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## Asian/Pacific Islander American Women: Age and Death Rates During Hospitalization for Breast Cancer

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**Purpose/Objectives:** To investigate whether differences in age and death rates exist between hospitalized Asian/Pacific Islander American (APIA) women and women of other racial groups.

**Design:** Secondary data analysis of a national data set.

**Setting:** The Healthcare Cost and Utilization Project Nationwide Inpatient Sample, Release 6, was used to obtain hospitalization data on women with breast cancer based on racial status. A total of 20,507 hospitalization records met the study criteria.

**Sample:** All women who were hospitalized with a primary diagnosis of breast cancer, were older than 18, and did not die during hospitalization, plus all women who met the criteria stated above but died during hospitalization.

**Methods:** Secondary data analysis. Post hoc analysis was used to identify significant differences among racial groups.

**Findings:** Significant differences were found between APIA and Caucasian and Latino women. Significant differences based on race were found between subjects who had died during hospitalization. On average, APIA women were the youngest to die.

**Conclusions:** APIA women with breast cancer were among the youngest women being hospitalized and the youngest to die during hospitalization.

**Implications for Nursing:** Cultural awareness by nurses is critical when discussing methods for prevention and early detection of breast cancer with minority women. Targeting new immigrants is a priority for those who screen and educate women about detection and treatment of breast cancer.

### Key Points . . .

- The term Asian/Pacific Islander American (APIA) signifies a diverse population in the United States.
- Death rates from breast cancer in the APIA population are significantly higher than rates among other ethnic populations.
- Some groups of APIA women present later and with more advanced disease than their Caucasian counterparts.
- APIA women face a variety of barriers that may result in starting and receiving treatment later in the disease course.

in the United States has grown from 1.5 million in 1970 to more than 11.2 million in 2000 (U.S. Census Bureau, 2000).

Rates of breast cancer generally are lower in Asia than in the United States (Kagawa-Singer & Pourat, 2000). According to Jemal et al. (2004), the incidence of breast cancer in APIA women is 97.2 (per 100,000 women) compared to 140.8 for Caucasian women in the United States. The mortality rate is 12.5 (per 100,000) compared to 27.2 for Caucasians (Jemal et al.). Evidence suggests that exposure to the Western lifestyle increases breast cancer risk among immigrants from Asia (Ziegler et al., 1993). The longer that foreign-born Asian/Pacific Islander women reside in the United States, the more likely that their risk for developing breast cancer will approach that of American-born women. Disease rates among APIA women vary depending on ethnicity. In general, however, these women

**B**reast cancer is the most frequent cancer diagnosis for women in the United States. Incidence remained relatively unchanged during the 1990s. Even so, an estimated 217,440 women will be diagnosed and 40,580 will die of the disease in 2004 (Jemal et al., 2004). More Caucasians are diagnosed with breast cancer than other groups. However, the five-year relative survival rate in other races and ethnic minorities is substantially lower than that for Caucasians (Jemal et al.).

The term Asian American signifies a diverse population in the United States. The federal government defines Asian Americans as a minority population originating in the Far East, Asia, and Southeast Asia (Intercultural Cancer Council, 2001). According to the 2000 U.S. Census, Asian/Pacific Islander Americans (APIAs) are the fastest-growing ethnic group in the United States, with the population increasing by 72% since the 1990 U.S. Census (U.S. Census Bureau, 2000). The number of APIAs

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have lower cancer incidence and mortality rates than Caucasians for all anatomic sites combined, but their survival rates are poorer than those of Caucasians (Yi & Prows, 1996).

## Literature Review

Rajaram and Rashidi (1998) reported that although minority women have higher breast cancer mortality rates, they are less likely than Caucasian women to use screening procedures. Regardless of type of cancer, minority women typically present with more advanced stages of disease than Caucasian women (Phipps, Cohen, Sorn, & Braitman, 1999). Subsequently, minority women are more likely than Caucasian women to die from the disease (Yi & Prows, 1996). A study comparing racial differences in breast cancer survival indicated that African American women were younger at time of diagnosis, had more advanced tumors, and had poorer survival rates than Caucasian women. The researchers attributed the findings to socioeconomic factors, lower use of mammography screening, and cultural barriers and beliefs (Joslyn & West, 2000). Similar findings have been reported for APIA women (Ortin, 1998; Yi & Prows).

Asian American and Pacific Islander women have the lowest breast cancer screening rates and increasing mortality rates when compared with other ethnic groups (San Francisco State University, 2001). Nationally, the two-year mammography screening rate for APIA women aged 50 and older is 63% compared to an overall national average of 69% (Clegg, Li, Hankey, Chu, & Edwards, 2002). Breast cancer is the leading cause of death among APIA women, and death rates have increased almost 200% since 1990 (Kagawa-Singer & Pourat, 2000). Among certain groups in the APIA population, death rates from breast cancer are significantly higher than rates among other ethnic populations (Intercultural Cancer Council, 2001).

The APIA population poses unique healthcare challenges because of increasing ethnic heterogeneity. APIAs are diverse in language, culture, history, religion, and demographic characteristics. When sociocultural health statistics are reported, these groups often are lumped together. Linguistic and ethnocultural barriers to gaining healthcare and other services are barriers to the APIA population, which is composed primarily of recent immigrants and refugees. In the more than 30 different ethnic groups that comprise the U.S. Asian population (U.S. Census Bureau, 2000), breast cancer screening practices are below recommended rates. This has been attributed to degree of assimilation, level of education, language fluency, geographic location, generation, occupation, and socioeconomic status (Facione & Katapodi, 2000; Joslyn & West, 2000).

Maxwell, Bastani, and Warda (1998) indicated that some groups of APIA women, including Koreans, Filipinos, and Native Hawaiians, present later and with more advanced disease than their Caucasian counterparts. Reasons attributed to this include cultural values and beliefs affecting attitudes about cancer prevention strategies, screening, and access to health care. Hedeem and White (1999) explored whether Asian American women with breast cancer presented at a more advanced stage of disease at diagnosis compared to Caucasian Americans. Their findings indicated that Asian-born American women had a greater portion of tumors larger than 1 cm at diagnosis than did Caucasian American women. In contrast, the proportion of tumors larger than 1 cm among Asian

American women born in the United States did not differ significantly from that of Caucasian American women overall. Racial differences in breast cancer mortality have been attributed to late-stage disease at diagnosis (Gullatte, 1999). This contrasts with findings reported in most national databases that indicate that APIA women present at earlier stages of disease than Hispanics or African Americans (Ortin, 1998).

Mitchell (1998) described cross-cultural issues in the disclosure of a cancer diagnosis and noted that many cultures (e.g., ethnic Americans, including Korean and Chinese) consider complete and accurate disclosure of cancer undesirable. Bottorff et al. (1999) examined breast cancer screening practices in a sample of 50 South Asian women living in Canada. The women provided five major explanations for how breast cancer developed: catching it, damaging the breast, passing it down, bringing it upon yourself, and through the hands of others. Facione, Giancarlo, and Chan (2000) studied 45 Chinese American women and found that the women in their sample felt "invulnerable" to cancer and described cancer as "tragic luck" and mammography as bringing on trouble. Lu (1995) recruited 174 Taiwanese women for a study designed to explore variables associated with breast self-examination. The subjects reported that they were not susceptible to breast cancer and attributed the disease to fate, broken promises to a god, and hot and cold imbalances in the body.

Early detection of breast cancer results in favorable outcomes. Unfortunately, underutilization of breast cancer screening is cited as a common problem, with only 30% of Asian female immigrants reporting that they have ever had a mammogram (Kagawa-Singer & Pourat, 2000). A survey of 39 Middle Eastern Asian Islamic immigrant women indicated that 85% had heard of breast self-examination but that 74% had not examined their breasts for lumps. None of the respondents had examined their breasts monthly during the previous year (Rashidi & Rajaram, 2000).

Tang, Solomon, and McCracken (2000) reported that health insurance coverage and degree of acculturation were predictors of whether women would have a mammogram at least once. The authors noted that other barriers included an Eastern approach to medicine, little interest in preventing disease, modesty, and reliance on family when seeking care. Rajaram and Rashidi (1999) explored breast cancer screening practices of Asian Islamic women in the United States and found that cleanliness, individual responsibility in health promotion, diet, eating habits, and exercise were associated with breast cancer screening. Factors associated with not screening for breast cancer included time constraints, embarrassment, discomfort, and having to ask a physician for the procedure (Maxwell et al., 1998).

Yi and Prows (1996) surveyed 216 Cambodian women in the United States by telephone to help identify variables that might be associated with ever having had a clinical breast examination. The researchers identified perceived barriers such as income, written language acculturation, knowledge about clinical breast examination recommendations, and level of education in the United States as predictors of having a clinical breast examination at least once. Yi (1994) found that sociocultural preference, length of residence in the United States, age, and a regular place for care predicted mammography screening in a sample of Vietnamese women living in Massachusetts. Maxwell et al. (1998) surveyed 229 Korean American women in California and found that subjects were

more likely to get a mammogram if they had an income greater than \$25,000 per year, a physician recommendation, positive group norms, and a longer stay in the United States and had become acculturated. In contrast, Phipps et al. (1999) reported that length of stay in the United States was not a predictor of getting a mammogram.

Lack of health insurance has been cited as a possible reason that APIA women were not screened for breast cancer (Maxwell et al., 1998; Tang et al., 2000). A recent report indicated that health insurance rates for employed and unemployed individuals fell in 2002, and an estimated 43.6 million people (15% of the overall population) were without coverage (U.S. Census Bureau, 2003). The number of uninsured Asians was reported to be 18%–21% compared to 10% of Caucasians (Guy, 2000). In addition, 33.4% of foreign-born citizens and 43.3% of foreign-born noncitizens lacked health insurance in 2002 (U.S. Census Bureau, 2003). Ayanian, Kohler, Abe, and Epstein (1993) studied 4,675 women with invasive breast cancer and found that those who were uninsured or had Medicare presented with more advanced disease than women who had private insurance.

In general, lower rates of breast cancer screening and multiple barriers to care have been identified in APIA women. A recent report stated that breast cancer rates are increasing in Asian American women, with Japanese American women being the hardest hit by this change (Deapen, Liu, Perkins, Bernstein, & Ross, 2002). Higher mortality and lower survival rates are more evident in the APIA population compared to Caucasian women because of the late stage of breast cancer when first diagnosed (Yi & Prows, 1996).

Almost 60% of people in the United States die in the hospital. However, a literature review failed to locate information that focused specifically on hospitalized APIA women with breast cancer or whether their mortality rates during hospitalization differed from those of other racial groups. Data on hospitalizations of Asian women related to breast cancer are scant. Even though the Healthcare Financing Administration has attempted to improve racial codes on Medicare forms, data on APIA women are limited. One recent study compared racial and ethnic differences in hospitalization rates among aged Medicare beneficiaries. The researchers reported that hospitalization for older adult Asians was 32% lower than for their Caucasian counterparts. In addition, the risk ratio for admission to the hospital for breast cancer was 0.50 as compared to Caucasians (Eggers & Greenberg, 2000). No information was found that focused specifically on age differences at hospitalization in women with breast cancer or on age differences in women who died from breast cancer during hospitalization. Therefore, the purpose of this study was to investigate whether differences in age and death rates exist between hospitalized APIA women and women of other racial groups.

## Methods

The Health Cost and Utilization Project 1997 was a national data set collected and maintained by the Agency for Healthcare Research and Quality (1997). It consisted of 7.1 million inpatient records from 22 states (900 hospitals) and reflected hospitalization nationally. A secondary analysis was performed using SPSS® PC version 11.5 (SPSS Inc., Chicago, IL). A general linear model univariate analysis of variance was used to determine differences.

## Sample

Two samples were examined to meet the aims of the study. The first sample included all women hospitalized in 1997 with a primary diagnosis of breast cancer who were 18 years of age or older and did not die during hospitalization. Women who died during hospitalization were excluded from this sample to control potential skewing of the results. The second sample included all women who met the same criteria but died during hospitalization with a primary diagnosis of breast cancer.

## Analysis

Prior to data analysis, an evaluation was performed to determine whether the main assumptions underlying the methods were satisfied. Using the recommendations of Tabachnick and Fidell (2001), the researchers checked the data for outliers and for normality of dependent variables in the cells defined by the explanatory variables. In addition, the homogeneity of variance-covariance matrices in those cells and the linearity of independent-dependent variable relationships in the cells were determined. Age was examined for normality, and analysis of age in both samples employed a general linear model univariate analysis of variance to examine the main effects of the racial group status. The Levene's test of equality of error variances was computed to determine homogeneity. When equal variance was found, post hoc analyses were completed using least significant differences (LSD). When a Levene's test was significant, indicating unequal variance, a conservative post hoc procedure (the Tamhane T2 test) was employed to find differences between racial groups.

## Results

The sample included 20,246 women (16,788 Caucasians, 1,865 African Americans, 937 Latinas, 370 Asians, 19 Native Americans, and 267 other) (see Table 1). The mean age was 61.23 (SD = 14.51 years, range = 20–103 years). The second sample contained 261 women (182 Caucasians, 51 African Americans, 22 Latinas, 5 Asians, and 1 other) (see Table 2).

Significant main effects were found between subjects in the living sample for race ( $F_{2, 20245} = 72.52, p = 0.001$ ). The Levene test of equality of error variances was significant, indicating a lack of equal multivariate variance ( $F_{5, 20245} = 3.11, p = 0.008$ ). Post hoc analysis using Tamhane's T2 test found significant differences between APIA women and Caucasian women (mean difference = 6.44 years,  $p = 0.001$ ) and Latinas (mean difference = -2.62,  $p = 0.021$ ) (see Table 3).

Does a difference in age exist between APIA women with breast cancer who die in the hospital and women in other racial groups who die in the hospital? Significant main effects were found between subjects in the sample of people who died during hospitalization for race ( $F_{4, 260} = 3.08, p = 0.02$ ). Post hoc analysis using LSD found significant differences between APIA women and Caucasian women (mean difference = 17.01 years,  $p = 0.01$ ) and Latino women (mean difference = 18.89,  $p = 0.01$ ) (see Table 4). APIA women were, on average, the youngest to die, with a mean age of 46.2 (SD = 10.08 years). On average, Asian women were 17 years younger at death compared with Caucasian women, 12 years younger compared with African American women, and almost 19 years younger compared with Latino women (see Table 2).

**Table 1. Women With Breast Cancer by Race Who Did Not Die During Hospitalization**

Racial Group	n	%	Mean Age at Hospitalization
Caucasian	16,788	83	62.25
African American	1,865	9	56.97
Latina	937	5	58.43
Asian	370	2	55.81
Native American	19	1	55.00
Other	267	1	56.78
Total	20,246	100	61.39

*Note.* Because of rounding, percentages do not total 100.

## Discussion

APIA women face a variety of barriers to health care that may result in starting and receiving treatment later in the disease course and at an older age, which contributes to increased morbidity and mortality rates (Gullatte, 1999; Hedeén & White, 1999; Ortin, 1998; Tang et al., 2000). This analysis indicates that APIA women are among the youngest women being hospitalized for the treatment of breast cancer. This finding is supported, in part, by an annual report issued by the state of Oklahoma in 1999, which provided information on hospitalizations according to race (Health Care Information, 1999). The average age for Asians who were hospitalized was 30.1 years compared to Caucasians ( $\bar{X} = 50.7$  years), Native Americans ( $\bar{X} = 41.8$  years) and African Americans ( $\bar{X} = 39.6$  years). The Oklahoma report indicated that the hospitalization rate for Asians (3.6%) was lower than for Caucasians (10.1%) and African Americans (9.8%). In addition, the percentage of Asians who died during hospitalization was 1.6%, which was lower than the rates reported for Caucasians, Native Americans, and African Americans (2.8%, 2.9%, and 2.3%, respectively). The 1.9% death rate found in the current study is similar to that found in the Oklahoma report. Strzelczyk and Dignan (2002) analyzed data collected by the Colorado Mammography project to evaluate whether a diverse sample of women adhered to follow-up recommendations after mammography. Although the number of subjects was large ( $N = 167,232$ ), only 1.6% of the sample was identified as Asian. Clearly, recruiting Asian women for research on breast cancer screening is a challenge.

Additional support for the younger age of the APIA women in the current study is found in research conducted by Lin, Phan, and Lin (2002) on Vietnamese women living in California. The researchers compared age, stage, and histologic grade of tumor and found that the women in the sample were younger at diagnosis ( $\bar{X} = 51.0$  years) than other minority groups. Almost half of the Asian women were diagnosed before the age of 50 years.

Information about staging of breast cancer for the women in this sample was not available for analysis. Perhaps Asians in the sample were coming to treatment with more advanced disease and, therefore, a reduced chance of long-term survival. Some support exists for this conjecture, because the APIA group in the current study died at a mean age of 46.2 ( $SD = 10.08$  years). The literature suggests that Asians are more likely to seek alternative care for illness prior to seeking care from healthcare professionals (Lee, Lin, Wensch, Adler, &

Eisenberg, 2000; Rees et al., 2000). This may delay treatment for certain illnesses and contribute to diagnosis at advanced stages of disease. Additional support may be found in a research study that explored the influence of socioeconomic and cultural variables on breast cancer mortality in a sample of 540 African American women (Lannin et al., 1998). The authors concluded that socioeconomic variables, combined with cultural beliefs and attitudes, contributed to subjects coming to treatment at more advanced stages of disease.

APIAs with more advanced disease may be less likely to be treated aggressively for their disease, thus accounting for a higher death rate. This could have been a factor that influenced the findings in the current investigation. Two studies supported by the Agency for Healthcare Research and Quality that focused on age and race differences in the treatment of breast cancer lend support to this conjecture. Mandelblatt et al. (2002) found that older African American women who were sicker, had more advanced disease, and lived in impoverished neighborhoods were 48% less likely to receive recommended treatment consisting of mastectomy and radiation therapy for localized breast cancer. A study conducted by Edge et al. (2002) found that women who were older and had poorer functional status were less likely to undergo axillary lymph node biopsy after breast cancer surgery.

Joslyn (2002) investigated differences in treatment for women who were diagnosed with early-stage breast carcinoma and received breast conserving surgery. She reported that African American women were less likely to receive follow-up radiation therapy in every age group except one ( $> 85$  years). Additionally, Breen, Kessler, and Brown (1996) reported that African American or Hispanic women with breast cancer who were older and had less income and education were more likely to receive less than standard care. Although none of these reports included APIA women, the fact that minority women were less likely to undergo standard treatment options is worthy of attention.

The current sample was drawn from a national data set consisting of 7.1 million inpatient records reflecting hospitalization from more than 20 states. However, the number of women dying in hospitals from breast cancer indicates a uniformly rare event across all races ( $n = 261$ ). Therefore, the findings in the current study of those who died during hospitalization must be viewed cautiously. The low numbers of hospitalized deaths with a breast cancer diagnosis may result from unstudied nonpatient-related variables. However, despite the low number of APIA subjects, the strength of the study design makes the results plausible.

**Table 2. Women With Breast Cancer Who Died During Hospitalization**

Racial Group	n	%	Mean Age at Death
Caucasian	182	70	63.21
African American	51	20	58.16
Latina	22	8	65.09
Asian	5	2	46.20
Otherx	1	1	77.00
Total	261	100	62.11

*Note.* Because of rounding, percentages do not total 100.

**Table 3. Comparison of Mean Age Differences of Asian Pacific Islander American Women With Women of Other Races Who Did Not Die During Hospitalization**

Race	Mean Difference	Standard Error	p	95% Confidence Interval for Difference <sup>a</sup>	
				Lower Boundary	Upper Boundary
Caucasian	-6.445	0.756	0.000	-7.928	-4.962
African American	-1.162	0.819	0.156	-2.768	0.443
Latino	-2.621	0.884	0.003	-4.353	-0.889
Native American	0.808	3.386	0.811	-5.828	7.445
Other	-0.971	1.156	0.401	-3.236	1.295

<sup>a</sup> Adjustment for multiple comparisons: least significant

Women in the APIA group made up 1.9% of the sample of women with breast cancer who died during hospitalization but did not accurately reflect the percentage of APIA women in the United States as a whole. This reflects a report by Eggers and Greenberg (2000) that indicated that hospitalizations for older adult Asians were significantly lower than for older adult Caucasians. The women in the current study were not older adults, but a pattern of fewer hospitalizations for Asians is suggested. Racial disparities in health care must be addressed. As the population of APIAs grows, additional data for analysis will become available.

## Nursing Implications

Cultural awareness is critical when discussing methods for prevention and early detection of breast cancer with minority women. Nurses should have an understanding of the barriers to receiving care and act to minimize them. Heeden and White (1999) reported that first-generation Asian American women have a higher incidence of larger tumors at diagnosis compared to second- and third-generation Asian Americans. This could indicate that healthcare professionals are making strides providing information to acculturated second- and third-generation APIA women. Distrust of health professionals and Western style of medical care may explain limited access to care by APIAs (Snyder, Cunningham, Nakazono, & Hays, 2000). Targeting new immigrants is a priority for those who screen and educate women about breast cancer detection and treatment.

Statistically, APIA women have lower breast cancer incidence than their Caucasian American counterparts. This fact, along with cultural influences and barriers to care, may help to minimize the perception of breast cancer as a major health threat to this population. Healthcare professionals may under-

estimate the threat of breast cancer developing in APIA women. This misperception may have a negative effect on health teaching. As a consequence, APIA women may not receive adequate and culturally appropriate information on screening mammography and clinical breast examination during routine care. Prospective studies are needed to follow this population of women to identify risk factors associated with later diagnosis. Descriptive studies also are recommended to determine why APIAs are not using screening programs. Interventional studies to examine the impact of ethnically sensitive care are warranted as well.

## Limitations

Secondary analyses of data sets have disadvantages (Kawaga-Singer, 1995). In the current study, the number of APIA women who died during hospitalization was low, which made drawing meaningful conclusions difficult. The researchers were limited to the variables provided in the data itself. For example, the data set did not include biologic, societal, familial, or environmental data that may have helped to explain differences in the findings.

"Databases must be disaggregated among different APIA women's groups to allow for the diversity of the population and cultural reasons for variances in breast cancer incidence and mortality" (Ortin, 1998, p. 28). The findings in the current study may be a factor of unequal sample size as determined by the numbers included in each racial group, thereby limiting interpretation of results.

## Conclusions

This analysis of a national data set indicates that APIA women are among the youngest women being hospitalized for

**Table 4. Comparison of Mean Age Differences of Asian Pacific Islander American Women With Women of Other Races Who Died During Hospitalization**

Race	Mean Difference	Standard Error	p	95% Confidence Interval for Difference <sup>a</sup>	
				Lower Boundary	Upper Boundary
Caucasian	-17.014	6.711	0.012	-30.230	-3.798
African American	-11.957	6.938	0.086	-25.619	1.706
Latino	-18.891	7.335	0.011	-33.335	-4.447
Other	-30.800	16.218	0.059	-62.737	1.137

<sup>a</sup> Adjustment for multiple comparisons: least significant

the treatment of breast cancer. The age of APIA women with breast cancer who died in the hospital was significantly different than that of other racial groups. However, results should be viewed with caution because the sample did not reflect the percentage of APIA women in the U.S. population. The 1.9%

death rate found in the current study could be a bias regarding how APIA women come to the hospital (i.e., later and sicker).

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