influences. Dietary factors and diet-gene interactions are suspected in some of the differences that appear to be associated with migration and lifestyle change (Kolonel et al., 2000).

In addition to making comparisons across various Asian groups, it is useful to compare Asian American women's cancer rates to those of other racial groups, especially the majority White population. Based on the most recent data available from SEER comparing cancer incidence rates and trends for 1992-97 among Asian American women with those in Whites, White women have higher rates than Asian American women for all cancer sites combined, and for breast, lung, colorectal, and uterine cancer. Asian American women have higher incidence rates than White women for cancers of the stomach, 10.8 per 100,000 compared to 4.0 per 100,000 (data not shown) (NCI/SEER, 2000). An overall decrease in cancer incidence was seen for both Asian American and White women, as were decreases in cancers of the cervix and colon/rectum, and a small decrease for lung cancer. Asian women's incidence rates for breast cancer increased at a faster rate than they did for White women (NCI/SEER, 2000).

Cancer Mortality

Cancer mortality in Asian American women is lower than it is in White women for the most common causes of cancer death (see Table 5). As with cancer incidence, for cancers of the stomach, liver and intrahepatic bile duct, and cervix, API cancer mortality rates are significantly higher than for Whites. Some of the greatest differentials for Asians combined versus Whites are in breast cancer mortality and lung cancer mortality. There also have been a couple of cancer sites (stomach and ovary) where significant decreases in cancer mortality

for Asian American women during the 1990s have been observed (see Table 8), although the number of cancer sites with decreases significantly different from zero are more numerous for White women (NCI/SEER, 2000). It is important to note that aggregation of Asian American groups masks the disparities experienced by specific Asian groups, such as Vietnamese and other Southeast Asians.

Data from the San Francisco SEER registry show that, over the two decades from 1973 to 1994, the leading causes of cancer mortality among Asian American females were lung cancer for the Chinese and breast cancer for the Filipinos (Perkins et al., 1997; SEER Program of the San Francisco Bay Area, 1990). Stomach cancer was the leading cause of cancer mortality for Japanese women from 1973 to 1977, but it fell just behind breast cancer from 1978 to 1981 and has remained behind breast cancer up to the present (Miller et al., 1996).

Migration Patterns and Cancer Incidence and Mortality

The comparison of cancer incidence and mortality rates of immigrant populations in the United States to the rates of their native counterparts provides important clues about genetic and environmental interactions in cancer etiology (Lee, 1981; Locke and King, 1980). Over time, cancer mortality among Chinese Americans gradually reached the level of that for U.S. Whites. Haenszel and Kurihara (1968) reported a similar pattern of cancer mortality among Japanese immigrants after a few generations in the United States. Recent reviews support this continued association, though Filipino American women who are foreign born are nearly identical to their U.S.-born counterparts in breast cancer incidence, with a breast cancer rate only 40 percent that of U.S. Whites (Stanford et al., 1995).

Examining site-specific rates by birthplace also is informative. Several reports have reviewed the incidence of various cancers for Asian migrants to the United States. Liver cancer is much higher in immigrant men than in U.S.-born Asians, though the pattern is less consistent for women (Rosenblatt et al., 1996). Filipino women born in the Philippines have more than three times the risk of thyroid cancer as do their U.S.-born counterparts, although the association with migration is less clear for Japanese and Chinese women (Rossing et al., 1995). Asian women have ovarian cancer rates lower than those of U.S.-born White women, and the rates do not differ between Asian women born in Asia and those born in the United States (Herrinton et al., 1994). Although the rates of breast cancer increase among Asian women as they become settled in the United States (Stanford et al., 1995), there remains a paradoxical relationship between immigration and tumor size at diagnosis. Asian-born women were found to have a larger proportion of tumors greater than 1 cm at diagnosis than either U.S. White women or U.S.-born Asian women. This difference is believed to result from low use of breast cancer screening among the immigrants (Hedeen et al., 1999).

Rates of colorectal cancer among Asian migrants and their descendants present a mixed picture that suggests a combination of differences in biological characteristics and in exposures that might relate to the development

of colorectal cancer. Japanese men's and women's colorectal cancer rates increase significantly among the U.S.-born, but Chinese women have low colorectal cancer rates irrespective of birthplace. Likewise, Filipinos have low rates of colorectal cancer regardless of their birthplace (Flood et al., 2000).

Two distinctive site-specific cancer mortality patterns among U.S.-born and foreign-born Chinese and Japanese have been reported (King et al., 1985). A downward trend after migration to the United States was observed for cancers of the nasopharynx, esophagus, liver, uterus, and stomach, compared with an upward trend following migration for colon/rectum, lung, prostate, and breast cancers. Male and female patterns were similar for cancers of the colon/rectum and lungs. Elevated mortality among Japanese Americans was reported for cancers of the colon/rectum, lung, breast, and bladder and for leukemia with each succeeding generation. Stomach cancer was noted to be substantially reduced in the second generation (Locke and King, 1980).

These reports should stimulate both epidemiologic and behavioral studies of cancer among the Asian subpopulations (King and Locke, 1989). Genetic susceptibilities, lifestyle behaviors and exposures, and use of early detection tests all appear to contribute to these various patterns of migration and cancer among Asian groups.

Survival

Five-year relative survival rates for API women (1988-97) were significantly better than for White women for all sites combined, as well as for cancers of the stomach, colon-rectum, breast, and ovary, and for myeloma (see Table 5). However, for liver and intrahepatic bile duct cancers, melanomas of the skin, and leukemias, API women had lower relative 5-year survival rates. From 1973 through 1990, relative survival rates improved for most cancers, except survival from cervical cancer for all three subgroups and lung cancer for the Chinese and Japanese (SEER Program of the San Francisco Bay Area, 1990). Lung and stomach cancers have lower survival rates than breast and cervical cancers, whereas relative to those two groups of cancers, ovarian and colon/rectum cancers have mostly intermediate survival rates.

Based on SEER 5-year survival data for 1992-97 in White women and Chinese, Japanese, and Filipino women, there is some variation between groups, but for the most part survival among Asians is similar to survival among Whites. Two notable exceptions are the poorer survival from lung cancer for Chinese women, and poorer survival rates from stomach cancer for Filipino women (NCI/SEER, 2000). Research into the factors contributing to these low survival patterns should examine the possible roles of treatment patterns, poverty, and acculturation.

Early detection plays a critical role in the survival rates for breast and cervical cancers (Stellman, 1987). For both cancers, women of lower socioeconomic status (SES) have lower survival rates. SES appears to be

related to health behaviors and access to the health care system (Stellman, 1987). Ethnic variations in breast cancer survival rates have been attributed mainly to variations in SES (Le Marchand, 1991); however, other factors related to breast cancer survival, such as body weight and dietary fat intake, should also be considered (Nomura et al., 1991).

Consistent with the survival data, more than 60 percent of breast cancer cases and 80 percent of cervical cancer cases among Asian American females are diagnosed in situ or in a localized stage, compared with less than 30 percent of colorectal cancer cases, 20 percent of stomach cancer cases, and about 10 percent of lung cancer cases (D. West, personal communication, 1993). For each site, 60 to 95 percent of women diagnosed with a localized tumor survive 5 years, whereas those diagnosed with distant-stage tumors have less than a 20 percent 5-year survival rate. Ovarian cancer, which has a survival rate of 21 percent for Chinese, 33 percent for Filipinos, and 29 percent for Japanese women, is an exception.

In Hawaii, late-stage breast cancer is often diagnosed among Filipino women, whereas a greater proportion of Japanese women are diagnosed with noninvasive cancers and fewer metastases (Goodman, 1991). In the San Francisco Bay area, Japanese and Filipino women are at greater risk for late diagnoses of cervical cancer compared with Chinese women (Saunders, 1989). Exactly how early detection and different pathologies influence the stage of diagnosis is not clear.

RISK FACTORS FOR CANCER

Lower overall cancer rates in Asian American women compared with other Americans, as well as varying rates among Asian subgroups, may be related to SES and lifestyle or hereditary factors. Variations in social class, fertility, migration status, psychosocial factors, dietary habits, and physical inactivity may contribute to ethnic differences in the risks associated with breast or colorectal cancers, whereas variations in smoking behavior, including exposure to secondhand smoke, may explain differences in lung cancer.

Other factors, such as physical inactivity, obesity, and alcohol consumption, also are associated with the risk of developing cancer. Most available data on cancer risk factors in Asian Americans come from cross-sectional surveys of different Asian American subgroups living in different geographic locations. Despite the difficulty of generalizing to all Asian American women from these studies, these data provide useful information on contributing risk factors.

Tobacco Use

Tobacco use, the most preventable cause of death, is associated with cancers of the lung, cervix, bladder, esophagus, larynx, oral cavity, stomach, pancreas, kidney, and liver, and with myeloid leukemia (USDHHS,

1989; International Agency for Research on Cancer, 1986; Doll 1996). Gender differences in Asian Americans' smoking patterns have been found consistently, with men smoking at much higher rates than Asian American women. Most data sources report aggregate data on Asian and Pacific Islanders, and thus very few data are available on tobacco use in various subgroups. Ever-smoking reported in the 1998 NHIS was lowest among Asian Pacific Islander women. According to the NHIS data for 1997-98, Asian Pacific Islander women had the lower smoking prevalence (11.2 percent) than any other group of women (CDC, 2000a; USDHHS, 1998). Heavy smoking among American Indian, Alaskan Native, and Asian or Pacific Islander women remained unchanged from 1978-80 and 1994-95 (USDHHS, 1998). Although the confidence intervals were large, data from the NHIS for 1978-95 reported that White women were more likely to be heavy smokers than American Indian, Alaskan Native, and Asian or Pacific Islander women (USDHHS, 1998).

A California survey of tobacco use during 1990 reported a smoking prevalence of 24 percent for White males and 19 percent for White females (Pierce et al., 1994). Among Asian Americans, the difference between male and female smoking rates was even greater, and rates among Asian American females tended to be lower than the rates for White females.

Findings from the Filipino Smoking Prevalence Survey conducted by the Asian and Pacific Islander American Health Forum (1991) showed that approximately 22 percent of Filipino men and 7 percent of Filipino women smoked. In a study of health plan members in Northern California (Klatsky and Armstrong, 1991), 30 percent of Filipino men, 16 percent of Chinese men, and 23 percent of Japanese men reported smoking. Yet among women in these populations, the rates were much lower: 11 percent of Filipino women, 7 percent of Chinese women, and 19 percent of Japanese women reported smoking. In 1991, a survey of 557 Vietnamese men and 454 Vietnamese women in California found that 35 percent of Vietnamese men were current smokers, whereas only 2 percent of Vietnamese women had ever smoked (CDC, 1992). This is parallel to findings of men's very high smoking rates in Vietnam (over 75 percent), whereas only 4.3 percent of women are smokers (Jenkins et al., 1997). One survey (Lee et al., 1992) found low rates of smoking (5 percent overall) among Chinese women living in the San Francisco Bay area. Chinese women most likely to smoke were more educated, had higher incomes, and were more acculturated. Highly acculturated Asian American women have a greater risk of developing lung cancer and coronary heart disease compared with less acculturated Asian American women.

Among the nearly 30,000 Japanese women from 45 to 75 years of age who participated in the baseline survey of the Multiethnic Cohort Study in California and Hawaii, 11.1 percent were current smokers (Kolonel et al., 2000).

Reports of smokeless tobacco in Asian and Pacific Islander women is 0 percent, according to aggregate data from the 1978 and 1991 NHIS (USDHHS, 1998).

Passive exposure to smoking, or environmental tobacco smoke (ETS), is a great public health concern, and the associated risk may be most serious for the families of smokers. Lung cancer occurs more frequently in nonsmoking women who are married to smokers and thus are exposed to the hazards of passive smoking (Stellman, 1987). Several studies have confirmed the adverse effects of passive smoking on lung cancer incidence in Asian women (Koo and Ho, 1990). Aggregate data from the NHIS for the years 1991-93 indicate that 15.5 percent of Asian and Pacific Islander nonsmokers reported ETS exposure in the home on 3 or more days per week. This rate was second only to American Indians and Alaska Natives, whose reported rate was 17.8 percent (USDHHS, 1998, p. 123). Smoking prevention and cessation efforts for Asian Americans would thus likely benefit women's health by reducing their exposure to environmental tobacco smoke.

Few studies have reported on smoking cessation rates in Asian American and Pacific Islander women. For these two groups of women, quitting smoking increased from 1978-80 (36.9 percent) to 1994-95 (62.2) according to NHIS (USDHHS, 1998, p. 101). Asians were significantly more likely than most other racial groups to report that not exposing children in the home to smoking was an important reason for quitting (Vander Martin

et al. 1990; USDHHS, 1998). This study also found that Asians reported more pressure from friends to stop smoking than did White, African American, and Hispanic smokers.

Alcohol Use

Data concerning alcohol consumption by Asian Americans are relatively scarce. In general, studies of drinking behavior among Asian Americans have found both a low prevalence of alcohol consumption and little difference in rates by sex. Chi and colleagues (1989) estimated that about 33 percent of both Chinese and Japanese either drink infrequently or abstain. In a Kaiser Permanente study of Japanese, Chinese, and Koreans (Klatsky and Armstrong, 1991), more than 80 percent of Asian American men and 50 percent of Asian American women had consumed alcohol at some time in the past. Neither study assessed how much or how often the subjects drank.

Chinese Americans reported lower alcohol consumption compared with rates for U.S. White males and females as determined in the 1974-75 National Health and Nutrition Examination Survey (NHANES I) (NCHS, 1978). The average number of drinks (beer, wine, or hard liquor) per week among Chinese American men and women was 5.5 and 1.3, respectively, whereas the average number for all U.S. men and women was 7.3 and 2.3, respectively (Lee et al., 1994). Japanese women from California and Hawaii who responded to the Multiethnic Cohort Study baseline survey reported only a 9.9 percent rate of current drinking, the lowest among the several ethnic groups included (Kolonel et al., 2000). Alcohol consumption may not be a problem for Asian American women.

Sexual Practices

Despite the known influence of sexual behavior on the risk for contracting cervical cancer, no such data for Asian Americans have been published to date. This may reflect a difficulty in collecting data on sexual practices because of modesty and cultural inhibitions. However, studies in Hong Kong and China found that having multiple sexual partners increased the risk of cervical cancer four- to six-fold (Donnan et al., 1989; Zhang et al., 1989). Recently, attention has turned to the role of the human papillomavirus and its association with cervical cancers. A review of Hawaii SEER data from 1973 to 1996 found that in situ squamous cell carcinoma of the cervix was diagnosed less often among both APIs and Whites in Hawaii than among Whites in the general U.S. population. This suggests that many Hawaiian women, and especially Asian American women, may not be diagnosed and treated for cervical cancers at a preinvasive stage (Frisch and Goodman, 2000). Also, the relationship of sexual behavior to the transmission of the hepatitis B virus and the risk of liver cancer among Asian Americans should be explored.

Viral factors

Chinese American women experience a high incidence rate of nasopharyngeal cancer, 3.9 per 100,000

women. This cancer is very rare in other populations (Miller, 1996). Epstein-Barr virus is the major risk factor for nasopharyngeal cancer in Asian populations (Vokes, 1997).

Whereas incidence rates for liver and hepatic bile duct are 1.5 per 100,000 women for non-Hispanic Whites and 2.4 per 100,000 for blacks, rates are 10.5 per 100,000 for Korean American women, 5.3 per 100,000 for Chinese American women, 3.9 per 100,000 for Japanese American women, and 3.4 per 100,000 for Filipino American women. The hepatitis B and C viruses probably are responsible for the high liver cancer rates experienced by Asian American women. These viruses are well-established risk factors for these cancers (Monto, 2001).

Nutritional Factors

Populations consuming diets rich in vegetables and fruits have significantly lower rates of cancers of the colon, rectum, lung, breast, oral cavity, larynx, esophagus, stomach, bladder, uterus, cervix, and pancreas (Block et al., 1992). Epidemiological studies suggest that people whose diets are rich in vitamin C and beta carotene are less likely to get cancer of the stomach, colon, cervix, or lung (Willet, 1990b; Koo, 1988). Although data are not conclusive on the role of dietary fiber in reducing cancer risk, high-fiber, low-fat diets appear to confer protection against colorectal cancer among Chinese Americans (Whittemore et al., 1990; Yeung et al., 1991).

Data on Asian Americans' diets come primarily from studies in Hawaii and California. Changing from the traditional Asian diet, which is high in grains, to foods more frequently consumed in the United States tends to increase the relative intake of animal protein, fats, and refined sugar, and decrease fiber intake (U.S. Department of Health and Human Services, 1985; Yu et al., 1985). Lee and colleagues (1994) found that the dietary intake of Chinese people living in California resembles that of Whites more than that of their counterparts in China. Thirty-five percent of the caloric intake of Chinese Americans comes from fat, a number similar to that of Whites as reported in the NHANES II (NCHS, 1981). The data for Japanese Americans were similar (Kolonel et al., 1986).

Differences in dietary intake have been reported for first-generation (Issei) and second-generation (Nisei) Japanese Americans in Hawaii (Kolonel et al., 1986). Issei consumed more "Japanese" items, whereas Nisei consumed more "Western" items—that is, more fat. In California, Chinese Americans consumed a mean of 1.7 servings of fruit and 2.8 servings of vegetables daily (Lee, 1994), whereas Vietnamese reported consuming a mean of 1.3 servings of fruit and 1.8 servings of vegetables daily (Hung et al., 1995). Japanese women in California and Hawaii who responded to the Multiethnic Cohort Study had the lowest intake of total calories and total fat, and had moderate fruit and high vegetable intake (Kolonel et al., 2000).

Goldin and colleagues (1986) found that the ratio of fat to fiber intake was three times greater for White women than for Asian American women. These dietary differences corresponded to urinary estrogen and estrogen plasma levels that were 50 percent lower among Asian Americans. Therefore, consumption of high-fat and low-fiber foods seems to influence sex hormone production and metabolism. It may also suggest an association between fat intake and the development of cancer in the colon and/or breast.

Some evidence suggests that the isoflavone phytoestrogens found in soybeans may reduce the risk of hormone-related cancers, such as breast cancer (Messina et al., 1994; Kennedy, 1995; Stoll, 1997). The isoflavonoids in soy—genistein and diadzein—are similar to tamoxifen and have been shown to possess agonist and antagonist estrogenic activity. Isoflavones also mimic estrogen and they reduce breast cancer risk in women by binding receptors on certain tissue cells where estrogen is known to exert a carcinogenic effect. A recent study showed that the frequency of soy (tofu) consumption was more than twice as high among Asian American women born in Asia (62 times a year) as among Asian American women born in the United States (30 times per year); the adjusted odds ratio for breast cancer associated with each additional serving per week was 0.85 (95-percent confidence interval=0.74-0.99). The protective effect of high tofu intake was observed in both premenopausal and postmenopausal women in that study (Wu et al., 1996).

Smoked, salt-cured, pickled, and nitrite-cured foods are known to increase the risk of stomach and esophageal cancers (Yu et al., 1985; Hirayama, 1975; Tominaga et al., 1982). Reduced consumption of these foods by Asian immigrants to the United States may account for their lower rates of these cancers.

Obesity

Among postmenopausal women, obesity may increase the risk of cancer in general and of breast cancer in particular (den Tonkelaar et al., 1992). An enhanced nutritional status during childhood would be reflected in increased adult height. A positive association between height and postmenopausal breast cancer risk was reported in a study of Asian Americans (Ziegler et al., 1993a).

Asian American women are generally leaner than White men and women; obesity is not common among Asian Americans (Yu et al., 1985). Using a body mass index of 24.4 or greater as a measure of obesity, Klatsky and Armstrong (1991) found that 13 percent of Chinese women, 26 percent of Filipino women, and 18 percent of Japanese women were obese. The authors also noted that U.S.-born Asian Americans have higher adiposity than their foreign-born counterparts. Japanese women in the Multiethnic Cohort Study had the lowest rates of obesity of all ethnic groups in the study, at only 6.7 percent (Kolonel et al., 2000).

Extent of Physical activity

Overall physical activity is believed to have an effect on overall cancer incidence and mortality. Data from

observational studies suggest that physical activity has a beneficial effect for colon cancer (Thune and Furberg, 2001). To get some health benefits, it is suggested that adults accumulate at least 30 minutes of moderate-intensity physical activity at least 5 days of the week (USDHHS, 1996). Data from national surveys are not reported by gender for Asians; therefore the prevalence estimates reported here are for all adults. Data from CDC's Behavioral Risk Factor Surveillance System (BRFSS) and NHIS indicate that Asians have higher levels of inactivity than Whites (29.5 percent versus 26.5 percent) or no leisure time physical activity (42 percent versus 38 percent) (Macera and Pratt, 2000; USDHHS, 2000). The percentage of Asians that meet the current physical activity recommendation is similar to the percentage of Whites (USDHHS, 2000); 15 percent accumulate 30 minutes of moderate-intensity physical activity at least 5 days of the week. The percentage of Asians and Whites who do 20 minutes of moderate to vigorous physical activity is 30 percent and 32 percent respectively. Finally, the percentage of Asians who engage in vigorous physical activity is lower than for Whites (16 percent versus 24 percent) (USDHHS, 2000).

Occupational Exposure

Labor force participation by Asian Americans is higher among men than women. A higher proportion of Asian Americans (37 percent) than of Whites (33 percent) are concentrated in managerial and professional specialty occupations, such as managers, executives, administrators, physicians, nurses, and teachers (Humes and McKinnon, 2000). Additional detailed data about specific occupations among Asian American women are not currently available.

Very little is known about the role occupation may play in cancer risk among Asian American women. One study in Chinese American women found no specific associations between occupational risk and colorectal cancer (Whittemore et al., 1990). However, female textile workers in Shanghai had increased incidence of colon cancer (Chow et al., 1993). The authors hypothesized that the increased rate might be the result of low physical activity and long periods of sitting.

A sedentary lifestyle and increased duration of sitting were associated with elevated risks of colorectal cancer in Chinese American women (Whittemore et al., 1990). New Asian immigrants frequently work as seamstresses in the garment industry. These workplaces could provide a setting for intervention programs. However, such sites often are the focus of political and legal battles related to working conditions, so work site intervention for this population may not be feasible.

Other Factors

Changes in incidence and mortality patterns after immigration also suggest that premigration and postmigration environmental influences, as well as genetic predisposition, may contribute to cancer risk. In a study of colorectal cancer among North American Chinese (Whittemore et al., 1990), the risk of colorectal cancers

increased with a greater number of years lived in North America among Chinese American women. When duration of North American residence and dietary intake of saturated fat were taken into account, risk rose steadily with increased years of residency in North America, regardless of saturated fat intake. The findings suggest that changes other than fat intake may also affect the rate of colorectal cancers among Chinese immigrants.

After examining migration patterns and breast cancer in Asian American women, Ziegler and colleagues (1993b) found that those born in the United States, immigrants from rural to urban areas in Asia prior to immigration, and those with a longer duration of residence in the United States showed an increased risk of developing breast cancer. This study suggests that exposure to Western lifestyles has a major impact on immigrants' breast cancer rates.

The positive association between estrogen and breast cancer risk was examined in U.S. White and Asian American women (Goldin et al., 1986). Whites who had higher risks for breast cancer also had higher plasma estrogen than did Asian Americans, whereas the levels of urinary and fecal estrogen were higher for Asian Americans than for Whites. These findings support the role of estrogen metabolism in breast cancer development.

Other psychosocial risk factors, including social support, presence of stressors, preexisting chronic conditions, and belief in loss of control over life, have been studied and examined for their possible association with cancer in non-Asian women (Stellman, 1987). However, no similar data are available for the Asian American population. There is a need for further study of factors influencing Asian women that relate to cancer etiology and treatment outcomes.

CANCER SCREENING

Clinical breast examination (CBE), mammography, and Pap test screening are among the major elements of effective early cancer detection programs for women. Cancer screening behavior among Asian Americans has not been reported for the United States as a whole, although there have been several studies that provide some data (Lovejoy et al., 1989; Lee, 1992; Lee et al., 1996; Kim et al., 1998; Wismer et al., 1998; Lesjak et al., 1999; Phipps et al., 1999; Maxwell et al., 2000). Table 9 gives the percentages (from several studies) of Asian Americans and Whites who reported performing breast self-exams (BSEs) and getting CBEs, mammograms, and Pap tests (Perkins, 1992; Chen et al., 1992; Lee, 1992; McPhee et al., 1992, 1996; Wilcox and Mosher, 1993; Lee et al., 1996). Many Asian Americans underutilize cancer screening tests. A survey conducted in San Francisco in 1991 found that only 31 percent of Asian American women had received a previous mammogram compared with more than 50 percent each of Whites, Blacks, and Latina women in the San

Francisco Bay area (Lee, 1992). In a telephone survey of cancer-related practices among Chinese American women 20 to 74 years old in San Francisco (Lee, 1994; Lee et al., 1996), 70 percent or more of respondents reported ever having had a BSE, a CBE, and a mammogram (age \geq 40 years), and 67 percent reported ever having had a Pap test. However, the rates for having breast and cervical cancer screening tests at regular intervals were much lower (25 percent for mammograms; 37 percent for Pap tests). A household survey among Vietnamese American women in San Francisco and Sacramento showed that they were the least likely to have breast and cervical cancer screening tests compared with Caucasian Americans, African Americans, Latina Americans, and Chinese Americans; 50 percent or fewer reported ever having had a CBE, mammogram, or Pap test (McPhee et al., 1996).

Among the barriers to breast and cervical cancer screening indicated by Asian American females in some early studies were modesty, reluctance to disrobe for a breast and pelvic examination (especially by male physicians), and language problems (Jenkins et al., 1990, Lee, 1992). Other barriers included fear of finding out that one has cancer, cost, transportation problems, access to health care, and traditional health beliefs and attitudes (Mo, 1992; Lee, 1992). Asian American women largely preferred that female physicians perform physical examinations (Jenkins et al., 1990; Lee, 1994; MCPhee et al., 1994). Understanding the cultural values of Asian women, especially unmarried women, with respect to modesty and sexuality is essential for effective health promotion (Mo, 1992). Asian American women whose primary language is not English will not benefit from English-language breast cancer prevention information presented in educational pamphlets, media talks about mammography, or mobile van screening services (Lovejoy et al., 1989; Lee, 1994).

Two studies (Lee, 1994; Lee et al., 1996) found the following cited reasons for not having the screening tests: “do not need one because I am healthy” (mammogram and Pap test), “do not have time” (CBE and Pap test), “could not afford a mammogram,” and “do not need one for my age” (Pap test). “Do not need one because I am healthy” was the foremost reason given for not having the screening tests, an attitude that could result from a lack of knowledge of risk factors for breast and cervical cancers, lack of awareness of the physical symptoms of cancer, and nonbelief that apparently healthy people need cancer screening. Many Asian Americans do not know that a breast lump or discharge can signal breast cancer or that abnormal vaginal bleeding can be a sign of cervical cancer (Lee, 1992).

Recent surveys of Filipino, Korean, Vietnamese, and Cambodian women further demonstrate the low levels of cancer screening among these Asian American groups, as well as limited awareness and understanding. Mammography rates among Filipino and Korean women in California were recently found to be between 10 and 34 percent (Maxwell et al., 2000; Wismer et al., 1998). Vietnamese women reported relatively high rates of CBE (70 percent), and about half had had a Pap test (53 percent), but only 30 to 35 percent in two studies had had a mammogram (McPhee et al., 1997a; MCPhee et al., 1997b). About half of a sample of Cambodian

American women in Washington state reported a recent Pap test, and 24 percent said they had never had one (Taylor et al., 1999). In these studies, the strongest correlate of having appropriate cancer screening was having regular (asymptomatic) medical checkups. Women who were better educated, younger, and in the United States longer were more likely to receive cancer screening tests (Maxwell et al., 2000; McPhee et al., 1997a,b; Taylor et al., 1999). Barriers to screening included cultural beliefs about the causes of disease, unemployed status, lack of a regular physician, and lack of awareness about cancer detection strategies (Kim et al., 1998; Phipps et al., 1999; Taylor et al., 1999; McPhee et al., 1997a,b).

A recent article by Kagawa-Singer and Pourat pooled 1993 and 1994 data from the NHIS to compare all American Asians and Pacific Islanders (AAPIs) to Whites and to six specific nationalities. This article drew three major conclusions. First, AAPI subgroups vary greatly in demographics and health insurance coverage. Second, as a group, AAPI women have lower rates of breast and cervical cancer screening than Whites and fall short of the Healthy People 2000 recommendations, and some subgroups have especially low screening rates. Third, even AAPI women with higher incomes, more education, insurance coverage and better access to care still use screening less than their White counterparts.

Some Asian Americans, especially recent immigrants, demonstrated a lack of awareness about cancer causes and prevention (Phipps et al., 1999; Kim et al., 1998). When women were asked whether dietary fat may cause cancer, only 38 percent of Asian American women answered “yes,” compared with more than 70 percent of other ethnic groups (Lee, 1992). When questioned about whether dietary fiber could help prevent cancer, Asian American and Latina women each answered “yes” less often (66 percent) than White and African American women (85 percent each).

Many Asian Americans also hold several strong misconceptions about cancer. For example, many expressed the belief that once cancer is treated surgically, it will spread. This belief contributes to treatment delay. Many also believe that cancer is contagious (Mo, 1992). Some Asian Americans may hold a fatalistic attitude with regard to cancer because they believe in “karma,” in which fate is determined by events in their previous lives (Kagawa-Singer, 1993; McPhee et al., 1994; Taylor et al., 1999). Thus, they accept the disease, which may result in reluctance to adhere to the treatment regimen.

CANCER PREVENTION AND CONTROL INTERVENTIONS

Until recently, few cancer control intervention programs targeted Asian American women. In 1990, a privately funded pilot study of Breast Health Day in San Francisco demonstrated the feasibility and usefulness of providing ethnically tailored, low-cost mammography screening and instructions for BSE in ethnically diverse community clinics (Lee, 1992). During the 1990s, NCI funded a 5-year study of breast and cervical cancer

screening among low-income, multiethnic women, including Asian American women aged 40 to 75, who lived in the San Francisco Bay area. This study was a randomized, controlled trial with both community outreach and clinic inreach and coordination of case management follow-up. It developed educational materials for breast and cervical cancer screening specifically targeted toward non-English speaking, low-income Chinese women with poor access to health care and low literacy rates.

Another project, a 4-year, NCI-funded program begun in 1992, designed and implemented effective and comprehensive interventions to increase early breast and cervical cancer detection among four underserved ethnic groups in the San Francisco Bay area: Chinese Americans, Vietnamese Americans, African Americans, and Hispanic Americans. Each group was studied separately; for example, the aim of the Chinese project was to identify barriers related to screening practices (Lee et al., 1996). The findings suggested that future interventions should be targeted particularly to those Chinese American women who are not proficient in speaking English and who do not have health insurance. Educational materials should be available in Chinese, and health messages should stress the need for regular cancer screening among healthy people.

In the past few years, there have been reports of several studies of interventions to improve cancer prevention and detection services for Asian American women. Most of these studies have used some combination of lay health outreach workers, language-appropriate materials, and traditional cultural values to appeal to the health motivations of Asian American women, including recent immigrants.

McPhee and colleagues conducted several intervention studies to improve women's cancer screening in California Vietnamese American communities. One intervention used indigenous lay health workers to conduct small group sessions in a low-income district of San Francisco. The neighborhood-based intervention included small-group education, distribution of Vietnamese-language educational materials, and health fairs. Because of their cultural competency, the lay workers were effective communicators and change agents with regard to changing cancer screening attitudes, knowledge, and behaviors among women in the community (Bird et al., 1996). Adoption of screening in the intervention community was compared with a control community in Sacramento. In the intervention community, recognition of screening tests increased significantly and receipt of CBE, mammograms, and Pap tests also increased at higher rates than in the control community (Bird et al., 1998).

A second study used a 24-month media campaign to promote recognition, intention, receipt, and currency of CBEs, mammograms, and Pap tests among Vietnamese American women in two northern California counties, with Los Angeles serving as a control community. Media strategies were adapted for cultural and linguistic appropriateness, and locally promoted. At posttest, significantly more women in the intervention communities

had heard of a Pap test and CBE, and intended to have the tests; but the intervention had no significant effect on being up-to-date with testing (Jenkins et al., 1999).

In a third study, called “Suc Khoe La Vang” (Health is Gold), targeted interventions were directed toward both Vietnamese women and physicians in northern California. The strategies included neighborhood-based education, print materials, a media campaign, and continuing medical education seminars. With Los Angeles serving as a control city, surveys were conducted in 1996 and 1998 to evaluate the intervention program. It had no overall impact, but appeared to produce a modest positive effect on those with more exposure to intervention elements (Nguyen et al., 2001). Based on these three studies with Vietnamese American women, it appears that targeted, individually focused interventions and small group sessions were most effective in promoting cancer screening.

Other reports have described community-based cancer prevention interventions with similar features: cultural appropriateness, community infrastructure building, and community advisors. Projects for Korean American women (Chen et al., 1997) and Cambodian American women (Carey Jackson et al., 2000) appear to have thoughtfully blended traditional value systems with practical considerations, so these strategies should have good prospects for success.

ALTERNATIVE MEDICINE

In Asian cultures, many people do not feel the need to receive routine preventive care from Western health providers to maintain their health. They often seek out traditional medical practitioners and use herbal medicine for chronic illness. Asian people prefer to visit a Western physician only when they are sick or are forced by a major illness to seek treatment (Lovejoy et al., 1989; Pasick, 1987; Jenkins et al., 1990; McPhee et al., 1994), which may result in a late-stage diagnosis and possibly influence the effectiveness of cancer treatment. They view Western medicines as “too strong” or “too hot” and perhaps as upsetting to the internal balance. The traditional Asian health belief described by Yu and Cypress (1982) is that health is a state of equilibrium between a human being and the universe. Maintaining a balance between the body’s “cold” (yin) and “hot” (yang) elements is the cornerstone of good health. Blood is a source of human vitality, and “chi” is a form of energy circulating through the body.

Many Asians believe that illness is caused by an imbalance of blood and/or chi and that blood is difficult to replenish. Consequently, surgery is avoided to the extent possible because it increases the chance of losing one’s blood. Furthermore, some illnesses are thought to be caused by a bad wind or by spirits or ghosts. Many Asians may visit and pray at temples or seek the help of Buddhist priests before they seek Western medical care. Thus, Asians often delay treatment. However, among Vietnamese, the use of traditional medical

practices does not appear to be in conflict with seeking appropriate Western treatment for cancer (Jenkins et al., 1990).

In a 1995 survey of cancer screening practices among primary care physicians serving predominantly Chinese Americans in San Francisco (unpublished data, M. Lee), 66 percent of physicians approved the use of alternative cancer therapies for their patients. They were aware that their Chinese American cancer patients had used some form of alternative cancer therapies, such as herbal remedies, nutritional therapy, acupuncture, acupressure, massage, faith healing, or psychological methods. The frequent use of herbal remedies and nutritional therapy for cancer treatment among Chinese Americans was also shown in a study on the choice of alternative therapies for breast cancer treatment among women from four ethnic groups (Whites, Blacks, Chinese, and Hispanics) in San Francisco (unpublished data, M. Lee). In that study, 50 percent of Chinese women used at least one type of alternative therapy, and 33 percent of them used two types of therapies after breast cancer diagnosis (i.e., dietary therapies and herbal remedies).

In a 1998 survey of 1,168 cancer patients in Hawaii, 24.7 percent reported using at least one type of complementary or alternative medicine since being diagnosed with cancer (Maskarinec et al., 2000). Nearly twice as many women as men (35 percent versus 19 percent) reported using complementary and alternative medicine (CAM), and CAM use was more common in younger respondents. The Asian ethnic groups that most often reported using CAM were Filipinos (39 percent) and Chinese (25 percent); a smaller proportion of Japanese respondents (18 percent) used CAM. In comparison, 34 percent of Whites and 30 percent of Native Hawaiian respondents said that they used CAM. CAM use was most prevalent among breast cancer patients (39 percent) and persons who had undergone chemotherapy (44 percent). CAM users had lower scores on emotional, cognitive, and social functioning tests than nonusers; reported more symptoms, such as fatigue, pain, nausea, and vomiting; and reported greater financial difficulty (Maskarinec et al., 2000). These findings may overestimate CAM use because the survey had a 47.6 percent response rate. Of particular interest and importance, the study was conducted as a SEER supplement, and illustrates how SEER registries can facilitate additional investigations into psychosocial and treatment-related factors in ethnic minorities and women.

FUTURE DIRECTIONS

Studying Asian American populations along with worldwide ethnic differences in cancer incidence, mortality rates, and migration patterns may lead to a greater understanding of cancer etiology and improved strategies for cancer control. Understanding risk factors for cancers, such as tobacco and alcohol use, nutritional factors and obesity, physical inactivity, immigration status, and occupational exposures, can also suggest preventive strategies.

Asian Americans have been one of the fastest-growing minorities in the United States for more than two decades. However, data resources on Asian Americans are limited (Chu, 1998). The aggregation of API populations has confounded large differences between Asian groups and Pacific Islanders, but the recent creation of a distinct Asian American category will provide better information. Nevertheless, Asian Americans comprise many diverse groups, so further specific reporting will be important (Chu, 1998; Shinagawa et al., 1999). Knowledge of ethnic subgroups, geographic variations, and population characteristics (such as income, education, language, and birthplace) are important in interpreting and comparing findings from various studies. Lack of validity resulting from a small sample size is often encountered in studies of Asian Americans, and larger, more representative samples are needed.

Among Asian American women, whose cancer rates are lower than those for White women in general, breast cancer is by far the most common cancer, followed by cancers of the lung, colon/rectum, and cervix. Some studies have reported underutilization of cancer screening by specific groups of Asian American women, especially Vietnamese, Cambodians, and Koreans. Early diagnosis through mammographic screening, breast examinations, Pap tests, rectal examinations, sigmoidoscopy, and occult blood tests are promising strategies for prevention and early treatment. It is important for Asian American women to understand that just because they have lower rates of cancer does not mean that they are immune. Lifestyle behaviors, such as limited consumption of animal fat and ample consumption of fruit and vegetables, may help reduce breast and colorectal cancers in Asian American women or prevent increases in these diseases. Lung cancer may be reduced by smoking cessation programs targeted at both Asian American women and their male partners.

Community outreach and education are promising strategies for promoting screening, cancer prevention, and appropriate cancer treatment. Many Asian Americans may require health care services that provide either translators or providers who speak the patient's language. By understanding cultural differences and social beliefs and by respecting and possibly incorporating traditional Asian health care modalities, Western health professionals can provide care that effectively meets the needs of Asian Americans.

Unmet health care needs in the Asian American community, coupled with limited data on and knowledge gaps with respect to Asian American subgroups, present an opportunity for cancer researchers, policy-makers, health practitioners, and community organizations to strengthen their impact by working cooperatively (Lin-Fu, 1988). Clusters of Asian American populations in California, New York, and Hawaii can facilitate the coordination of multisite epidemiologic surveys, as well as clinical and community studies (Alexander et al., 2000), using standardized research protocols, interview instruments, and data collection procedures crucial to estimating and comparing results. In any case, improved methods for studying health and cancer problems among Asian Americans are definitely needed.

Several areas suitable for exploration are readily identifiable. One area is the social/cultural aspect of health. Because Asian American immigrants bring with them cultural values and beliefs that influence the way they perceive illness and cures, the degree of acculturation and its effect on health behaviors must be considered in future research. In addition, the family values in Asian culture, health beliefs about traditional medicine, and alternative use of herbs or acupuncture for cancer treatments in Asian American women need to be incorporated into future cancer and health care outcome studies.

A second area deals with ethnic subgroups. In terms of cancer etiology, Asian subpopulations may be influenced by different factors related to cancer development and progression. The difference in magnitude of incidence rates of various cancers among Asian subgroups provides a basis for studying cancer etiology and cancer control.

A third area has to do with environmental and genetic interactions. Because immigration patterns vary for Asian Americans and because exposure to cancer-causing agents may vary at different points of immigration and in different regions of the United States, studies that focus on Asian Americans can further advance the knowledge of genetic and environmental interactions in cancer research.

Another issue that remains to be explored is the effect of cancer treatment—for example, mastectomy—on a woman's self-image, as well as other psychosocial research on the outcomes of cancer diagnoses and treatment in Asian American women. Studies also are needed concerning the tradeoff involved with female hormone estrogen therapy, which is prescribed to prevent bone mineral loss but may promote endometrial cancer and possibly breast cancer.

Delay in the detection, diagnosis, or treatment of cancer can mean the difference between life and death. Because most Asians believe that they do not need medical care when they appear to be healthy, lack of preventive measures in Asian cultures presents a barrier to cancer control. In designing cancer prevention interventions for Asian Americans, it is important to understand the cultural values, knowledge, beliefs, attitudes, and other factors related to changing the screening behaviors in each Asian subgroup. Screening services should be conducted using bilingual staff members, especially for recent immigrants. Educational efforts in cancer prevention and control that involve multilanguage approaches and that use the media—both television and newspapers—may prove effective in encouraging Asian Americans to seek preventive checkups. However, the materials presented must be culturally sensitive to the target population and to regional variations in primary language usage.

CONCLUSION

The SEER program is actively expanding cancer surveillance systems for Asian Americans beyond those in place in California and Hawaii. This expansion will provide excellent opportunities to learn more about patterns and trends in cancer diagnoses and outcomes among Asian American women. As more geographic areas establish cancer registry systems, they will increase the opportunities to improve the health status of and cancer control among Asian American women.