
Barriers to Mammography in a Low Income, Multiethnic Clinic Population

Carolyn Cook Gotay PhD, Brian F. Issell MD, Brenda Y. Hernandez MPH, Seth Serxner PhD, MPH

Breast cancer-related knowledge, attitudes, behaviors and barriers to obtaining a mammogram were assessed in women attending a primary care clinic serving a low-income minority population. Although most women believed in the value of mammograms, fewer than one in six was compliant with guidelines, and there were considerable deficits in knowledge about breast cancer risk. Ethnic and age differences in responses have implications for health program planning.

Introduction

Breast cancer poses a significant threat to the health of the women of Hawaii. During the past five years, breast cancer was the leading malignancy and a major source of cancer-related death in the state. The burden of breast cancer is disproportionate among Hawaii's ethnic groups. Caucasians and Native Hawaiians are at highest risk for being diagnosed with breast cancer; respective age-adjusted breast cancer incidence rates are 133 and 112 per 100,000 population, compared to 59 for Filipinas and 88 for Japanese. Native Hawaiian women are also at greatest risk of dying from the disease, with mortality rates of 38 per 100,000, compared to 30 for Caucasians, 16 for Filipinas, and 14 for Japanese.¹ Breast cancer is more likely to be at a more advanced stage at diagnosis in Native Hawaiians and Filipinas. Among breast cancer patients in Hawaii, 56% of Native Hawaiians and 46% of Filipinas present with regional or advanced disease, compared to 30% of Caucasians and 27% of Japanese.

An effective strategy to diagnose breast cancer at an early, more treatable stage is available: screening asymptomatic women through mammography and clinical breast examination reduces breast cancer mortality and morbidity for women 50 years of age and older.² Despite the widespread availability of mammography, many women do not obtain mammograms, especially on a regular basis as recommended in screening guidelines.³ In particular, women from minority groups and those of low socioeconomic status are less likely to report having been screened.^{4,5} Low-income may affect the

likelihood of having insurance coverage or the ability to pay for mammograms. Low-income also often co-varies with other variables such as education that may influence screening behaviors. It appears that sociocultural variables may affect mammography participation⁶ even after controlling for income.⁷

Although information has been reported on barriers to mammography in some minority groups such as African-Americans^{8,9} and Hispanics,¹⁰⁻¹¹ virtually no data are available with respect to Asians and Pacific Islanders. In addition, few studies in Hawaii have focused on the cancer-related knowledge, attitudes and behaviors among individuals living in poverty. This project addressed these gaps by identifying barriers to obtaining a mammogram in women attending an inner city clinic designed to serve low-income populations in Honolulu.

Methods

Setting.—The study was conducted at an outpatient clinic affiliated with a major hospital which provides primary care and medical specialty services to indigent patients in downtown Honolulu. Interviews were conducted over a one-month period by a female interviewer with a background in health education.

Patient Eligibility.—Women 40 years or older with no past history of breast cancer or recent breast abnormalities were eligible for participation. (At the time this study was conducted, there was agreement among all major national organizations about the advisability of regular screening mammograms for all women aged 40 years and older.)

Procedures.—Patient charts were examined to identify eligible patients on a daily basis. On arrival at the clinic, the patient was asked if she wished to participate in the study. After women agreed to participate and signed the informed consent form, they were asked to complete a written survey which included 40 items. The questionnaire was designed to be self-administered, and it included descriptive information (e.g., marital status, ethnicity, education, employment, income) as well as questions about knowledge, attitudes, and practices related to mammography and breast cancer. Most items were answered using scaled response categories, and questions which had been utilized in previous studies were used wherever possible. An interviewer administered the questionnaire to women who required assistance. After the questionnaire was completed, the women were randomly assigned to an educational intervention; this aspect of the project will not be discussed further here.

Results

Description of the sample.—A total of 98 women participated in the study. No patient who was approached for participation declined to take part. The demographics of the participants can be seen in Table 1. There was a broad age distribution, with the largest proportion (about one-third of the women) between 40 and 49 years

Address for reprints:
Carolyn Cook Gotay PhD
Cancer Research Center of Hawaii
1236 Lauhala Street
Honolulu, HI 96813

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Table 1.—Characteristics of the Participants

Demographics	Frequency (%)
Age	
40 - 49	34 (35)
50 - 59	25 (26)
60 - 69	19 (19)
70+	19 (19)
Education	
Less than high school	35 (37)
High school graduate	31 (32)
More than high school	30 (31)
Ethnicity	
Caucasian	37 (38)
Hawaiian/Part Hawaiian	19 (19)
Japanese	8 (8)
Hispanic	7 (7)
Filipino	5 (5)
Chinese	2 (2)
Other Pacific Islander	8 (8)
Mixed/Other	12 (12)
Annual Income	
Less than \$10,000	66 (73)
\$10,000 - \$15,000	9 (10)
More than \$15,000	15 (17)
Marital Status	
In marital-type relationship	27 (28)
Not in marital-type relationship	71 (72)

Note: Total number of participants equals 98; in all tables, numbers may be less due to missing data, and total percentage may not equal 100% because of rounding.

of age. Ethnicity was assessed by self-report, and almost 60% of the participants were either Caucasian or Hawaiian/part Hawaiian, with the remaining women reflecting a wide variety of ethnic backgrounds. Since the other ethnicities comprised too many different groups to be interpretable, ethnic analyses in this paper are based on comparisons between Caucasian and Hawaiian/part Hawaiian women. Consistent with the population targeted by the clinic, two-thirds of the participants reported family incomes of less than \$10,000 per year, although almost one-third (31%) had education beyond high school. Only 26% of the women were married or cohabitating with a partner. This figure seems very low when compared to figures for the state as a whole, which report 55% of women 15 years of age and older as married,¹² supporting a link between poverty and a single earner.

Use of mammography.—Table 2 reports the women's past use of mammography as a function of ethnicity and age. It can be seen that while 28% of participants had never had a mammogram, the remaining 72% had had at least one previous mammogram. American Cancer Society guidelines for mammogram frequency (which guide mammography reimbursement in this state) are that all women 40 years of age and older obtain mammograms every one or two years. Based on this criterion, 59% of these women were adherent to these guidelines. Although the numbers of individuals in the different ethnic groups were quite small, there was a significant difference ($X^2(1) = 7.7$, $p < .006$) between Caucasian and Hawaiian women, such that the Hawaiian women were less likely to be adherent to the guidelines. There were no significant differences according to age.

Attitudes towards breast cancer.—Table 3 summarizes participants' attitudes about breast cancer overall and according to ethnicity.

Table 2.—Mammogram History by Ethnicity and Age

	Last Mammogram		
	Past 2 yrs N (%)	> 2 yrs ago N (%)	Never/DK* N (%)
Ethnicity			
Caucasian	26 (70)	4 (11)	7 (19)
Hawaiian	6 (32)	5 (26)	8 (42)
Other	25 (63)	3 (8)	12 (30)
Age			
40 - 49	17 (50)	5 (15)	12 (35)
50 - 59	16 (67)	5 (21)	3 (13)
60 +	23 (62)	2 (5)	12 (32)
Overall	57 (59)	12 (13)	27 (28)

*DK indicates women who could not remember when or if they had had a mammogram.

Table 3.—Attitudes Toward Breast Cancer by Ethnicity*

Item	Caucasian N (%)	Hawaiian N (%)	Other N (%)	Overall N (%)
I would rather not know if I had cancer.	2 (5)	1 (6)	8 (20)	11 (12)
At my age, I don't need to worry about breast cancer.	6 (16)	2 (11)	11 (28)	19 (20)
Painful treatment is worth getting if it improves my chances of living longer.	22 (60)	11 (61)	31 (38)	64 (68)
Most women would be afraid to tell their husband of partner they have cancer because it would affect the relationship.	10 (29)	12 (67)	15 (38)	37 (39)
I have doubts about some of the things doctors say that they can do for you once you have cancer.	14 (39)	16 (89)	17 (43)	47 (50)
There is not much a person can do to prevent cancer.	14 (39)	11 (61)	9 (23)	25 (47)
With breast cancer, most women can live a normal life if it is discovered and treated early.	33 (94)	19 (100)	34 (88)	86 (91)

*Table reflects number (%) of women who agreed with each statement on a 3-point scale.

Overall, respondents were positive about the value of early detection and treatment of cancer: high proportions agreed that cancer treatment is worth getting, that discovering breast cancer early allows successful treatment, and that it would be preferable to know if they had cancer. Overall, most women were aware that they were at risk for breast cancer; only one in five women believed that her age obviated concern about breast cancer. A diversity of opinion was evident in other areas: on whether women would be afraid to tell their partners if they had cancer, on whether they had doubts about physicians' claims about their ability to treat cancer, and about whether cancer could be prevented.

Ethnic-related differences were seen in a few areas.—Hawaiian women were more likely to agree (67% compared to 29% of Caucasians) that most women would be afraid to tell their partner about their cancer ($X^2(1)=7.1, p < .01$); since nearly equal proportions of Hawaiian and Caucasian women were unmarried (84% and 82% respectively), this difference does not derive from marital status and may reflect different cultural patterns of gender relationships. The Hawaiian women also were much more skeptical of what doctors say ($X^2(1)=12.2, p < .0005$).

Only one age-related difference was seen, with respect to the statement, "At my age, I don't need to worry about breast cancer." 41% of older women (aged 60 and above) agreed with this statement, compared to 9% of women 40-49 and 4% of women 50-59. This difference was significant ($X^2(2)=15.8, p < .0005$).

Perceptions of risk factors.—Table 4 presents findings for the participants' beliefs about breast cancer risk factors. Since findings

Potential risk Factor	Caucasian N (%)	Hawaiian N (%)	Other N (%)	Overall N (%)
Hawaiian ethnicity	7 (19)	4 (22)	5 (13)	16 (17)
Mother had breast cancer	27 (73)	12 (67)	22 (55)	61 (64)
Sister had breast cancer	21 (58)	10 (55)	15 (38)	46 (48)
Menstrual period began before age 13	8 (22)	1 (6)	2 (5)	11 (12)
Menstrual periods stopped after age 55	4 (11)	5 (28)	7 (18)	16 (17)
Having one's children after age 30	7 (19)	6 (35)	10 (25)	23 (24)
Breastfeeding one's children	4 (11)	2 (11)	2 (5)	9 (9)
Eating a diet high in fat	22 (61)	7 (41)	22 (55)	51 (55)
Lack of regular exercise	13 (36)	7 (41)	21 (52)	41 (43)
Using alcohol	16 (44)	5 (29)	21 (52)	42 (45)
Smoking cigarettes	23 (64)	11 (65)	29 (73)	63 (67)
Taking medications such as estrogens or birth control pills	26 (70)	7 (41)	17 (43)	50 (53)

*Table reflects numbers (%) of women who agreed that each factor "somewhat" or "very much" increases a woman's chances for getting breast cancer on a 4-point scale (not at all, somewhat, very much, don't know).

Potential risk Factor	Caucasian N (%)	Hawaiian N (%)	Other N (%)	Overall N (%)
Hawaiian ethnicity	7 (19)	4 (22)	5 (13)	16 (17)
Mother had breast cancer	27 (73)	12 (67)	22 (55)	61 (64)
Sister had breast cancer	21 (58)	10 (55)	15 (38)	46 (48)
Menstrual period began before age 13	8 (22)	1 (6)	2 (5)	11 (12)
Menstrual periods stopped after age 55	4 (11)	5 (28)	7 (18)	16 (17)
Having one's children after age 30	7 (19)	6 (35)	10 (25)	23 (24)
Breastfeeding one's children	4 (11)	2 (11)	2 (5)	9 (9)
Eating a diet high in fat	22 (61)	7 (41)	22 (55)	51 (55)
Lack of regular exercise	13 (36)	7 (41)	21 (52)	41 (43)
Using alcohol	16 (44)	5 (29)	21 (52)	42 (45)
Smoking cigarettes	23 (64)	11 (65)	29 (73)	63 (67)
Taking medications such as estrogens or birth control pills	26 (70)	7 (41)	17 (43)	50 (53)

*Table reflects numbers (%) of women who agreed that each factor "somewhat" or "very much" increases a woman's chances for getting breast cancer on a 4-point scale (not at all, somewhat, very much, don't know).

	Likely N (%)	Unlikely N (%)	Don't Know N (%)
Ethnicity			
Caucasian	10 (28)	16 (44)	10 (28)
Hawaiian	8 (42)	4 (21)	7 (37)
Other	5 (12)	19 (45)	18 (43)
Age			
40 - 49	10 (39)	13 (39)	10 (30)
50 - 59	8 (32)	11 (44)	13 (37)
60 +	5 (13)	14 (37)	19 (50)
Overall	23 (24)	39 (40)	35 (36)

were very similar across ethnic and age groups, the table presents data for the women as a whole. The risk factors included those which are known scientifically to increase breast cancer risk (e.g., early menses, late menopause) and to have no effect on risk (e.g., smoking cigarettes), as well as some for which a link is currently unclear (e.g., high fat diet, lack of exercise).

It can be seen that there was a large amount of misinformation about cancer risk among the participants. The highest rated risk was smoking (endorsed by two-thirds of the women), a factor which had not been implicated in breast cancer development at the time of this study. Established risk factors such as being Hawaiian, early menstruation, late menopause, and having children at an older age were each recognized by fewer than one woman in four overall. Many

women were aware that breast cancer in one's mother was a risk factor, and nearly half overall also knew that having a sister with breast cancer increased risk. A large proportion correctly stated that breast feeding did not increase breast cancer risk. The other factors all reflected a diversity of opinion (as many women agreeing as disagreeing or being unsure), which is appropriate since the scientific literature is equally unclear about whether these factors increase breast cancer risk.

Personal risk of breast cancer.—The respondents were asked how likely they felt it was that they would be diagnosed with breast cancer at some point in their lives. Table 5 indicates the proportions of women who thought they were at high risk for breast cancer by ethnicity and age. It should be noted that considerable numbers of women in all groups responded "don't know": that is, they had not

Concern	Caucasian N (%)	Hawaiian N (%)	Other N (%)	Overall N (%)
I think it is going to hurt	17 (49)	3 (17)	10 (25)	30 (32)
I feel embarrassed about having a mammogram	10 (29)	3 (17)	11 (29)	24 (27)
I am worried that breast cancer will be found	18 (51)	12 (67)	17 (43)	47 (51)
I am concerned about getting too much radiation	10 (28)	7 (38)	17 (43)	24 (37)
I think this is a very good way to find breast cancer	32 (89)	16 (84)	30 (76)	78 (82)

*Table reflects numbers (%) of women who agreed "some" or "very much" on a 4-point scale of agreement (not at all, some, very much, don't know).

Concern	40-49 N (%)	50-59 N (%)	60+ N (%)	Overall N (%)
I think it is going to hurt	13 (39)	8 (37)	8 (18)	29 (32)
I feel embarrassed about having a mammogram	10 (31)	7 (32)	6 (16)	23 (25)
I am worried that breast cancer will be found	19 (58)	12 (55)	15 (41)	47 (51)
I am concerned about getting too much radiation	17 (52)	7 (32)	9 (24)	33 (36)
I think this is a very good way to find breast cancer	29 (88)	21 (88)	27 (73)	77 (84)

*Table reflects numbers (%) of women who agreed "some" or "very much" on a 4-point scale of agreement (not at all, some, very much, don't know).

been able to determine their personal risk for breast cancer. There was a trend toward significance by ethnicity, such that Hawaiian women were more likely to believe they had a likelihood of contracting breast cancer ($X^2(1) = 2.6, p = .11$). While older women (60 and older) tended to believe that they were unlikely to get breast cancer (reported by 74% of the women) compared to the younger women (of whom 57% believed breast cancer unlikely), this difference was not statistically significant.

Barriers to mammography.—The women were asked to identify the most important reason why women do not get mammograms. The most frequent response was "fear of mammograms," named by 26 respondents. 16 respondents cited not thinking a mammogram is needed, 11 high cost, 7 that the physician did not recommend a mammogram, and 6 the fear that it would hurt. A number of other responses were suggested by smaller numbers of women, and a considerable number (N=15) could not offer a reason.

The women also asked about a number of specific concerns they might have about getting a mammogram. Tables 6 and 7 summarizes the women's responses as linked with ethnicity and age, respectively. All of the mammography concerns were endorsed by a number of women, with the fear that cancer might be detected on the mammogram the most prevalent across all groups. Overall, the respondents were quite positive about the usefulness of mammograms in detecting breast cancer, with 73% or more in all groups agreeing that they were a good way to detect breast cancer.

With respect to ethnicity, Hawaiian women were particularly likely to report worry that the mammogram could indicate cancer; two thirds of these women endorsed this concern. In contrast, the Hawaiian women were less concerned about the painfulness of the procedure or feeling embarrassed. With respect to age, it is noteworthy that the older women (those 60 years and older) reported the lowest levels of concern in every area about which they were asked. Although nearly three-quarters of these women endorsed the value of mammograms, this was the lowest percentage in any group.

Discussion

Limitations.—Several limitations to this study should be mentioned. The sample size is small, especially in subgroups, and limits the statistical power to detect differences. Only patients who could understand English and were at least somewhat literate were included in the study; however, numerous patients speaking other languages (most frequently, Samoan, Tongan, and Korean) attended this clinic, as well as illiterate individuals. The findings

cannot be extrapolated to these groups. The data were gathered from one clinic at a particular time and may not be applicable to other settings. Finally, all data are based on self-reports, which are subject to biases due to social desirability, limitations in memory, and so on. Participants were encouraged to be completely candid, and the large numbers of "don't know" responses in almost every question imply that they were not highly concerned about self-presentation; however, the limitations of self-reports must be acknowledged.

Use of mammography.—In Hawaii, the Behavioral Risk Factor Surveillance Survey (BRFSS), which is conducted annually by the State Department of Health through a contract with the Centers for Disease Control and Prevention, provides a state-specific estimate of mammography use. Data in this survey are collected from a representative sample of the population through telephone interviews. The most recent data indicate that 82% of respondents 45 and older report ever having had a mammogram.¹³ The self-reported rates of mammography use in this sample (72% of participants had had at least one mammogram) are reasonably close to what has been reported for the state as a whole, although the women in this study represented a group which had significantly lower income than the state average and a slightly different age group (40 and above). Thus, it appears that in Hawaii, low-income is not necessarily as great a barrier to receiving a mammogram as has been reported elsewhere in the country;⁵ this may result from the widespread availability of health care insurance coverage in the state.

Knowledge and attitudes about breast cancer and mammography.—Most women reported positive attitudes towards breast cancer treatment and mammograms. However, the generally low levels of belief that cancer in general can be prevented, as well as little understanding of breast cancer risk factors, indicate areas where health education efforts are needed. Such efforts need to identify both factors which are not linked with cancer as well as those that are, in order to countermand the frequently-stated belief that "everything causes cancer." The most frequent reason women offered for why they do not get mammograms—a general fear of the procedure—may stem largely from a more basic fear of cancer. The question about women's mammography-related concerns also indicated that many respondents harbored worries that a mammogram would detect cancer. In order to address this barrier, health care personnel need to stress that the vast majority of screening mammograms in asymptomatic women do not indicate cancer or any abnormalities.

Subgroup differences.—Despite the small sample size, several

interesting subgroup differences emerged. The responses of the Hawaiian women differed from those of the Caucasian women in a number of respects. For one, they were more distrustful of physicians. Their lower levels of adherence to mammography guidelines may be partially due to distrust with the standard Western health care system. This finding is consistent with another article recently reported in the *Hawaii Medical Journal*¹⁴ and indicates that health care providers need to make special efforts to communicate with Native Hawaiian patients. Innovative strategies to reach Native Hawaiians are needed as well, such as the approach used by Waianae Coast Comprehensive Health Center's mammography and Pap test screening project. This community-based project utilized lay health educators, natural social networks, and procedures and materials that incorporated Hawaiian cultural values.¹⁵ Hawaiian women in the present study were also less likely to believe that male partners would be supportive, implying that educational efforts may be needed for family members as well as for the women themselves.

The Hawaiian women were markedly more concerned about the possibility of being diagnosed with breast cancer than were the Caucasian women, even though current Hawaii incidence figures indicate higher breast cancer rates for Caucasians. The Hawaiian women's perceptions may stem from the many reports of significant health problems in the Native Hawaiian community, as well as the significantly higher breast cancer mortality experienced by Native Hawaiian women. Such concern can potentially have a positive effect, if the women become mobilized to adhere to healthy lifestyles and recommended preventive care. On the other hand, if women perceive that they are destined to become ill, they may give up attempting to adopt and maintain healthful behaviors. Health care providers and educators need to convey a message that balances valid concerns with realistic hopes and positive, achievable actions.

The older women presented, if anything, the opposite picture. Older women were more likely to believe that they did not need to be concerned about breast cancer at their age and that they were unlikely to be diagnosed with breast cancer during their lifetime. Other studies have also reported lower levels of perceived breast cancer risk in elderly women.¹⁶⁻¹⁸ The older women were also less concerned about all aspects of mammography, including the possibility that cancer would be detected. Their lower levels of concern run directly counter to breast cancer incidence, which rises with age. This fact may get lost in mass media coverage of breast cancer, which often focuses on younger women in the public eye. These findings strongly suggest that efforts aimed at breast cancer education for older women are needed. Several programs designed to enhance breast screening in older women have been reported: strategies targeting individuals (e.g., telephone counseling and letters), the health care system (e.g., using a nurse practitioner to encourage mammography) and environmental barriers (e.g., reduced-price screening, mobile vans) have all been successful in increasing mammography utilization.¹⁹ However, little research has been directed at older impoverished minority women like many of the participants in this study. These women are multiply disadvantaged and their needs warrant particular attention, especially since their numbers will increase in the future.

Implications

This study documented considerable need for breast cancer education and screening among attendees at an urban primary care clinic. It also indicated that screening programs must be sensitive to individual patient characteristics, such as ethnicity and age. The clinic attendees were interested and willing to participate in the

study, and future activities could profitably utilize the clinic as a setting for health education.

Observations

For many low-income, minority women, such clinics may be their predominant and perhaps only contact with the health care system. A number of approaches have been used to promote screening in primary care settings; the most frequently-used interventions include physician reminder systems (e.g., chart tags, computerized reminders, checklists) and patient reminders (e.g., postcards, telephone calls).²⁰

Although only a few studies to date have utilized social support and social network interventions,¹⁹ such approaches hold considerable promise. The Waianae project mentioned earlier represents one such program.¹⁵ Another example is the "Tell A Friend" program, in which women contacted their friends to encourage them to obtain a mammogram. This program was particularly effective among lower income participants.²¹ The "Witness" program, based in Arkansas, recruits participants to cancer screening using community women from the target population who have obtained screening and can share their experience, rather than health care professionals. The similarity between the person providing the health education (the "Witness") and the target audience has proved successful in convincing minority, low-income women to obtain cancer screening.²² Interventions using models such as these could be adapted to the clinic setting. They may be particularly appropriate for women like the participants in the present study, given the importance of social ties in Native Hawaiian and other cultures, as well as feelings of discomfort and alienation towards the modern Western health care system in many minority and low-income individuals.¹⁴ Future researchers and program planners need to build on these ideas.

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