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# Breast Cancer Screening among Chamorro Women in Southern California

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## ABSTRACT

Breast cancer is the most common cancer in Pacific Islander women, yet relatively little is known about their cancer risks and screening behaviors. Chamorros are indigenous people from Guam, and California is home to the largest numbers of Chamorros on the mainland United States. This study examined the breast cancer risk, knowledge, and screening behaviors in a nonprobability sample of Chamorro women age 40 years and older in Los Angeles and Orange Counties ( $n = 227$ ). The proportional incidence ratio for breast cancer among Chamorro women was found to be 0.7 compared with white women in California, indicating a lower current breast cancer risk for Chamorro women compared with white women. Thirty-seven percent of respondents ever performed a breast self-examination (BSE), 93% ever had a clinical breast examination (CBE), and 77% ever had a mammogram. In terms of screening maintenance, only 27% did BSE monthly, 66% received a CBE in the past year, and 25% received yearly mammograms. Significant correlates of CBE were higher educational attainment, married status, higher income, and health insurance coverage. Women who knew of breast cancer symptoms, would undergo treatment, and would like to know if they had breast cancer were also more likely to have ever had a CBE. With regard to mammography, older age, moderate income, married status, and use of traditional healers and healing practices were associated with higher screening incidence. Implications of these findings for developing culturally tailored and appropriate cancer screening programs are discussed.

## INTRODUCTION

**B**REAST CANCER REPRESENTS the most common cancer for Pacific Islander women, yet relatively little is known about the cancer risks and screening behaviors of ethnic subgroups.<sup>1</sup> Existing studies of breast cancer among Pacific Islanders, however, highlight alarming needs. Native Hawaiian women have the highest incidence of and mortality from breast cancer of all ethnic

groups<sup>2</sup> and are more than three times more likely to die of breast cancer than Japanese women.<sup>3</sup> Higher death rates are in large part due to late stage at diagnosis, as only 71% of native Hawaiian women over 40 years of age had ever had a mammogram, and 59% reported having had a mammogram during the past 2 years.<sup>4</sup> Breast cancer is also the most common cancer by site for American Samoans, with an age-adjusted odds ratio (OR) of 0.8 for risk of cancer in Amer-

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ican Samoans compared with Anglos diagnosed in Los Angeles County,<sup>5</sup> but only 44% had ever had a mammogram.<sup>6</sup>

Guam is the westernmost territory of the United States, and Chamorros are indigenous Guamanians who constitute approximately 47% of the island's 150,000 population.<sup>7</sup> In the first published report of cancer on Guam, breast cancer was the leading cancer site for Guamanian women (with an incidence rate of 60.9 per 100,000).<sup>8</sup> (Many data sources do not differentiate between Guamanians, who include Filipinos, Japanese, whites, and all other people living in Guam, and Chamorros, who are indigenous people from Guam and the Commonwealth of the Northern Mariana Islands. We use the term "Guamanians" only when Chamorro-specific data are not available, with the understanding that this category overestimates the true numbers of Chamorros.) In the only known study of cancer screening among Chamorro women on Guam, 47% had ever had a mammogram.<sup>9</sup> There are no published studies of breast cancer incidence or screening among Chamorros in the United States.

California is home to the largest numbers of Chamorros on the mainland. According to the 1990 census,<sup>10</sup> there were 23,783 Guamanians living in California. Guamanians are generally a young population (median age of 25 years compared with the U.S. average of 33 years) with larger families (3.9 persons per family, compared with the U.S. average of 3.2).<sup>10</sup> More Guamanians are economically disadvantaged (15% live under the poverty line compared with only 10% in the United States), and educational attainment for Guamanian women is lower (only 8% having completed college compared with 18% in the United States).<sup>10</sup> Based on these characteristics, Chamorro women may face many structural barriers to breast cancer screening.

This article is the first report of breast cancer screening among Chamorro women. We present data on proportional incidence, screening rates (for breast self-examination [BSE], clinical breast examination [CBE], and mammography), and cancer knowledge for Chamorro women 40 years and older in Los Angeles and Orange County, California. Results are presented in a manner to facilitate development of programs and materials to improve breast cancer knowledge and screening for Chamorro women in the United States.

## MATERIALS AND METHODS

This study was the product of a close partnership between the University of California, Irvine, and the Guam Communications Network, a community-based organization serving Chamorros in Southern California. Research activities were conducted in three phases: calculation of proportional incidence rates, exploratory focus groups, and survey administration and analysis. Breast cancer incidence data among Guamanians was obtained from the California Cancer Registry over an 8-year period (1988–1996). These data were analyzed to identify all breast cancer cases and calculate the proportional incidence rates for breast cancer among Guamanian women compared with white women in the state.

Next, two focus groups were conducted with a total of 22 Chamorro women age 40 and older. The focus groups were tape-recorded and transcribed by staff from the community-based agency and analyzed by the authors for common themes and issues. For instance, traditional health behaviors were common among the participants, and thus the survey was developed to incorporate the traditional behaviors defined as most relevant to cancer control by the focus group participants. Based on the identified themes and issues, the survey was designed to measure the demographic characteristics, breast cancer knowledge, attitudes, and screening behaviors of Chamorro women. The Cancer Control Supplement of the National Health Interview Survey and select past research on Asian American women were reviewed for relevant items to include in the survey.<sup>11,12</sup>

The survey was developed as a self-administered questionnaire in English, then translated into Chamorro and back-translated into English to identify discrepancies in the original English version. The original and back-translated English versions were reviewed by the study team for content accuracy, with discrepancies worked out within the team until agreement on wording was reached. The survey was then pilot tested with 6 women to assess the amount of time needed for completion, comprehension of all survey questions, and any needed improvements in formatting. One result of the pilot test was that many women wanted to ask questions regarding specific survey questions, often initiating an educational interaction between the survey distributor

and the respondent. To be responsive to community needs, we modified the survey administration protocol to be facilitative. A bilingual, volunteer community advocate would read each question out loud and instruct each woman to write her own answers on her survey. After completion of the surveys, advocates would often facilitate a conversation with these women about questions they had on breast cancer screening and control.

Convenience sampling was used to distribute the survey to Chamorro women age 40 and older, using existing networks of social ties and organizations (such as dance groups, cultural groups, senior citizen clubs, and women's organizations). Women were contacted by a volunteer, bilingual community advocate, who told the women that their answers on the survey were anonymous, that the survey would take approximately 30–45 minutes to complete, and that the information from the survey would be used to develop cancer screening programs for the community. Consenting women were asked whether they preferred an English or Chamorro language survey. A total of 300 women were approached, and 227 completed a survey, for a response rate of 75.7%. Nineteen percent of the respondents preferred to complete a survey in Chamorro, which indicated that not all Chamorro women were comfortable reading and writing in English. All survey data was entered using the SPSS statistical package<sup>13</sup> and analyzed using univariate and bivariate methods (including chi-square tests of significance).

## RESULTS

### *Estimated breast cancer incidence among California Chamorros*

California Cancer Registry data showed that there were 68 cases of cancer among Guamanian women in California between 1988 and 1996. As shown in Table 1, the breast is the most common cancer site for Guamanian women, followed by lung and bronchus, cervix and uterus, colorectum, and ovary. It is difficult to calculate reliable breast cancer incidence rates for Chamorros, primarily because of the lack of valid population estimates and small numbers of reported cancer cases. However, it is possible to calculate pro-

TABLE 1. NEW CANCER CASES FOR GUAMANIAN WOMEN IN CALIFORNIA, 1988–1996

Cancer site	Guamanian women	
	Number	%
Breast	16	23.5
Cervix and uterus	10	14.7
Lung and bronchus	11	16.2
Stomach	2	2.9
Colorectum	6	8.8
Ovary	5	7.4
Lymphoma	4	5.9
Leukemia	2	2.9
Liver	1	1.5
Urinary system	1	1.5
Pancreas	2	2.9
Oral cavity and pharynx	1	1.5
Melanomas of the skin	1	1.5
Other	6	8.8
Total	68	100.0

Data from the California Cancer Registry, 1988–1996.

portional incidence ratios (PIR), that is, the ratios of the proportion of all cancers accounted for by a particular cancer site in a population compared with the same proportion in whites. Using this approach, the proportion of all cancers accounted for by breast cancer among Chamorros is 0.7 compared with white women.

### *Knowledge, attitudes, and behaviors of Chamorro respondents*

As shown in Table 2, nearly half of the Chamorro respondents were 60 years and older, and the majority were married and born in Guam. Income levels varied, with 12% having family incomes less than \$14,000 per year and 39% having more than \$36,000 per year. Education also varied, with about one third having less than a high school level education and one fifth having attained college level or higher. The overwhelming majority of women had health insurance and a regular doctor. A majority of Chamorro women had used traditional herbs or vegetables to help a physical problem (e.g., in teas to control high blood pressure or to get pregnant), used traditional massage, and consulted a traditional Chamorro *suruhana* (healer) for treatment of their ailments.

With regard to breast cancer screening behaviors, 37% of respondents had ever performed a BSE, 93% ever had a CBE, and 77% ever had a

TABLE 2. DEMOGRAPHIC CHARACTERISTICS OF CHAMORRO RESPONDENTS

<i>Characteristic</i>	n	%
Age, years	222	
40-49		28.4
50-59		31.1
60+		40.6
Marital status	221	
Married		55.2
Widowed/divorced/separated		40.3
Never married		4.5
Place of birth	224	
Country of ethnic origin (i.e., Guam)		85.3
United States		11.2
Other		2.6
Yearly family income	220	
<\$14,400		12.4
\$14,401-\$24,000		29.1
\$24,001-\$36,000		20.0
>\$36,001		38.6
Years of education	161	
≤6		2.5
7-11		31.5
12		45.7
13+		20.4
Health insurance	225	
Yes		92.4
No		7.6
Have regular doctor	223	
Yes		90.6
No		9.4
Traditional practices		
Eaten traditional herbs or vegetables	225	86.7
Used traditional massage	215	63.7
Used a traditional healer	211	61.1
Used a traditional women's health remedy	207	14.0

mammogram. When compared with the American Cancer Society's (ACS) guidelines for breast cancer screening, 27% of Chamorros did BSE monthly, 66% received a CBE in the past year, and 25% received yearly mammograms (data not shown).

Significant correlates of breast cancer screening for Chamorros are shown in Tables 3 and 4. Having higher education, higher income, and health insurance were significantly associated with ever having had a CBE. Women who were never married were significantly less likely to have ever had a CBE. With regard to mammograms, older age, widowhood, having moderately lower income (between \$600 and \$1999 per month), and having health insurance were significantly associated with ever having had a mammogram. Chamorro women who had ever used a traditional healer or

traditional massage were also more likely to have ever had a CBE and mammogram (the latter statistically significant) compared with women who had not used traditional healing.

In terms of knowledge and attitudes, women who knew that early age at menses is a risk factor and that breast cancer symptoms include bloody discharge from nipples, puckered breast skin, and a change in breast size were more likely to have ever had a CBE than women who did not have this knowledge (Table 4). Women who agreed that they would undergo treatment that was painful if it improved chances of living longer, that they would like to know if they had breast cancer, and that they were not very likely to get breast cancer were also more likely to have ever had a CBE than those who disagreed.

Women who agreed that they would like to know if they had breast cancer were more likely than women who disagreed to have ever had a mammogram. Interestingly, women were also more likely to have ever had a mammogram if they believed that mammography is only needed for symptoms and that there is not much that can be done to prevent breast cancer.

## DISCUSSION

This study examined the breast cancer risk and self-reported screening knowledge, attitudes, and behaviors of Chamorro women in Southern California. The calculated PIR for breast cancer among Chamorros (0.7) is roughly comparable to the OR for breast cancer incidence for American Samoans (0.8) relative to whites and suggests that, at this time, Chamorro women have a lower breast cancer incidence rate than white women. This PIR also suggests that Chamorro women have a lower incidence of breast cancer compared with native Hawaiian women and highlights the heterogeneity between different Pacific Islander populations.<sup>2</sup> Although this is a good news for Chamorros, past research has found increasing cancer rates for Pacific Islanders who immigrated to the mainland United States,<sup>5,14</sup> primarily due to an increase of fat in the diet and decreased physical activity. The overwhelming majority of women in this study were born abroad, and although life on Guam has long been westernized, it may be that lifestyle change along with other stresses and strains of living away from their place of birth also contribute to increasing breast

TABLE 3. SIGNIFICANT DESCRIPTIVE CORRELATES OF EVER HAVING HAD CLINICAL BREAST EXAMINATION

Characteristic	n	% Ever had CBE	p <sup>a</sup>	n	% Ever had mammogram	p <sup>a</sup>
Education						
Elementary school	13	61.5	0.000	—	—	—
Some high school	42	100.0				
High school graduate plus	104	90.4				
Marital status						
Married	120	95.8	0.001	121	73.6	0.002
Widowed	66	92.4		67	91.0	
Never married	10	60.0		10	50.0	
Divorced/separated	21	90.5		21	61.9	
Monthly income						
\$400–599	12	66.7	0.003	12	66.7	0.021
\$600–1199	14	92.9		14	92.9	
\$1200–1999	64	98.4		64	87.5	
\$2000–2999	42	90.5		43	76.7	
\$3000+	84	94.0		84	66.7	
Health insurance						
Yes	204	95.6	0.000	206	79.1	0.003
No	17	58.8		17	47.1	
Age, years						
40–49	—	—	—	61	41.0	0.000
50–59				69	97.0	
60–69				37	97.3	
70+				53	90.6	
Ever used traditional massage						
Yes	—	—	—	137	87.6	0.000
No				78	55.1	
Ever used a traditional healer						
Yes	—	—	—	129	88.4	0.000
No				82	54.9	

<sup>a</sup>Chi-square test of significance. The proportions of respondents reporting "never had a CBE" and "never had a mammogram" are not shown in this table, for simplification.

cancer rates for Chamorro women on the mainland. Regardless of the possible trajectory of change, educational efforts should promote preservation of traditional lifestyles and behaviors that may be contributing to a lower incidence rate.

The Chamorro women in our study appeared to have relatively high baseline screening rates, with 93% ever having a CBE and 77% ever having a mammogram. According to ACS guidelines, however, only 66% received a CBE in the past year and 25% receive yearly mammograms, pointing to the need to promote regular breast cancer screenings among this population. As the overwhelming majority of our respondents had health insurance, the emphasis should be placed on educating these women on the importance of regular CBE and mammogram screenings to maintain breast health. In addition, very few of our respondents practiced regular BSE; 37% ever performed BSE, and only 27% did this monthly.

BSE is the most common method for detecting breast abnormalities in women of all ages, and education for these Chamorro women should underscore the importance of monthly BSE as part of routine self-care.

Significant descriptive correlates for ever having had a CBE and mammogram were similar to those found in other studies of Asian Americans and Pacific Islanders.<sup>5,11,12</sup> Our findings reiterate the importance of higher income, health insurance, married status, and older age as correlates of baseline breast cancer screening. Perhaps unique among our findings, however, was the positive association between traditional health practices and breast cancer screening. The finding that Chamorros who practice traditional healing behaviors are more likely to have had a baseline mammogram counters the common stereotype that traditional beliefs and behaviors pose barriers to Western healthcare. Only one other published paper examined the connection

TABLE 4. SIGNIFICANT KNOWLEDGE AND ATTITUDE CORRELATES OF EVER HAVING HAD A CLINICAL BREAST EXAMINATION AND MAMMOGRAM

<i>Characteristic</i>	<i>n</i>	<i>% Ever had CBE</i>	<i>p<sup>a</sup></i>	<i>n</i>	<i>% Ever had mammogram</i>	<i>p<sup>a</sup></i>
Early age at menses is a risk factor						
Yes	188	94.7	0.024	—	—	—
No	35	82.9				
Blood is a symptom of breast cancer						
Yes	181	95.0	0.016	—	—	—
No	42	83.3				
Puckered skin is a symptom of breast cancer						
Yes	164	96.3	0.002	—	—	—
No	59	83.1				
Change in breast size is a symptom of breast cancer						
Yes	173	95.4	0.011	—	—	—
No	50	84.0				
Would undergo treatment if it improved chance of living longer						
Agree	195	95.4	0.000	—	—	—
Disagree	19	63.2				
Not very likely to get breast cancer in lifetime <sup>b</sup>						
Agree	160	95.6	0.018	—	—	—
Disagree	56	85.7				
Would like to know if had breast cancer <sup>b</sup>						
Agree	180	97.2	0.000	181	80.1	0.032
Disagree	36	72.2		36	63.9	
A mammogram is only needed if feel symptoms						
Agree	—	NA	—	78	88.5	0.002
Disagree				142	71.1	
Not much can be done to prevent breast cancer						
Agree	—	—	—	98	87.8	0.001
Disagree				121	69.4	

<sup>a</sup>Chi-square test of significance. The proportions of respondents reporting "never had a CBE" and "never had a mammogram" are not shown in this table, for simplification.

<sup>b</sup>Wording of these questions appears inverted from the original survey for purposes of reporting only.

between traditional health practices and use of western medical services (albeit in an Asian population) and also found that traditional beliefs and practices do not act as barriers to access to or use of western medical care.<sup>15</sup> Our findings take this one step further: traditional behaviors may be linked with other self-healthcare practices. We strongly encourage researchers to investigate the potentially facilitative connection between positive traditional health practices and breast cancer screenings among immigrant Asian and Pacific Islander women in the future.

Finally, the significant knowledge and attitude correlates of baseline screening in our study have implications for the development of educational messages promoting screening

among Chamorro women. We recommend that efforts to promote CBE underscore knowledge of breast cancer symptoms and risk factors, as well as having positive attitudes toward breast cancer (e.g., it is survivable) and treatment (e.g., there are many treatment options). Based on our results, educational messages to promote mammograms should differ from messages about CBE, with an emphasis placed on the benefits of knowing about breast cancer early. Unfortunately, we are not sure why women who believed that mammograms are needed only for symptoms or that there is not much that can be done to prevent breast cancer were more likely to have ever had a mammogram. Our findings could be a result of repeated significance testing

rather than reality and need to be explored further in future studies.

This study has several limitations, the most important of which was our reliance on convenience sampling to identify survey respondents. Compared with national census data for Guamanians, our study sample was less highly educated (only 66% had a high school education or above, compared with 71% of Guamanians in the United States). This suggests that our results may underestimate the true rates of screening among Chamorro women, as lower educational level has been associated with lower screening rates. However, any conclusions about the representativeness of our sample are speculative because there are no ethnic-specific demographic data on Chamorros in the United States. Finally, data were based on respondents' self-reports, and despite confidentiality and self-administration (to reduce social desirability), such self-reports may not reflect actual behaviors. Nonrespondents may have differed significantly from respondents in their rates of screening. All of these study limitations point to the need to conduct further breast cancer control research, ideally using innovative methods for probability sampling in this population. Despite these limitations, however, our study is the first of its kind for Chamorro women on the mainland United States, and we hope it provides important information to inform future research, interventions, and policies in support of community-based efforts to control breast cancer in this unique and underserved population.

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