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4

Cancer

CHRISTOPHER N. H. JENKINS
MARJORIE KAGAWA-SINGER

Cancer is the second leading cause of death, after cardiovascular diseases, in the United States today. One in four Americans will develop some form of cancer. Compared with other ethnic groups in the United States, however, there are few data available about the epidemiology and control of cancer among Asian Pacific American populations. Major cancer control efforts in public education and the treatment and rehabilitation of cancer patients are being made to reduce the emotional, social, and economic burdens of this disease for individuals and their families. However, specific efforts toward these ends for Asian Pacific American populations have been few (Kagawa-Singer, 1988, 1993).

The objectives of this chapter are to present what is known about cancer in Asian Pacific Americans and to offer suggestions for effective cancer control among these populations. We will first define and describe the disease of cancer and then present what is known about cancer morbidity and mortality in Asian Pacific American populations. We will highlight the significant differences among Asian Pacific American ethnic groups and the differences between these groups and the white population. Following this discussion, we will identify some of the unique cultural factors among Asian Pacific Americans that may facilitate or pose barriers to the prevention, early detection, and treatment of cancer. Finally, we will indicate potential targets and avenues for culturally congruent intervention programs to reduce the burden of the disease in these populations.

Since passage of the Cancer Act of 1971 in the United States, enormous advances have been made in understanding the etiology and course of cancer. Treatments have become more effective and survival of certain cancers has been remarkable. Twenty years ago long-term survival of childhood leukemias was extremely low, as was survival from Hodgkin's disease. Death from cervical cancer was high. Survival rates associated with these three diseases have risen from 5% to 10% to around 90%. Treatments for many other cancers are also increasingly effective. With growing numbers of people surviving cancer and enjoying a satisfactory quality of life, cancer is now listed as one of the *chronic* diseases of U.S. society rather than as an acute, terminal disease. For some of the most common cancers, such as lung, breast, and colon, however, little progress has been made in the overall morbidity and mortality associated with the disease.

In 1984, the National Cancer Institute established the goal of reducing the mortality rate from cancer by half by the year 2000 (Greenwald & Sondik, 1986). This objective is theoretically possible for two reasons. First, from 85% to 90% of cancers are believed to be caused, in part, by behavioral, cultural, and dietary factors. Thus certain cancers can be prevented through the modification of these factors. Second, using existing medical technology, lives can be saved through early detection of cancer, while it is still localized and treatment has the greatest chance for success. Thus cancer control efforts are currently focused on developing, evaluating, and disseminating effective strategies for prevention and early detection.

Cancer, however, has the onerous distinction of symbolically embodying the worst fears of our age: pain, suffering, and death (Sontag, 1977). Prevention and early detection are key elements in control, but, unlike other chronic diseases such as heart disease and diabetes, the emotional aura of fear that surrounds this disease creates unique barriers to the utilization of health care services. Experience with community programs has clearly shown that successful cancer control efforts must be tailored to address the distinct health beliefs and behaviors of different cultural groups.

Cancer: The Disease

Cancer is a collective term for an aberrant process of cell division. Any cell type in the body can become cancerous. The common defect in this process is that the normal mechanisms in the cell that regulate cell proliferation become nonfunctional, and the cell begins to divide and reproduce unchecked. Without treatment to stop the growth of these abnormal cells—surgery, radiation therapy, chemotherapy, and/or biologic modifiers—they will eventually physically press upon surrounding tissues and organs and will usually produce satellite areas of growth called metastases. These metastatic lesions are spread by the bloodstream or by lymphatic circulation to distant parts of the body, where they colonize and continue to grow. Each type of cancer has common sites of metastases. Death results from invasion of cancerous cells into surrounding vital organs and depression of the immune system to a point where the individual is no longer able to resist systemic infections (DeVita, Hellman, & Rosenberg, 1989).

Cancer is ubiquitous worldwide (Muir, Waterhouse, Mack, Shanmugaratnam, & Powell, 1987). The overall incidence of the disease in a population appears fairly consistent when controlled for age (because it occurs more frequently with increasing age) and economic level of development of the country. However, the major anatomic sites of cancer vary significantly by geographic and cultural groups (Schottenfeld & Fraumeni, 1982). Comparative epidemiological studies among countries, studies of migrants, and studies of ethnic groups within particular geographic areas have provided data to support the contention that most cancer can be explained by variations in environment, including diet, smoking, and other lifestyle factors (Bonacini & Valenzuela, 1991; Goodman, Gilbert, & Low, 1984; Haenzel, 1982). Socioeconomic status is a strong risk factor as well. Recent data indicate that poverty is a major risk factor for cancer morbidity and mortality regardless of ethnicity (Freeman, 1989; Rimpela & Pukkala, 1987).

Most significant for policy considerations in the United States, cancer rates among racial or ethnic groups often change when members of a group migrate from their native country to another country. Identifying the reasons for such changes, including those factors that predispose an individual to get cancer as well as those that protect an individual from getting cancer, has clear implications for policy and program planning for cancer prevention and control (Fraumeni, Hoover, Devesa, & Kinlen, 1989; Modan, 1974).

Although the specific causes of most cancers are not well understood, cancer is thought to be caused by three factors: environmental exposure, viral agents, and genetic predisposition. Environmental factors that play a major role in the development of cancer include workplace carcinogens such as asbestos, which has been linked epidemiologically to the development of mesothelioma; ionizing radiation, which has been linked to leukemia, breast cancer, thyroid cancer, and lung cancer; and solar radiation, which has been linked to basal cell skin cancers and melanoma. Other environmental factors include lifestyle behaviors such as cigarette smoking and improper diet. Smoking has been linked to cancer of the lung, mouth, bladder, and other organs. Diets high in fat and low in fiber have been linked to cancer of the colon. Pickled foods have been associated with stomach cancer, and excess alcohol intake has been associated with cancers of the esophagus, tongue, and pharynx (Mettlin, 1992).

Viral infections have been implicated in a growing number of cancers. The human papilloma virus is felt to play a causal role in the development of cancer of the cervix. Those who carry the hepatitis B virus have a greatly increased risk of liver cancer. Helicobacter pylori has been shown to be related to stomach cancer and the Epstein-Barr virus to cancer of the nasopharynx (Nomura et al., 1991). The HTLV-1 and HTLV-2 viruses, endemic in Japan, have been linked to T-cell leukemia (Thomas, 1979).

The third cause, genetic predisposition, appears to account for only 2% of cancer incidence (Desmond, 1987). An individual's risk of contracting some cancers increases if there is a history of that cancer in another blood relative. A woman's breast cancer risk, for example, increases by a factor of two if her mother or sister has had the disease and by a factor of six if both have had it (Page & Asire, 1985). A woman's risk increases by a factor of nine if her mother or sister has had cancer in both breasts before menopause (Anderson, 1972). Children with leukemic siblings have a risk of leukemia four times greater than the risk in the general population (Draper, Heaf, & Kennier-Wilson, 1977).

Although the various factors listed above are strongly implicated in the etiology of the various cancers, the specific triggering mechanism that results in cancer is as yet unknown. The process is dependent upon multiple factors, for not everyone exposed to environmental toxins, viruses, or familial predispositions will actually manifest the disease. Nonetheless, cancer initiation, or carcinogenesis, appears to follow a two-step sequence (DeVita et al., 1989). The *initiation* step probably begins through an environmental assault (e.g., exposure to ionizing radiation or a viral infection) that rearranges the DNA sequencing within a cell. This rearrangement results in deregulation of oncogenes (regulators of cell division) that were perhaps operative in embryonic life. The normal negative feedback signal that controls cell growth is lost, and the cell begins to divide uncontrollably and to invade surrounding tissues. If cells that have undergone this initiation (for example, liver cells that are infected with the hepatitis B virus) are then exposed to a *promoting* factor (such as aflatoxins from food), cancer (in this case, liver cancer) may then develop. The process seems logical, but not everyone in a family with one member who has, say, hepatitis B will be infected, and not all of those infected will develop liver cancer. It is apparent that multiple risk factors are operating, yet because further research is needed, only trends can now be reported.

In order to reduce the morbidity and mortality of cancer, a comprehensive cancer control program contains three strategies that are directed to the two-step process of carcinogenesis. Primary prevention efforts are directed toward preventing the development of the disease. Productive efforts should be directed toward the elimination of cigarette smoking, modification of diet and alcohol intake, and avoidance of exposure to other environmental or occupational carcinogens. For many Asian Pacific American populations, it is especially important to prevent exposure to the hepatitis B virus, a risk factor for liver cancer. Secondary prevention consists of early detection and treatment of the disease at a localized stage in order to maximize positive treatment outcomes. If detected early enough, many cancers can be cured. Tertiary prevention efforts provide optimal treatment and rehabilitation to enhance chances of survival, minimize the morbidity that results from treatment, and maximize the quality of life of the cancer survivor.

Treatments for cancer usually involve a combination of two or more of the following interventions: surgery, radiation therapy, chemotherapy, and use of biologic modifiers. Treatments often extend for 6 months to a year. Public attitudes and beliefs about these treatments, which are often toxic and perceived as mutilating, greatly influence the individual's and family's decisions about accepting the treatments or about completing the full course of treatments once they have begun. These issues are affected by cultural beliefs and will be discussed below, in the section on cultural considerations.

Epidemiology of Cancer in Asian Pacific Americans

In this section we present what is known about cancer incidence, mortality, stage at diagnosis, and survival among individual Asian Pacific American groups in the United States. At the outset, it is important to acknowledge that cancer data for individual Asian and Pacific Islander groups in the United States are limited; in some cases, they are nonexistent.

In 1985, the U.S. Department of Health and Human Services published a landmark study on the status of minority health in the United States (Heckler, 1985). One index used in this report to measure the burden of disease in an ethnic group was excess mortality, that is, "the difference between the number of deaths actually observed in a minority group and the number of deaths that would have occurred in that group if it experienced the same death rates for each age and sex as the White population" (p. 63). In this section, we will identify cancer sites where Asian Pacific Americans experience excess mortality in relation to the white population and extend the concept to identify sites of excess cancer incidence and lower cancer survival, as well.

In addition, we will report what is known about the prevalence of behavioral risk factors for cancer and utilization of cancer screening procedures among the different Asian Pacific American populations. As national estimates are generally not available, here we will rely on community surveys. Information about risk factor prevalence and cancer screening utilization is important at the national and community levels for planning effective cancer control programs. Finally, we will examine the effect of immigration to the United States on the epidemiology of cancer among Asian Pacific Americans.

Data Sources

To measure the burden of cancer in a population, it is conventional to examine site- and sex-specific rates of incidence, mortality, stage at diagnosis, and five-year relative survival. These data are

collected in the United States for different ethnicities by the Surveillance, Epidemiology and End Results (SEER) program of the National Cancer Institute. However, until 1988, the only Asian Pacific American ethnicities for which SEER data are available are Chinese, Japanese, Filipino, and Native Hawaiian. The data are collected from 11 regions around the country that represent about 10% of the U.S. population. SEER data for Chinese, Japanese, and Filipinos are taken from the San Francisco/Oakland registry; data for Native Hawaiians are taken from the Hawaii registry.

Starting in 1988, the SEER program began collecting data for the following additional Asian Pacific American ethnicities: Vietnamese, Laotian, Kampuchean, Hmong, Korean, and Asian Indian/Pakistani. The absence of accurate sex-, age- and county-specific counts for each group, however, precludes calculating cancer incidence and mortality rates for these ethnicities. When these data become available from the 1990 census, rates may be calculated.

In addition, since July 1988 the California Tumor Registry in the California Department of Health Services has gathered cancer data for the entire state of California using the same Asian Pacific ethnicity identifiers as the federal SEER program (Seiffert, Price, & Gordon, 1990). According to the 1990 census, nearly 40% of all Asian Pacific Americans in the United States live in California, more than in any other state (U.S. Bureau of the Census, 1991). California data, therefore, provide a useful surrogate for national Asian Pacific American data. Counts of incident site-specific cancer cases by ethnicity are currently available for years 1988 and 1989 from regional registries of the California Tumor Registry. In this chapter we present SEER data and supplement it, when possible, with data from other sources, including the California data, which may be less reliable but provide preliminary insights into the cancer problem among Asian Pacific Americans.

Incidence

Incidence is the number of new cases of a disease diagnosed during a given time period (usually one year) divided by the total number in a population at risk for that disease. Incidence, therefore, is an estimate of the risk in the population of developing the disease during that time period. For each ethnic group, incidence data can be reported for all anatomic sites combined or for separate anatomic sites, such as lung or liver.

For *all anatomic sites combined*, Chinese, Japanese, and Filipinos of both sexes experience lower cancer incidence rates than whites (Horm, Devesa, & Burhansstipanov, in press). However, certain ethnicities experience excess incidence at certain anatomic sites. Incidence rates for these sites are indicated in bold type in Table 4.1.

Chinese males experience an excess incidence of cancers of the oral cavity and pharynx, other oral cavity, nasopharynx, esophagus, stomach, liver, and gallbladder; Chinese females, of cancers of the oral cavity and pharynx, other oral cavity, nasopharynx, stomach, liver, and cervix uteri. Japanese males experience an excess incidence of cancers of the esophagus, stomach, colon and rectum, liver, and gallbladder. Japanese females experience higher incidence rates of cancers of the oral cavity and pharynx, and, like their male counterparts, of the stomach and liver. Filipino men experience excess incidence of cancers of the oral cavity and pharynx and liver. Filipino females have a higher incidence of cancer of the cervix uteri.

Chinese, Japanese, and Filipinos experience cancer incidence at rates lower than whites at a number of sites. Most notable are lower incidence rates of cancers of the lung, skin, breast, corpus uteri, prostate, urinary bladder, and kidney. Although these rates are lower in comparison to rates in the white population, the suffering caused by these cancers should not be overlooked and the potential to prevent these cancers should be emphasized. In addition, given that many of these cancers are related to lifestyle factors or increasing age, the rates of these cancers may increase dramatically as immigrant Asian Pacific American populations grow older or acculturate to a U.S. lifestyle. For example, the breast cancer rates of Chinese and Japanese women in the United States are significantly higher than those in their native countries. As these populations acculturate, the rates of breast cancer in these groups may approach that of their white American counterparts.

Native Hawaiians, unlike the other Asian Pacific American groups for which we have data, have *higher* cancer incidence rates than whites for *all anatomic sites combined* (Heckler, 1985). Most notably, Native Hawaiians experience excess incidence of cancers of the female breast, cervix uteri, corpus uteri, esophagus, larynx, lung, pancreas, stomach, and multiple myeloma.

Because incidence rates from SEER are available only for Chinese, Japanese, Filipino, and Native Hawaiian ethnic groups, it is

Table 4.1 Average Annual Age-Adjusted[a] Cancer Incidence Rates per 100,000 Population, Malignant Cases Only, for Chinese, Japanese, and Filipinos Compared With Whites, San Francisco and Hawaii SEER Areas, 1977 to 1983

	Both Sexes	*Male*	*Female*
All sites			
Chinese	247.6	274.0	225.9
Japanese	242.5	289.2	207.4
Filipino	212.4	221.1	178.7
white	349.6	393.5	329.0
Lung and bronchus			
Chinese	40.6	57.4	24.8
Japanese	27.1	45.0	12.6
Filipino	27.3	35.5	16.1
white	53.6	77.5	36.2
Breast			
Chinese	29.8	0.5	59.8
Japanese	30.0	0.4	55.0
Filipino	19.8	0.4	41.3
white	52.6	0.8	46.8
Colon and rectum			
Chinese	40.4	48.8	33.0
Japanese	48.8	62.3	37.5
Filipino	30.3	36.7	18.3
white	49.1	59.6	41.9
Stomach			
Chinese	10.5	13.0	8.4
Japanese	26.6	38.9	17.2
Filipino	7.8	9.3	5.0
white	8.7	13.0	5.5
Prostate			
Chinese	NA	29.6	NA
Japanese	NA	43.8	NA
Filipino	NA	44.0	NA
white	NA	70.7	NA
Liver			
Chinese	9.6	17.0	2.8
Japanese	3.6	6.2	1.4
Filipino	5.4	8.0	2.1
white	2.2	3.5	1.1
Oral cavity and pharynx			
Chinese	15.4	22.8	8.6
Japanese	4.8	7.7	2.5
Filipino	8.9	10.4	7.1
white	13.3	18.7	9.0

(continued)

Table 4.1 Continued

	Both Sexes	Male	Female
Other oral cavity[b]			
Chinese	14.8	22.1	8.0
Japanese	4.3	6.8	2.2
Filipino	7.9	9.2	6.2
white	10.8	14.5	8.0
Nasopharynx			
Chinese	11.1	15.4	7.1
Japanese	0.6	1.2	0.2
Filipino	2.1	2.9	1.1
white	0.5	0.8	0.3
Esophagus			
Chinese	3.3	5.9	0.9
Japanese	2.8	5.6	0.6
Filipino	3.4	4.5	1.6
white	2.9	4.3	2.0
Gallbladder			
Chinese	1.0	1.3	0.8
Japanese	1.5	1.5	1.5
Filipino	1.4	1.4	1.2
white	1.2	0.7	1.6
Cervix uteri			
Chinese	NA	NA	10.3
Japanese	NA	NA	5.9
Filipino	NA	NA	8.6
white	NA	NA	8.3
Pancreas			
Chinese	6.3	6.6	6.1
Japanese	7.1	9.0	5.5
Filipino	4.9	6.1	3.6
white	8.0	9.7	6.8
Melanoma of skin			
Chinese	0.7	0.6	0.9
Japanese	1.2	1.6	1.0
Filipino	1.0	1.1	0.5
white	11.7	13.2	10.6
Corpus uteri			
Chinese	NA	NA	18.0
Japanese	NA	NA	17.7
Filipino	NA	NA	11.3
white	NA	NA	30.6
Ovary			
Chinese	NA	NA	9.2
Japanese	NA	NA	8.8
Filipino	NA	NA	9.7
white	NA	NA	13.5

(continued)

Table 4.1 Continued

	Both Sexes	Male	Female
Urinary bladder			
Chinese	9.0	14.7	3.7
Japanese	8.0	12.0	4.6
Filipino	4.4	5.4	2.9
white	17.2	29.7	8.2
Kidney and renal pelvis			
Chinese	3.5	4.6	2.6
Japanese	3.6	5.7	2.0
Filipino	3.1	4.2	1.8
white	6.0	9.0	3.6
Brain and nervous system			
Chinese	2.4	2.9	2.0
Japanese	2.4	2.8	2.1
Filipino	1.9	2.9	0.5
white	5.4	6.6	4.3
Hodgkin's disease			
Chinese	0.6	0.6	0.7
Japanese	0.5	0.8	0.3
Filipino	1.2	1.4	1.2
white	2.9	3.5	2.4
Non-Hodgkin's lymphoma			
Chinese	8.5	10.3	6.8
Japanese	7.2	8.5	6.2
Filipino	8.3	9.3	7.0
white	11.1	13.0	9.5
Multiple myeloma			
Chinese	1.9	2.4	1.4
Japanese	1.3	1.3	1.4
Filipino	3.2	3.8	2.0
white	3.4	4.2	2.9
Leukemias			
Chinese	4.8	6.3	3.4
Japanese	5.7	7.1	4.5
Filipino	7.1	8.0	5.8
white	9.5	12.6	7.3

NOTES: Excess incidence for Asians/Pacific Islanders in relation to whites is indicated in bold type. NA = not applicable.
a. 1970 U.S. standard.
b. Total oral cavity and pharynx, excluding lip and salivary glands.

useful to examine the California data to gain insights into the cancer burden borne by other Asian and Pacific Islander ethnicities. Although *rates* are not yet available from the California data, it is possible to calculate proportional incidence ratios (PIRs), that is, ratios of the proportion of all cancers accounted for by a particular anatomic site in a population to the same proportion in the white population during a given period of time. For example, if 40% of all cancers among females in a particular ethnic group during a given time period are cancers of the cervix uteri but only 10% of all cancers among white females during the same time period are cancers of the cervix uteri, then the cervical cancer PIR for that ethnic group would be 4.

PIRs at selected sites for Vietnamese, Koreans, Asian Indians, Laotians, Kampucheans, and other Asians are presented in Table 4.2. The data show higher PIRs for some groups at some sites when compared with whites. Although a high PIR may indicate sites that should be targeted for interventions, higher PIRs do not necessarily indicate higher incidence rates.

Several additional cautions should be noted in interpreting these data: The number of site-, sex-, and ethnicity-specific cases recorded for Asian Pacific Americans since 1988 is still relatively small and, therefore, the PIRs calculated here are potentially subject to variability. Furthermore, it can be expected that misclassification errors have resulted in some cancer cases being assigned to incorrect ethnicities, especially because coding of some Asian Pacific American ethnicities began only relatively recently. For example, an individual with the common Korean surname Park, on the basis of the surname only, may be understandably but incorrectly classified as Caucasian. Furthermore, groups such as the Chinese-Vietnamese, that is, individuals of Chinese ancestry born in Vietnam, may be legitimately classified as either Vietnamese or Chinese. In addition, Amerasians or persons of "mixed" ethnicity may present other difficult classification dilemmas.

The proportion of all cancers accounted for by lung cancer is higher among some Asian and Pacific Islander ethnicities than among whites (see Table 4.2). These differences may be explained by the high cigarette smoking prevalence rates, especially among males, of some Asian Pacific immigrant groups, as discussed below.

The proportion of liver cancer among Asian Pacific American males, with the exception of Asian Indians, is dramatically higher for all groups than among whites. This difference is most likely explained by the high prevalence of hepatitis B carrier status, liver fluke infestations, and aflatoxin exposure among Asian immigrants and their high correlation with subsequent development of hepatoma (Centers for Disease Control, 1991; Lam, 1986; Nomura et al., 1991).

Table 4.2 Proportional Cancer Incidence Ratios, Asian Pacific Americans in California for Selected Sites

Site	*Vietnamese*	*Korean*	*Asian Indian*	*Laotian*	*Kampuchean*	*Hmong*	*Other Asian*
Lung	1.0 (42)	1.1 (47)	0.2 (6)	2.3 (6)	1.1 (5)	— (0)	0.7 (60)
Liver (males)	14.5 (17)	12.4 (14)	— (0)	9.6 (1)	25.0 (4)	— (0)	10.1 (22)
Breast (females)	0.4 (22)	0.7 (35)	1.06 (33)	0.6 (1)	0.2 (1)	— (0)	1.4 (115)
Cervix (females)	2.2 (44)	2.6 (45)	1.4 (17)	1.5 (1)	3.7 (6)	— (0)	2.3 (67)
Nasopharynx	24.0 (8)	— (0)	— (0)	100.0 (2)	28.0 (1)	— (0)	14.0 (9)
Colon and rectum	0.7 (33)	0.6 (26)	0.9 (24)	1.1 (3)	0.4 (2)	2.4 (1)	0.6 (51)
Stomach	3.5 (23)	7.6 (50)	1.9 (7)	— (0)	2.5 (1)	— (0)	2.2 (28)
Esophagus	1.9 (5)	2.3 (6)	0.6 (1)	— (0)	— (0)	— (0)	0.8 (4)

SOURCE: California Tumor Registry Regions 1 and 8, 1988-1989; Regions 9 and 10, 1988. Region 10 cancer incidence data have been collected under Subcontract 050F-8710 with the California Public Health Foundation. The contract is supported by the California Department of Health Services as part of its statewide cancer reporting program, mandated by Health and Safety Code Sections 210 and 211.3. The ideas and opinions expressed herein are those of the author, and no endorsement of the State of California, Department of Health Services, or the California Public Health Foundation is intended or should be inferred.
NOTE: Numbers of cases appear in parentheses.

The proportion of female breast cancer among Asian Indians parallels the proportion among whites, but for the other Asian and Pacific Islander ethnicities the proportion of breast cancer is dramatically lower. These lower proportions are consistent with lower breast cancer incidence rates for Chinese, Japanese, and Filipinos, as reported above.

Cervical cancer proportions are higher than those for whites for every Asian Pacific American group. Higher cervical cancer proportions may be explained by the relative lack of Pap smear screening among Asian and Pacific Islander immigrants in their countries of origin as well as in the United States, as discussed below. In addition, some have speculated that poor sexual hygiene among Asian Pacific American immigrants in their countries of origin may result in a higher prevalence of the human papilloma virus, which has been linked to the development of cervical cancer (Weisburger & Horn, 1991).

Colorectal cancer proportions are lower than for whites except for Laotians, but stomach cancer proportions are higher. Vietnamese and Korean esophageal cancer proportions are higher than for whites, whereas Asian Indian, Laotian, Kampuchean, and other Asian proportions are lower. The "other Asian" category includes Thais, Malaysians, Indonesians, and Burmese.

Stage at Diagnosis

Although the terminology for the stage of the disease at the time of diagnosis varies by the site of cancer, its cell type, and current practice, cancer can be classified into four stages at diagnosis: *in situ*, confined to an area less than or equal to 1 to 3 cm and a thickness of one cell layer; *localized*, restricted to a single anatomical area with no gross lymph node involvement; *regional*, contained within an anatomical region with lymph node involvement; and *distant*, which includes metastatic sites distant from the primary or original site. With this information, we can calculate the proportion of cancer at a particular site that is diagnosed at in situ, localized, regional, and distant stages. It is important to have data regarding the stage of the disease at the time of diagnosis, because the stage indicates the degree of spread of the disease. As mentioned above, the more localized the disease, the better the chance for cure. Some groups of Asian Pacific Americans with potentially curable cancers are diagnosed with late-stage disease.

When compared with whites, for example, on the average, Japanese, Chinese, Vietnamese, Filipino, and Korean women are diagnosed with cervical cancer at later stages (Figure 4.1). The comparisons for breast cancer (Figure 4.2), however, show less dramatic differences between whites and Asian Pacific Americans. Vietnamese, Chinese, and Japanese women, on the average, present with earlier-stage breast cancer than do whites, whereas Filipino and Korean women present at a later stage. Detection at a later stage may mean higher mortality and lower survival rates. Culturally appropriate cancer screening programs may result in the detection of cancer among Asian Pacific Americans at an earlier, more treatable stage.

Mortality

The mortality rate is calculated by dividing the number of persons who have died of a disease during a given time period (usually

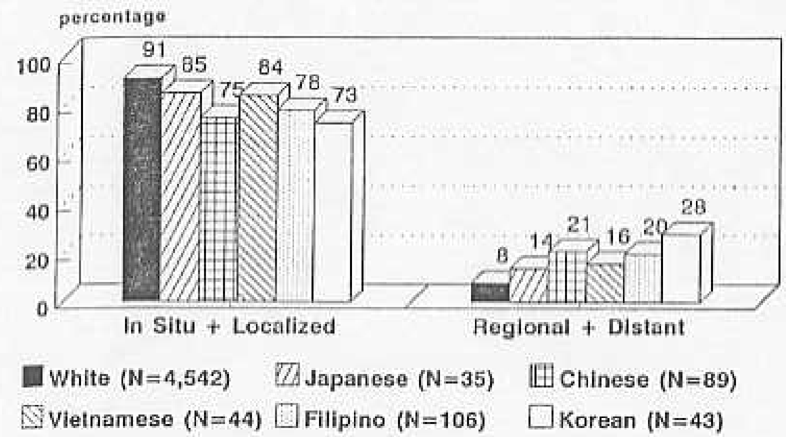

Figure 4.1. Cervical Cancer Stage at Diagnosis, Asian Pacific American Ethnicities and Whites, California

SOURCE: Data from the California Tumor Registry, Regions 1 and 8, 1988-1989; Regions 9 and 10, 1988 only.
NOTE: Total percentage may be less than 100 because unstaged cases are omitted.

a year) by the total number in the population during that period. As with incidence rates, mortality rates can also be reported for all anatomic sites combined or for separate sites.

National SEER data show that mortality rates from cancer at *all anatomic sites combined* are lower among Chinese, Japanese, and Filipinos than among whites (Horm et al., in press). However, when the data are disaggregated by anatomic site, rates exceed the comparable white rates for certain sites and for certain groups. Mortality rates are shown in Table 4.3.

Chinese males experience excess mortality of cancers of the oral cavity and pharynx, other oral cavity, nasopharynx, esophagus, stomach, and liver; Chinese females experience excess cancer mortality at the same sites, with the exception of esophagus and the addition of cervix uteri. Japanese males experience excess deaths from cancers of the nasopharynx, stomach, liver, and gallbladder; Japanese females, from cancers of the stomach and liver. Filipino males experience excess mortality from cancers of the nasopharynx and liver; Filipino females, from cancer of the nasopharynx only.

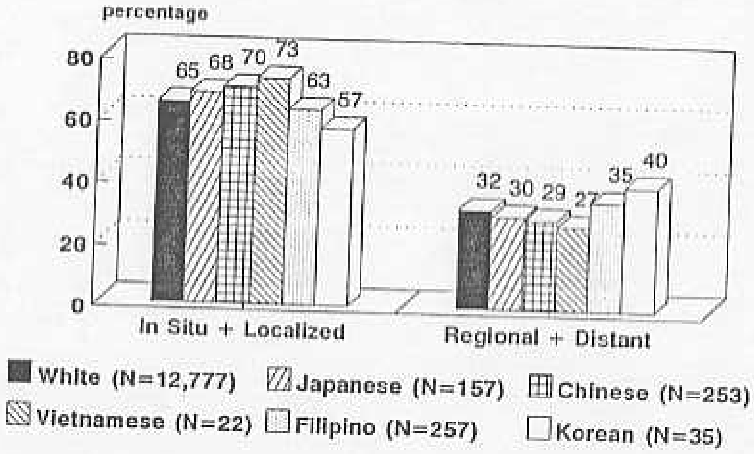

Figure 4.2. Breast Cancer Stage at Diagnosis, Asian Pacific American Ethnicities and Whites, California Females

SOURCE: Data from the California Tumor Registry, Regions 1 and 8, 1988-1989; Regions 9 and 10, 1988 only.
NOTE: Total percentage may be less than 100 because unstaged cases are omitted.

Native Hawaiians, however, have, as with incidence rates, higher cancer mortality rates than whites for all sites combined (Heckler, 1985). Specifically, Native Hawaiians experience excess mortality from cancers of the female breast, cervix uteri, rectum, esophagus, larynx, lung, pancreas, stomach, and multiple myeloma.

Chinese, Japanese, and Filipinos experience lower cancer mortality rates than whites at a number of sites (Table 4.3). Most notable are lower incidence rates of cancers of the colon and rectum, lung, skin, breast, corpus uteri, prostate, urinary bladder, and kidney.

Five-Year Relative Survival Rates

Five-year relative survival rates represent the percentage of persons with cancer who remain alive 5 years after diagnosis, after adjusting for age, race, and other causes of mortality. As shown in Table 4.4, for *all sites combined*, Chinese and Filipinos of both sexes and Japanese males have lower 5-year relative survival rates than

Table 4.3 Average Annual Age-Adjusted[a] Cancer Mortality Rates per 100,000 Population for Chinese, Japanese, and Filipinos Compared With Whites, San Francisco and Hawaii SEER Areas, 1977 to 1983

	Both Sexes	*Male*	*Female*
All sites			
Chinese	125.0	158.0	93.5
Japanese	108.0	138.6	84.8
Filipino	72.0	84.0	48.2
white	164.2	209.8	133.5
Lung and bronchus			
Chinese	31.7	45.2	18.6
Japanese	19.8	34.0	8.7
Filipino	14.5	20.0	6.9
white	41.6	69.6	21.0
Breast			
Chinese	6.1	0.2	12.0
Japanese	5.8	—	10.2
Filipino	3.9	0.2	7.8
white	15.0	0.2	26.8
Colon and rectum			
Chinese	17.9	23.8	12.4
Japanese	16.8	21.8	13.0
Filipino	7.9	9.8	4.2
white	21.4	25.7	18.4
Stomach			
Chinese	7.6	10.1	5.3
Japanese	17.9	24.3	13.2
Filipino	3.5	4.0	2.6
white	5.2	7.6	3.6
Prostate			
Chinese	NA	7.4	NA
Japanese	NA	8.4	NA
Filipino	NA	8.7	NA
white	NA	21.1	NA
Liver			
Chinese	10.1	16.4	3.8
Japanese	3.4	4.9	2.1
Filipino	3.5	5.3	1.3
white	1.9	2.7	1.3
Oral cavity and pharynx			
Chinese	5.4	8.0	2.7
Japanese	1.7	2.8	0.8
Filipino	2.4	3.0	1.2
white	3.3	5.2	1.8

(continued)

Table 4.3 Continued

	Both Sexes	Male	Female
Other oral cavity[b]			
Chinese	5.3	7.8	2.6
Japanese	1.6	2.6	0.7
Filipino	2.2	2.8	1.0
white	3.0	4.7	1.6
Nasopharynx			
Chinese	4.1	6.3	1.9
Japanese	0.4	0.5	0.2
Filipino	0.8	1.0	0.4
white	0.2	0.4	0.2
Esophagus			
Chinese	2.8	4.7	0.9
Japanese	2.1	3.8	0.8
Filipino	1.8	2.6	0.3
white	2.6	4.5	1.2
Cervix uteri			
Chinese	NA	NA	3.3
Japanese	NA	NA	2.2
Filipino	NA	NA	1.9
white	NA	NA	3.2
Gallbladder			
Chinese	0.7	0.5	0.9
Japanese	1.1	0.9	1.2
Filipino	0.6	0.6	0.6
white	0.9	0.6	1.2
Pancreas			
Chinese	6.4	7.6	5.3
Japanese	7.0	8.3	6.0
Filipino	3.5	4.5	2.1
white	8.4	10.4	6.8
Melanoma of skin			
Chinese	0.2	0.4	0.2
Japanese	0.2	0.3	0.1
Filipino	0.3	0.3	0.3
white	2.2	2.8	1.6
Corpus uteri			
Chinese	NA	NA	2.7
Japanese	NA	NA	2.4
Filipino	NA	NA	1.7
white	NA	NA	3.9
Ovary			
Chinese	NA	NA	3.8
Japanese	NA	NA	4.4
Filipino	NA	NA	2.6
white	NA	NA	8.1

(continued)

Table 4.3 Continued

	Both Sexes	Male	Female
Urinary bladder			
Chinese	1.7	2.6	0.9
Japanese	1.8	2.3	1.5
Filipino	1.4	1.6	0.7
white	3.8	6.8	1.9
Kidney and renal pelvis			
Chinese	1.7	2.4	1.1
Japanese	1.6	2.5	1.0
Filipino	0.8	1.1	0.5
white	3.2	4.6	2.1
Brain and nervous system			
Chinese	1.3	1.5	1.1
Japanese	1.3	1.4	1.1
Filipino	1.1	1.3	0.7
white	4.2	5.0	3.4
Hodgkin's disease			
Chinese	0.3	0.5	0.1
Japanese	0.1	0.1	0.0
Filipino	0.3	0.3	0.2
white	0.9	1.1	0.7
Non-Hodgkin's lymphoma			
Chinese	2.8	3.1	2.5
Japanese	3.5	4.2	3.0
Filipino	3.4	3.8	2.6
white	5.2	6.3	4.4
Multiple myeloma			
Chinese	1.4	1.8	1.1
Japanese	1.3	1.7	1.0
Filipino	1.5	1.9	0.6
white	2.4	3.0	2.0
Leukemias			
Chinese	4.1	5.2	3.1
Japanese	3.5	4.9	2.4
Filipino	4.1	5.0	2.3
white	6.7	8.9	5.2

NOTES: Excess mortality for Asians/Pacific Islanders in relation to whites is indicated in bold type. NA = not applicable; Dash indicates that there were no cases.
a. 1970 U.S. standard.
b. Total oral cavity and pharynx, excluding lip and salivary glands.

whites (Horm et al., in press). Japanese women, however, have higher 5-year relative survival rates than white women.

The data for individual anatomic sites show that Chinese males have lower survival rates for cancers of the colon and rectum, liver, pancreas, and prostate, and the leukemias; Chinese females, for cancers of the liver, pancreas, lung and bronchus, corpus uteri, and urinary bladder, and non-Hodgkin's lymphoma and the leukemias. Japanese males have lower survival rates for cancers of the oral cavity and pharynx, esophagus, liver, pancreas, and lung and bronchus, and non-Hodgkin's lymphoma and the leukemias; Japanese females, for cancers of the liver, lung and bronchus, corpus uteri, and urinary bladder, and non-Hodgkin's lymphoma and the leukemias. Filipino males have lower survival rates for cancers of the oral cavity and pharynx, other oral cavity, colon and rectum, prostate, urinary bladder, kidney, and renal pelvis, and non-Hodgkin's lymphoma and the leukemias; Filipino females, for cancers of the colon and rectum, pancreas, lung and bronchus, breast, and corpus uteri, and non-Hodgkin's lymphoma and the leukemias.

Native Hawaiians have poorer survival rates for all sites combined than whites (Heckler, 1985). Specifically, Native Hawaiians have lower survival rates from cancers of the urinary bladder, female breast, cervix uteri, colon, larynx, lung and bronchus, and prostate and from multiple myeloma.

Chinese, Japanese, and Filipinos experience higher 5-year relative survival rates than whites at a number of sites. Most notable are higher survival rates for cancers of the nasopharynx, stomach, breast, colon and rectum, cervix, and ovary.

Although, as an aggregate group, Chinese, Japanese, and Filipinos have lower cancer incidence and mortality rates than whites for all anatomic sites combined, their survival experience is generally poorer than that of whites. In other words, overall, Asian Pacific Americans may be less likely to develop cancer and, overall, Asian Pacific Americans may be less likely to die from cancer. But those Asian Pacific Americans who do develop cancer are less likely to survive. Especially noteworthy is that 5-year relative survival rates among some Asian Pacific American groups for cancers of the colon and rectum and breast, for example, are poorer even though mortality rates at these sites are lower when compared with those of whites.

Prevalence of Cancer Risk Factors

Published national data show that the prevalence of cigarette smoking, a risk factor for cancer of the lung and other organs, is lower among the *aggregate* Asian Pacific population than among

Table 4.4 Five-Year Relative Survival Rates for Cancer Cases Diagnosed From San Francisco/Oakland and Hawaii SEER Registries, 1975 to 1984, for Chinese, Japanese, and Filipinos Compared With Whites at the Same Sites (in percentages)

	Both Sexes	*Male*	*Female*
All sites			
Chinese	47.5	38.9	56.2
Japanese	53.1	44.4	61.6
Filipino	46.1	38.9	56.7
white	52.9	46.1	58.7
Lung and bronchus			
Chinese	15.1	15.0	15.4
Japanese	14.3	13.4	16.8
Filipino	13.2	14.3	10.1
white	15.7	13.8	18.9
Breast			
Chinese	80.9	—	80.8
Japanese	85.4	—	85.4
Filipino	73.6	—	73.7
white	78.3	90.2	78.3
Colon and rectum			
Chinese	53.1	48.7	58.8
Japanese	61.7	60.8	62.8
Filipino	44.8	42.5	51.4
white	54.4	54.2	54.6
Stomach			
Chinese	21.6	17.8	26.6
Japanese	29.8	28.1	32.5
Filipino	18.8	21.2	0.0
white	16.3	14.3	18.8
Prostate			
Chinese	NA	72.5	NA
Japanese	NA	80.5	NA
Filipino	NA	71.7	NA
white	NA	73.0	NA
Liver			
Chinese	2.0	1.4	4.1
Japanese	1.5	1.5	0.0
Filipino	6.7	5.0	—
white	4.2	3.2	6.1
Oral cavity and pharynx			
Chinese	55.7	54.3	58.5
Japanese	44.4	41.7	51.6
Filipino	46.6	40.6	58.4
white	50.2	49.6	51.1

(continued)

Table 4.4 Continued

	Both Sexes	Male	Female
Other oral cavity[a]			
Chinese	54.6	53.8	56.2
Japanese	45.1	42.9	50.5
Filipino	45.0	39.1	56.8
white	42.6	39.3	47.6
Nasopharynx			
Chinese	56.6	55.9	57.7
Japanese	45.1	—	—
Filipino	47.5	46.3	—
white	41.1	43.1	35.5
Esophagus			
Chinese	11.5	7.0	—
Japanese	5.8	4.8	—
Filipino	3.4	6.5	—
white	5.8	6.3	4.8
Gallbladder			
Chinese	—	—	—
Japanese	16.2	—	14.9
Filipino	—	—	—
white	8.8	3.0	10.8
Pancreas			
Chinese	0.0	0.0	0.0
Japanese	2.6	0.9	4.8
Filipino	5.2	3.8	0.0
white	2.1	2.2	2.1
Corpus uteri			
Chinese	NA	NA	86.1
Japanese	NA	NA	84.1
Filipino	NA	NA	79.9
white	NA	NA	86.9
Melanoma of skin			
Chinese	—	—	—
Japanese	81.0	—	—
Filipino	—	—	—
white	83.2	78.5	88.3
Cervix uteri			
Chinese	NA	NA	74.6
Japanese	NA	NA	70.2
Filipino	NA	NA	73.0
white	NA	NA	69.0
Ovary			
Chinese	NA	NA	43.3
Japanese	NA	NA	43.5
Filipino	NA	NA	44.7
white	NA	NA	37.4

(continued)

Table 4.4 Continued

	Both Sexes	Male	Female
Urinary bladder			
Chinese	78.5	83.9	56.8
Japanese	80.8	85.6	70.1
Filipino	58.4	64.9	—
white	77.5	79.0	73.5
Kidney and renal pelvis			
Chinese	60.7	58.9	—
Japanese	63.1	61.4	66.7
Filipino	47.0	44.3	—
white	53.1	54.6	50.0
Brain and nervous system			
Chinese	35.9	25.5	—
Japanese	40.6	26.5	57.4
Filipino	29.6	28.4	—
white	25.1	22.8	28.3
Hodgkin's disease			
Chinese	—	—	—
Japanese	—	—	—
Filipino	43.5	—	—
white	73.5	69.7	78.7
Non-Hodgkin's lymphoma			
Chinese	50.3	51.4	48.7
Japanese	41.1	38.5	43.9
Filipino	33.8	32.9	35.1
white	49.9	47.9	52.1
Multiple myeloma			
Chinese	20.5	—	—
Japanese	37.6	—	—
Filipino	17.1	7.8	—
white	25.4	26.1	24.6
Leukemias			
Chinese	19.8	22.1	16.4
Japanese	26.0	22.0	31.4
Filipino	22.3	21.9	22.5
white	32.8	33.7	31.6

NOTES: Lower survival for Asians/Pacific Islanders in relation to whites is indicated in bold type. NA = not applicable. Dashes indicate instances in which there were too few cases for a reliable estimate of the five-year relative survival rate.
a. Total oral cavity and pharynx, excluding lip and salivary glands.

whites. Table 4.5 shows comparative cigarette smoking prevalence data for Asian Pacific Americans compared with whites from the National Health Interview Survey (NHIS; National Center for

Table 4.5 Prevalence of Cigarette Smoking Among U.S. Whites and Asian Pacific Americans

	Year	*Male*	*Female*
Whites (NHIS)	1991	30.9	28.6
Whites (CPS)	1991	27.0	23.3
Aggregated Asian Pacific American data			
Asians (NHIS)	1991	24.9	11.9
Asian Pacific Islanders (CPS)	1991	22.1	10.5
Disaggregated Asian Pacific American data			
Vietnamese	1991	35.0	0.4
Filipinos	1991	20.0	6.3
Chinese	1989	28	1
Koreans	1989	33	2
Laotians	1985	72	—[a]
Kampucheans	1982	70.7	12.9
Hmong	1982	26.0	1.7
Sino-Vietnamese	1982	54.5	1.7

SOURCES: For whites (NHIS) and Asians (NHIS), National Center for Health Statistics (1991); for whites and Asians/Pacific Islanders (CPS), National Heart, Lung and Blood Institute (1991); for Vietnamese and Chinese, Centers for Disease Control (1992c); for Filipinos, Jang (1991); for Koreans, Han et al. (1989); for Lao, Levin (1985); for Kampucheans, Hmong, and Sino-Vietnamese, Rumbaut (1989).
NOTE: a. Women were not surveyed

Health Statistics, 1991) and the Current Population Survey (CPS) conducted by the U.S. Bureau of the Census (National Heart, Lung and Blood Institute, 1991). These data show that smoking rates among Asian Pacific Americans are lower than rates among whites. Cigarette smoking rates among Asian Pacific American females, especially, are considerably lower than among their white counterparts.

Disaggregated Asian Pacific American data from community surveys, however, show considerable variation in smoking rates by ethnicity. Some groups, especially recently immigrated Vietnamese, Chinese, Korean, Laotian, Kampuchean, and Sino-Vietnamese males, have smoking rates that are considerably higher than white rates. The community smoking survey data again illustrate how important health status differences can be discerned if each Asian and Pacific Islander ethnicity is examined separately rather than as an aggregate Asian Pacific group.

Carriers of the hepatitis B virus have a risk of liver cancer that is more than 200 times that in the noninfected population (Beasley & Hwang, 1984). Although the prevalence of hepatitis B carrier status is less than .05% in the general U.S. population, the rates among immigrants to the United States from Asia, where the disease is endemic, range from 10% to 14% (Jenkins, McPhee, Bird, & Bonilla, 1990; Mettlin & Dodd, 1991; National Cancer Institute, 1987). Hepatitis B is 100 times more contagious than the human immunodeficiency virus (HIV).

An important liver cancer prevention strategy is the screening of pregnant women for hepatitis B carrier status and the provision of immunoprophylaxis to infants born to women who are found to be carriers of the virus. A number of screening programs are in place, but compliance with immunoprophylaxis protocols is sometimes poor. For example, in 1984 to 1985, at one San Francisco Bay Area county hospital, 89% of pregnant immigrant Asian and Pacific Islander women were screened for hepatitis B. However, only 37% of the infants born to hepatitis B carrier mothers in this hospital completed the recommended three-dose immunoprophylaxis protocol (Klontz, 1986).

More recently, the Centers for Disease Control (1991) has published guidelines that call for the universal immunization of all infants against hepatitis B. However, the cost of the three-dose immunizations (approximately $120) is likely to remain a barrier to successful implementation of the universal immunization guidelines among Asian Pacific Americans. In addition, the supplies of vaccine and the staff available in clinics that administer the vaccines are limited (Hammer, 1992).

Screening

Screening guidelines for the early detection of cancer in asymptomatic individuals have been established by the National Cancer Institute (1987) and the American Cancer Society (Mettlin & Dodd, 1991). Early cancer detection and treatment have been associated with lower mortality and higher survival rates. Although the two sets of guidelines differ somewhat in the recommended frequencies and ages at which screening is advised, they both recommend regular Papanicolaou tests, pelvic examinations, clinical breast examinations and mammography for women, and digital rectal examinations, stool occult blood tests, and sigmoidoscopy for both sexes.

Table 4.6 Compliance With Cancer Screening Recommendations Among Asian Pacific Americans and U.S. Whites (in percentages)

	Procedure									
	Pap Smear		Breast Exam		Mammography		Rectal Exam		Stool Blood Test	
Population, Year	Never	Overdue	Never	Overdue	Never	Overdue	Never	Overdue	Never	Overdue
Chinese, 1989	45	—	—	—	68	—	—	—	—	—
Koreans, 1989	—	65^{a}	—	71^{b}	—	—	—	—	—	—
Vietnamese, 1991	51	62	47	57	—	—	—	—	—	—
Hawaiian, 1987	—	—	—	—	48	55	70	—	62	—
					55^{c}	78^{c}, 73^{d}	—	—	—	—
Asian Pacific Islander, 1990	—	—	—	—	71	—	—	—	—	—
Whites, California, 1990, and United States, 1987	5^{e}	34^{e}	12^{e}	31^{e}	30^{e}	38^{e}	42^{f}, 43^{g}	81^{f}, 77^{g}	63^{f}, 63^{g}	83^{f}, 80^{g}

SOURCES: For Chinese, Centers for Disease Control (1992a); for Koreans, Han et al. (1989); for Vietnamese, Centers for Disease Control (1992b); for Hawaiians, Tash et al. (1988); for Asian Pacific Americans, Jones (1990); for whites, California, California Department of Health Services (1990); for whites, United States, Brown, Potosky, Thompson, and Kessler (1990).

NOTES: Dashes indicate no data available.

a. Women age ≥18 who did not have a Pap smear in the last year.
b. Women age ≥18 who did not have a breast exam in the last year.
c. Hawaiian women of any ethnicity, age ≥50.
d. Hawaiian women of any ethnicity, ages 40-49.
e. California women.
f. U.S. men, age ≥40.
g. U.S. women, age ≥40.

Table 4.6 presents a summary of results available from community surveys among Asian Pacific American groups regarding compliance with cancer screening guidelines. When compared with whites, all Asian Pacific American populations have lower compliance for all procedures. As can be seen from the table, there are many Asian and Pacific Islander ethnicities for which there are no data on compliance with certain cancer screening recommendations.

Using a modified Behavioral Risk Factor Survey instrument, investigators at Asian Health Services, a community clinic in Oakland, California, conducted Chinese-language face-to-face surveys of 296 Chinese households in 1989 (Centers for Disease Control,

1992a). They found that Chinese women were less likely to have ever had mammograms or Pap smears than were women in the general California population. Chinese women with less than eighth-grade education or who did not speak English fluently were less likely to have ever had mammograms than their Chinese counterparts who were more highly educated or spoke English more fluently.

Han et al. (1989) conducted a Korean- and English-language bilingual mail survey of 345 Korean households in Los Angeles County in 1989. They found that the frequency of having had a Pap smear in the past year was highest among the reproductive age group, ages 30 to 44, but declined thereafter. Frequency of having had a breast examination within the last year was highest among the 45 to 64 age group but lower among both younger and older women.

Using a modified Behavioral Risk Factor Survey instrument, investigators at the University of California, San Francisco, surveyed 1,011 Vietnamese in California in the Vietnamese language using a computer-assisted telephone interview method in 1991 (Centers for Disease Control, 1992b). They found that women were significantly less likely to have had a Pap smear if they had less than a college education, were unemployed, were unmarried, had lower household incomes, or were more recent immigrants. Furthermore, women who were unmarried, had lower household incomes, or were more recent immigrants were significantly less likely to have had clinical breast examinations. Lower income and more recent immigration were also significantly associated with never having had a mammogram.

In an earlier study, the same authors conducted Vietnamese-language face-to-face interviews with 215 Vietnamese individuals in the San Francisco area in 1987 (Jenkins et al., 1990). They observed that respondents who reported that their regular physicians were Vietnamese were less likely to have had rectal examinations or stool occult blood tests than were respondents with non-Vietnamese physicians. The authors speculated that reluctance to disrobe, especially among Vietnamese women, and physician deference to a patient's modesty may act as barriers to some cancer screening procedures.

In Hawaii, investigators using the Behavioral Risk Factor Survey instrument surveyed 1,862 adults of all ethnicities using random-digit dialing techniques in 1987 (Tash, Chung, & Yasunobu, 1988). Among the 181 women surveyed who were of Hawaiian or part-

Hawaiian ethnicity, 73% had heard of mammograms, compared with 92% of their Caucasian counterparts in Hawaii. Among women of any ethnicity age 50 or more, 55% had never had mammograms, compared with national data for white women of 18% (Wirthlin Group, 1992).

It should be noted that there are no effective screening procedures available for some cancers that commonly strike Asian Pacific Americans (e.g., cancers of the liver, pancreas, stomach, esophagus, and corpus uteri). Moreover, because symptoms of these cancers may appear only after the disease has advanced to a relatively late stage, these cancers may have very poor prognosis. Thus health care practitioners should be alert to a possible cancer diagnosis when a patient presents with vague complaints of discomfort that could be early signs of cancer at these common sites. These complaints may be mistaken for part of the Asian and Pacific Islander cultural tendency to somatize emotional complaints and may be treated symptomatically, without diagnostic workup.

Implications of Migration Studies for Cancer Control

Migration studies compare cancer rates between members of a group in a country of origin and members of that same group in a host country to which they have immigrated. Investigators also compare successive generations of immigrants in the host country and observe the successive changes in cancer rates and the concomitant acculturation changes that occur in the group. These studies are important in clarifying the role of nongenetic determinants in the etiology of cancer. Identification of the changes in environmental exposures and lifestyle habits that are correlated with changes in cancer incidence among immigrants has significant implications for the prevention of cancers for Asian Pacific American groups specifically, but the findings may also be applicable for cancer prevention in general.

Migration studies among Asian Pacific immigrant groups to the United States that document the effect of immigration on cancer epidemiology are limited to studies of Chinese and Japanese. The incidence rates of the following cancers have been shown to rise among Chinese and Japanese when they emigrate from their respective countries of origin to the United States: prostate, corpus uteri, breast, colon, rectum, and pancreas (Thomas, 1979). For example, migration studies show that when Chinese move to the United States, their prostate cancer incidence rates increase more than 11-fold, although the rates remain less than half those found among males in the general U.S. population (Yu, Randall, Gao, Gao, & Wynder, 1991). Colon cancer incidence rates among Chinese Americans are three times higher than rates among Shanghai Chinese (Yu et al., 1991).

In addition, female breast cancer incidence rates have risen more than threefold among Chinese immigrants while still remaining below white rates (Yu et al., 1991). A similar increase in breast cancer incidence has been noted among Japanese immigrants to the United States; during the period from 1968 to 1971 the breast cancer incidence ratio among Japanese women in Miyagi, Japan, was 0.18 (using the rate among whites in San Francisco for the same period as the reference, 1.00), whereas during the same period the ratio was 0.59 among their Japanese counterparts in San Francisco (Thomas, 1979). Further evidence of this increase in successive generations of migrants are the higher breast cancer death rates for Nisei (second-generation Japanese Americans) than among Issei (first-generation Japanese Americans). More recently, it has been shown that Japanese women who immigrate to the United States at younger ages have a higher breast cancer incidence rate than those who immigrate at an older age (Shimizu et al., 1991).

Colorectal and breast cancer have been related to diets rich in animal fat (Armstrong & Doll, 1975; Goodwin & Boyd, 1987). Traditional diets in China and Japan are lower in fat than is the typical U.S. diet. In Japan, for example, fat accounts for only 10% to 15% of calories in the traditional diet (mostly unsaturated fat derived from fish oils) compared with the Western diet, in which fat makes up 40% of calories (Weisburger, 1991). The total dietary fat intake of Americans is 2.7 times that consumed by Chinese (Yu et al., 1991). The evidence is growing that the increased incidence of colorectal and breast cancers among Chinese and Japanese immigrants to the United States may be the result of immigrants' adoption of American dietary practices as they acculturate.

Diet may also affect breast cancer rates through hormonal influences. The high-fat diet of girls in the United States may cause them to reach the critical fat-to-lean body mass ratio necessary for the onset of menarche earlier than girls in China. Earlier onset of menarche and later menopause is related to higher incidence of breast cancer. Some have speculated that with early onset of menarche the breast tissue of women is exposed to the stimulation of estrogen for a longer period of time, thus increasing the likelihood of mutations or translocations of genetic material. In China, the average age of puberty is 17, whereas in the United States the average age of puberty has steadily been decreasing to its present level of 12.8 years of age (Harris, Lippman, Veronesi, & Willett, 1992).

The incidence rates for the following cancers decline for Chinese and Japanese when they immigrate to the United States: liver, cervix uteri, stomach, and esophagus (Thomas, 1979). Declines in liver cancer may be caused by two factors: better control and lower prevalence of the hepatitis B virus, and improved food handling and storage, resulting in less exposure to aflatoxins. Declines in cancer of the cervix may be the result of increased rates of Pap smear screening and the detection of precancerous lesions that may then be excised. Cervical cancer rates may also decline as immigrants adopt better sexual hygiene practices or barrier contraception methods, thereby reducing the transmission of the human papilloma virus, which has been associated with cervical cancer.

Diets low in fresh fruits and vegetables and high in dried, salted fish, pickled vegetables, and smoked fish (common in many Asian diets but rare in the United States) have been shown to raise the risk of stomach cancer (Howson, Hiyama, & Wynder, 1986). Declines in stomach cancer may therefore be the result of favorable dietary changes among Chinese and Japanese immigrants to the United States as they acculturate to the American diet. Esophageal cancer also has a dietary etiology and has been linked to consumption of food and alcoholic beverages contaminated with carcinogenic nitros-compound-forming yeasts and molds ("Leads in Oesophageal Cancer," 1974). Declines in esophageal cancer may be the result of better food preservation methods in the United States.

Clearly, the field of migration studies offers fertile ground for insights into the causes of cancer. Future research should focus on such large immigrant populations as Filipinos, Koreans, Vietnamese, Laotians, and Kampucheans, which have not yet been studied. In order to perform such studies, however, it will be necessary to develop rigorous cancer incidence, mortality, and behavioral risk factor data in the countries of origin so that comparisons can be made among foreign-born, migrant, and U.S.-born groups. For such data to be collected, it will be necessary to conduct behavioral risk factor surveillance and to establish national tumor registries in the countries of origin.

Cultural Considerations in the Treatment and Rehabilitation of Asian Pacific American Cancer Patients

We have focused thus far on the epidemiological data to describe the burden of cancer on Asian Pacific Americans. We turn now to a consideration of the emotional and social impact of the cancer experience. We will show how the individual's cultural background fundamentally influences how that person will interpret and utilize cancer control efforts.

Enormous emotional, existential, and practical problems arise for individuals and their families when they are confronted with a diagnosis of cancer. Negotiating the health care system to obtain treatment, for example, requires sophistication, perseverance, and understanding of the implicit culturally framed structure in which health care is provided. Many individuals, regardless of ethnicity, do not have the skills to enter the health care system. Even those who are able to enter are often overwhelmed by the demands and restrictions made upon them for decisions and choices. The perseverance and assertiveness required to obtain good care are characteristics not usually found in Asian Pacific American families when dealing with people in authority or institutions. Instead, they put their trust in their family physician and expect him or her to do whatever is in their best interest; their responsibility is to follow the doctor's recommendations as closely as possible. Asserting their desires to expedite treatment or to change doctors with whom they are dissatisfied would most often not even be considered as options. Thus Asian Pacific American patients are often viewed as "compliant" by Western providers.

An unchallenging and accepting demeanor may not always be in the patient's best interest. For example, such a patient may be less likely to complain of symptoms, and treatment, therefore, may be delayed. On the other hand, being compliant may also be a factor in the better survival rates found among Asian Pacific Americans than for whites for some cancers (Young, Ries, & Pollack, 1984). These patients may endure the negative side effects of treatments and receive higher overall doses of treatment over longer periods of time and thereby may obtain more complete eradication of microdisease sites.

Although the epidemiological findings presented above clearly indicate that ethnicity affects cancer incidence, mortality, and survival, a

Western ethnocentric bias is implicit in the majority of psychosocial studies conducted by Western and Western-trained researchers. This research overlooks the variations in cultural beliefs and behaviors that define ethnicity. This bias assumes that the desired outcomes and means for adaptation to cancer and its treatment are similar for all populations.

Although a patient's cultural background influences the entire cancer experience for the patient and the family, very little effort has been made to study the specific effects of cultural beliefs and behaviors on the emotional and physical response to cancer of differing ethnic groups. This is especially true for Asian Pacific Americans. The general health beliefs and behaviors of many traditional Asian and Pacific Islander cultures are based upon a paradigm that is very different from the Western biomedical paradigm (Kitano, 1990; Marr, 1987). Both paradigms are equally rational and "scientific" within the context of the belief system, but areas of inconsistency can create miscommunication and misunderstanding (Kleinman, 1980; Muecke, 1983).

Culture influences beliefs about the meaning of cancer; emotional and physical responses to the treatments; side effects of the treatments; perception of pain and attitudes toward suffering, death, and dying; patterns of decision making; and patterns of family communication used to cope with the entire experience (Gordon, 1990; Long & Long, 1982). Only one study has been conducted to explore the impact of cancer on an Asian Pacific American cancer patient population (Kagawa-Singer, 1988). This study supports the premise that culture frames the entire cancer experience, from the threat posed by the cancer to the problems created by the disease for the patient and family, and finally to the means used by the patients and their social networks to cope with the disease and its treatments. More research attention must be aimed toward exploration of the ramifications of cultural indicators in order to develop intervention programs that will effectively enhance the outcomes for prevention, early detection, and treatment of cancer.

Classification of Cultural Factors Affecting Cancer Control

Cultural factors affecting cancer control can be classified into two categories: structural and conceptual. Each of these two categories

can be further classified into those that inhibit and those that facilitate cancer control.

Structural factors, such as accessibility of care, affordability of care, and whether or not the signs and symptoms of cancer and the treatments prescribed by a physician are understandable to the individual and family, affect all individuals faced with cancer. Specific examples of structural factors affecting Asian Pacific American individuals of limited acculturation are whether or not health care providers of the same ethnic group are available, whether or not patients understand spoken and written English, whether or not health education materials are available in the appropriate language or at the appropriate literacy level, whether or not respectful communication and behavior are displayed by providers, and whether or not providers have sufficient knowledge of the culture to provide appropriate care. The last two factors overlap with the second category: conceptual issues.

Conceptual issues include the specific knowledge, attitudes, beliefs, and values of a particular ethnic group toward cancer in general and, specifically, toward preventive health care practices, early cancer detection procedures, and the various cancer treatment options. We cannot describe these factors here for each of the 60 Asian Pacific American groups (partly because they are not known). However, these factors are important determinants of whether or not cancer control efforts will be considered appropriate, desirable, or relevant by a particular population. Understanding the conceptual issues for each ethnic group is essential for planning effective cancer control programs.

However, we cannot wait until studies are conducted to describe the specific beliefs and behaviors about cancer for the major Asian Pacific American groups before we provide care. It is possible to deliver health care now using current knowledge about these groups. Many ethnic community clinics, for example, have developed successful methods for addressing many of the structural barriers listed above. To provide easier access, clinics are physically located within the communities they serve. Care is made more affordable through income-dependent, sliding fee scales for those patients without health insurance. Finally, these clinics utilize health care staff who speak the language and understand the culture of the patient. When bilingual providers are unavailable, highly trained translators are utilized. Greater ethnic specificity in the planning and delivery of health care services will be possible as information becomes available from evaluations of intervention and treatment programs tailored to particular ethnic groups.

In the meantime, it is known that cancer has a very negative connotation in Asian Pacific American communities, as it does in every other culture. Although it is commonly believed that Asian families are a strong source of support in a positive sense, these same cultural norms can also function to isolate the patient and family from support available from outside the family. Whether this is adaptive or maladaptive, however, depends upon whether or not the patient and family can meet their desired needs optimally through the traditional norms of beliefs and behaviors. We will discuss the ramifications of this possible behavior below.

To design effective interventions, we must know the beliefs about the causes of cancer for the major Asian Pacific American groups. Beliefs about etiology determine beliefs about appropriate interventions for the disease. For example, cancer is felt by some to be caused by hereditary defects. In more traditional families, such a belief can cause the offspring in families with a cancer history to be viewed as less marriageable. Others believe that cancer is a punishment for transgressions in this life or in past lives. This belief can result in shunning of the cancer patient by the community. Both beliefs may result in reluctance to make a cancer diagnosis in a family member known to the community.

Most Japanese and Chinese American patients interviewed by Kagawa-Singer (1988) felt that their cancer was a result of *karma*, caused by lifestyle choices made in the past, such as imprudent diets or smoking. Their response to these self-inflicted cancers was one of acceptance, and their efforts were directed toward doing all they could to rid themselves of the disease so they would not be a burden on their families. Among study subjects, compliance with the prescribed treatment regimen was extremely high (greater than 95%).

Social support is another important area of study in cancer care. American patients appear to utilize support from a wide network of friends and professional services. Asian Pacific American patients seem to use much smaller networks of support, mainly immediate family and possibly one or two very close friends (Kagawa-Singer, 1988, 1993). Community members who are not part of the significant social network of the patient and family can be reticent to offer assistance because, for instance, as noted above, the patient and family may be felt to have brought on their own suffering. Asian

Pacific Americans are also reluctant to enter where they are not invited. Individuals and families are socialized to take care of such private matters by themselves and to bear the consequences alone. Thus community members may be reluctant to offer help when it is not asked for. Community members may fear insulting the patient and family by intimating that the family is not capable of enduring this hardship on its own. This practice may be functional in the native country or in traditional enclaves where family networks are relatively cohesive, but it may become dysfunctional in American society, where the extended family is not always in geographic proximity and economic and social norms encourage women to work outside the home. Traditionally, women are the caretakers of the sick. If a woman is working, she is torn between a career (or possible loss of her job and health insurance coverage) and familial obligations. She may also become a target for community derision because she does not fulfill her culturally expected roles of caretaker and nurturer.

Much of Western cancer psychosocial support efforts aim to encourage the individual to be self-sufficient and autonomous in his or her decision making, even when in the sick role. However, such efforts may create distress in Asian Pacific Americans, rather than reduce it as intended. Self-sufficiency and autonomy are values that are diametrically opposed to the Asian Pacific cultural ethos of group identity, dependency, and consensus modes of decision making (Kagawa-Singer, 1988). Efforts to promote more individualistic values can create discomfort in Asian Pacific Americans and raise barriers to health education and treatment. The Western duality of mind and body is also an unfamiliar concept to most Asian Pacific Americans, whose concept of the individual is more integrated and interdependent. Cancer control efforts are often implicitly designed to address one or the other of the duality, and the resultant message is either incomprehensible or irrelevant to Asian Pacific Americans.

We will now examine whether certain Asian Pacific structural or conceptual factors may help to explain the poorer 5-year relative survival rates discussed above. Access to health care is a structural issue. Many Asian Pacific American groups have less access to health care services in general and cancer screening services in particular, and thus may be diagnosed at later stages, when the possibility of survival and cure is lower. Beliefs about cancer etiology may cause those Asian Pacific Americans who discover cancer themselves to delay seeking diagnosis and treatment from a physician or, once diagnosed, to be less likely to adhere to treatment protocols. Beliefs that cancer is a form of retribution (Ito, 1982) or other punishment for past transgressions can make them reluctant to seek treatment publicly. This reluctance may account for the late stage at diagnosis for cervical cancer among Japanese, Chinese, Vietnamese, Filipino, and Korean women in California, as shown in Figure 4.1.

Asian Pacific American patients may also first seek alternative, indigenous healers as the first line of treatment or as parallel services. For example, investigators have reported the case of a Cambodian family whose adolescent son developed brain cancer (Eisenbruch & Handelman, 1990). Believing that the tumor was caused by bad karma, the parents requested that two Buddhist monks conduct a ceremony in their home to increase their son's merit and thereby improve his karma and prognosis. At the same time, however, the boy was taken to a nearby hospital for surgery and radiation therapy. Some of the techniques used by alternative practitioners may be helpful; some may not. Little research has been done in the area of alternative medications and treatments (U.S. Congress, 1990).

There may also be a higher prevalence of cell types with poorer prognosis for some tumors among some Asian Pacific ethnicities, and responses to treatment regimens may differ because of basic biological differences in pharmacokinetics and pharmacodynamics. No research has yet been conducted to test differential response to cancer chemotherapeutic agents, yet there is a growing awareness of clinical reports of greater sensitivity to medications by Asian and Pacific Islanders (Kalow, 1989; Lin & Findler, 1983; Singer, 1992; Zhou, Koshakji, Silberstein, Wilkinson, & Wood, 1989). It is apparent that further research is needed to explore these differences.

Summary and Implications

Asian Pacific American populations now constitute a significant segment of the U.S. population. Heretofore, little attention has been given to the study of the burden of cancer on these populations. The numbers of Asian Pacific American individuals in most studies have been too small to be statistically significant as a separate

group. Thus they have often been aggregated within a category labeled "other," and their visibility lost. When cancer data have been obtained for Asian Pacific Americans as an aggregate group, cancer incidence and mortality rates have been found to be lower when compared with white rates. When the data are separated by ethnic group and anatomic site, however, the cancer incidence and mortality rates at many sites are higher than rates among the white population. Although Asian Pacific Americans suffer from the enormity of the cancer experience—as do all other groups in the United States—they have fewer support services.

Asian Pacific Americans have not been targeted as an underserved group for two reasons: the illusion created by the aggregate data that these groups are not at risk, and the erroneous belief that they are capable of taking care of their own and therefore do not need social service assistance. To understand adequately the problem of cancer among Asian Pacific Americans and to plan effective intervention programs, it is first essential to have accurate disaggregated data on each ethnic group. Aggregated data are inadequate, because they mask important variations in rates and risk factors within and between particular Asian Pacific subgroups. Next, data are needed for each group on the cultural values, knowledge, attitudes, beliefs, and behaviors that may facilitate or pose special barriers to access to high-quality cancer care.

Specific cancer control efforts can be instituted immediately. For primary prevention, certain groups within the Asian Pacific American population are at high risk and should be targeted for screening and early detection programs. These groups offer enormous opportunities for cancer control. For example, within a generation, effective hepatitis B immunoprophylaxis programs directed at Asian Pacific American groups could reduce liver cancer from its position as one of the most common cancer killers of Asian Pacific Americans to the relatively rare form of cancer it is among whites. The current levels of cigarette smoking, especially among some male Asian Pacific American groups, portend an epidemic of lung cancer and other tobacco-related cancers in the future. It is essential, therefore, to direct culturally appropriate smoking prevention and cessation programs toward these communities. In addition, it would be wise to encourage immigrant Asian Pacific American communities to maintain their traditional low-fat dietary practices and to refrain from adopting American high-fat dietary habits.

Research shows that the etiology of cancer is multifactorial; the environment, viruses, genetic makeup, and diet and other lifestyle habits are all involved. As Asian Pacific Americans acculturate and adopt the diet and behaviors of mainstream Americans with successive generations, their epidemiological profile grows more similar to that of whites and less similar to that of their counterparts living in their native countries.

Migration studies that focus on those Asian Pacific American groups whose cancer rates are lower than those among whites could yield useful information about the etiology and control of cancer. The information obtained from these studies would benefit the American population as a whole and move us toward achieving the objective of halving the mortality rate associated with this disease by the year 2000.

Secondary prevention strategies should target Asian Pacific American communities to improve access to and utilization of cancer screening services. The public health impact of cervical cancer, which appears to be proportionally higher among some Asian Pacific American groups than among whites, could be greatly reduced through regular Papanicolaou testing. Mortality rates for breast and colon cancers, which are rising rapidly among some Asian Pacific American groups, could be reduced through early detection and screening. Practitioners also need to be alert to the signs and symptoms of cancers of the nasopharynx, esophagus, pancreas, liver, and stomach, which, although relatively rare in the white population, are more common among the various Asian Pacific American ethnic groups.

In designing primary and secondary cancer prevention programs for Asian Pacific American communities, it is important to bear in mind that each community is culturally and linguistically different from the others. To plan an effective program, therefore, it is important that we gather information from each targeted group about the cultural values, knowledge, and attitudes that may enable or pose special barriers to behavioral change and utilization of health care services.

For communities with recent immigrants, programs must be carried out in their language. Education and screening programs should be conducted in each ethnic community with bilingual, bicultural staff. Educational materials should be produced in the patients' language and at an appropriate level of literacy (Jones & Kay, 1992; Michielutte, Bahnson, & Beal, 1990). Health education materials that have been

directly translated from English into an Asian language are usually ineffective. Instead, materials must be developed that contain the necessary information but that are framed and presented in a manner that is culturally sensitive to the target population.

Cultural beliefs and behaviors significantly affect how individuals meet adversity. Practitioners and researchers interested in understanding the burden of cancer on Asian Pacific American populations must know the nature of the threat posed by cancer, the cultural modes of communication for the patient and family with health care practitioners, the significant roles the patient holds in his or her life, and how the cancer interferes with fulfillment of these roles.

Finally, those who develop interventions must understand health beliefs and practices within the cultural contexts in which they have meaning. The fabric woven of these beliefs and behaviors provides strength and security to its members. Single beliefs and practices lose their meaning when taken out of context, and programmatic efforts to reduce the negative impact of cancer will not have their intended effect unless program designers understand and work within the cultural context as an equally valid interpretation of experience.

Administrators, educators, and practitioners now have the infrastructure available to support research and the delivery of cancer control programs of high quality for Asian Pacific Americans. Since 1980 the U.S. Bureau of the Census has used multiple identifiers for the Asian Pacific American population, enabling us to find the target populations. The U.S. government has funded two national agencies to study mental and physical health and treatment outcomes in the Asian Pacific American population. A national organization, the Asian and Pacific Islander American Health Forum, collects the available information and disseminates it to researchers and legislators. And several consortia of community clinics have developed models of culturally appropriate health care services for Asian Pacific American populations. Efforts must now be made to use the integrated view of culturally congruent care to implement effective programs and research to reduce cancer morbidity and mortality for Asian Pacific American cancer patients. The alternative is unacceptable.

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