
Determinants of Breast Cancer Screening Among Inner-City Hispanic Women in Comparison with Other Inner-City Women

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respondents (37 percent). Determinants of screening were explored to suggest reasons for this difference.

The Health Belief Model was used to identify and compare determinants of breast cancer screening (sociodemographics, health care utilization, perceived susceptibility to breast cancer, perceived seriousness of breast cancer, cues to screening such as a provider's recommendation, and the perceived benefits and costs of screening) among Hispanics, non-Hispanic whites, and non-Hispanic blacks.

Hispanics were younger, less educated, and had lower family incomes than other women residing in minority low-income census tracts, were less likely to receive medical care, to perceive themselves as susceptible to breast cancer, and to perceive breast cancer as curable.

Synopsis

A telephone survey of a random sample of Rhode Island women ages 40 and older residing in minority low-income census tracts—census tracts in the lowest quartile of a variety of socioeconomic indicators in which at least 5 percent of the population was classified as Hispanic or non-Hispanic black—was conducted in 1991, focusing on breast cancer screening. Hispanic women were found to have about half the breast cancer screening rate (20 percent, according to current screening guidelines) of other

Logistic regression analyses revealed the importance of use of health care, cues for screening, and perceptions of mammography to explain the screening behavior of Hispanics and non-Hispanics alike. Access to medical care is a significant problem in the Rhode Island Hispanic community, related to recent immigration, undocumented immigration, and low income characteristics of its members. Efforts to increase long-term screening for breast cancer in this community should focus on access while paying attention to its unique perceptions of breast cancer.

A 1991 TELEPHONE SURVEY of women's cancer screening experience among a random sample of women residing in minority low-income census tracts—census tracts in the lowest quartile of a variety of socioeconomic indicators in which at least 5 percent of the population was classified as Hispanic or non-Hispanic black—in Rhode Island revealed substantially lower rates of breast cancer screening among Hispanic women than non-Hispanic women (20 percent versus 37 percent, respectively, based on current guidelines). Known determinants of screening, including sociodemographics, health care use, perceived susceptibility to breast cancer, perceived seriousness of breast cancer, cues to screening, and

the perceived benefits and costs of screening (1), were analyzed to suggest reasons for this difference. The Health Belief Model was used to organize the analysis.

Methods

The 1991 telephone survey used reverse telephone directories to interview a random sample of 828 (70 percent response rate) women ages 40 and older residing in minority low-income census tracts (based on 1980 census returns). In parallel with a previous study of women's cancer screening among a random sample of all Rhode Island women ages 40 and older

(1), the Health Belief Model guided the choice of survey questions, addressing concepts such as sociodemographics, health care use, perceived susceptibility to breast cancer, perceived seriousness of breast cancer, cues to screening such as a provider's recommendation, and the perceived benefits and costs of screening. The interview form had been designed in 1987 by the Centers for Disease Control, working in cooperation with the Rhode Island Department of Health, then modified by the National Cancer Institute (NCI) in 1990 to include questions of interest to the NCI's "Women's Cancer Screening Program for Poor and Minority Women." The interviews lasted about 20 minutes and were conducted in English or Spanish, depending on the ability of respondents to speak English. Of the interviews, 746 were conducted in English, 82 in Spanish (77 percent of 106 interviews with Hispanic respondents). Results were weighted according to strata built into the sample for special analyses not reported in this report. Differences between weighted and unweighted results were evaluated and found to be minor.

In this primary analysis of data, frequency distributions and cross-tabulations (tables 1-4) were used to profile 761 women by ethnicity, including 505 non-Hispanic white, 150 non-Hispanic black, and 106 Hispanic. Of the 828 respondents, 67 were excluded from the analysis because they represented a number of additional ethnic groups (Asians, Southeast Asians, Native Americans, and "others") with numbers too small to be meaningful. Differences between 82 non-English-speaking Hispanics and 26 English-speaking Hispanics were also evaluated; selected differences by language are discussed in the Results section. All differences noted in the Results section were found to be statistically significant at the $P < 0.05$ probability level, using the Z-statistic to evaluate the outcome of difference of proportions tests.

Logistic regression analyses (SAS Logist software) (2) were used to identify important predictors of breast cancer screening (sociodemographics, use of health care, perceived susceptibility to breast cancer, perceived seriousness of breast cancer, cues to screening such as a provider's recommendation, and the perceived benefits and costs of screening) for each of three ethnic groups (table 5). Forward stepwise regressions were performed, using all the potential predictors listed in table 1; the same potential predictors were used in each of the three logistic regression analyses. Betas from regression solutions were converted to odds ratios by calculating e to the beta power, and confidence limits were determined by calculating e to the power: beta plus or minus 1.96 times the standard error of beta.

Table 1. Percentage of women residents of minority low-income census tracts, 40 years and older, categorized by potential predictors of breast cancer screening, Rhode Island, 1991, by ethnicity

Potential predictors	Non-Hispanic white (N = 505)	Non-Hispanic black (N = 150)	Hispanic (N = 106)
Perceptions of breast cancer:			
Perceived susceptibility to breast cancer high	33	41	14
Perceived seriousness of breast cancer high	32	41	72
Demographics:			
Ages 40-49	22	37	43
Ages 50-59	18	27	28
Ages 60-69	27	25	16
Ages 70-79	20	9	10
Ages 80 and older	13	2	3
High school diploma received	65	75	32
Family income <200 percent of poverty level	32	26	50
Any health insurance	96	91	82
Currently married	44	45	51
Health care use:			
Have primary care provider ..	85	82	64
Seen primary care provider past year	86	85	77
Have regular source of gynecologic care	85	93	85
Gynecologic care in past year	49	55	42
Ever had diagnostic mammogram	10	12	12
Cues for screening:			
Screening mammogram ever recommended by provider	65	60	48
Pap test received past year	45	49	39
Breast self-examination in past year	65	71	56
Perceptions of mammography:			
Mammography effectiveness high	50	43	49
Mammography safety high ..	69	65	59

Results

Only 23 percent of Hispanic respondents spoke English well enough to be interviewed in English; the remaining 77 percent were interviewed in Spanish. Although an exploratory analysis of differences between these two groups was undertaken, the number of English-speaking respondents was too small to make inferences from the analysis. Nonetheless, the data strongly suggest that Spanish-speaking Hispanic women were least likely of all women to have received a high-school diploma and to have any form of health insurance.

Hispanic respondents were less educated, had lower family incomes, and were less likely to have health

Table 2. Percentage of women residents of minority low-income census tracts, 40 years and older, categorized by screening for breast cancer according to current guidelines¹ in whole or in part, excluding women who received care for breast problems in the previous 1 or 2 years², Rhode Island, 1991, by ethnicity and age

Screening status	Non-Hispanic white (N = 463)		Non-Hispanic black (N = 138)		Hispanic (N = 93)	
	Number	Percent	Number	Percent	Number	Percent
Screening breast examination and screening mammogram.....	...	38	...	35	...	20
Screening breast examination only .....	...	18	...	14	...	12
Screening mammogram only .....	...	9	...	15	...	12
Neither.....	...	35	...	36	...	56
Total.....	...	100	...	100	...	100
Screening breast examination and screening mammogram:						
Ages 40-49.....	92	57	47	42	35	27
Ages 50-59.....	76	36	32	46	26	23
Ages 60-69.....	122	41	35	24	17	13
Ages 70-79.....	96	30	13	32	10	9
Ages 80 and older	66	22	3	32	3	0

¹For women ages 40-49: mammogram in previous 2 years; breast examination in previous year. For women ages 50 and older: mammogram and breast examination in previous year.

²Criteria of exclusion: for women ages 40-49: diagnostic mammogram in previous 2 years; diagnostic breast examination in previous year. For women ages 50 and older: diagnostic mammogram or diagnostic breast examination in previous year.

Table 3. Percentage of women residents of minority low-income census tracts, 40 years and older, who agreed with positive statements about mammography (benefits) and negative statements about mammography (costs), Rhode Island, 1991, by ethnicity

Statement	Non-Hispanic white (N = 505)	Non-Hispanic black (N = 150)	Hispanic (N = 106)
Benefits:			
You will feel better about yourself if you have a mammogram.....	84	88	90
Having a yearly mammogram will give you a feeling of control over your health.....	74	77	73
Mammograms are now a very routine medical test.....	82	81	68
Your family will benefit if you have a mammogram.....	70	75	71
You are confident that you can have a mammogram on a regular schedule	76	75	73
A regular mammogram is good for your doctor to have on file	89	87	88
If you have questions about mammograms, you try to get the facts to answer them	86	97	77
Costs:			
Mammograms have a high risk of leading to surgery that is not needed.....	16	15	22
If your doctor gives you a breast exam, then you do not need to have a mammogram	22	16	32
You would probably not have a mammogram unless you had a problem with your breasts.....	35	28	27
Once you have a couple of mammograms in a row that show no problems, you don't need any more mammograms.....	14	14	26
If your doctor does not mention a mammogram, neither will you.....	39	36	46

insurance than other respondents (table 1). Hispanic respondents were also less likely than others to have a primary care provider. In addition, Hispanic respondents were less likely than others to perceive themselves as susceptible to breast cancer and to perceive breast cancer as curable. For those variables that clearly differentiated Hispanics from other respondents, non-Hispanic whites and blacks were more similar to one another than to Hispanics.

Table 2 reveals that Hispanic respondents were screened for breast cancer according to current guidelines, including both screening mammography and screening breast examination, at about half the rate (20 percent) of other respondents (38 percent non-Hispanic whites, 35 percent non-Hispanic blacks). The lower rates of screening among Hispanics were consistent over all age groups, although the differences between ethnic groups within individ-

Table 4. Percentage of women residents of minority low-income census tracts, 40 years and older, categorized by index scores on the benefits and costs of mammography, Rhode Island 1991, by ethnicity

Scores	Non-Hispanic white (N = 505)	Non-Hispanic black (N = 150)	Hispanic (N = 106)	Total scores (N = 761)
Benefits of mammography (totals).....	100	100	100	100
0-1 (least agree)	8	6	21	11
2-3	10	6	11	9
4-5	19	28	22	21
6-7 (most agree)	63	60	46	59
Costs of mammography (totals).....	100	100	100	100
0-1 (least agree)	65	69	66	67
2-3	28	24	25	25
4-5 (most agree)	7	7	9	8

ual age categories did not achieve statistical significance at the $P < .05$ level.

As table 3 shows, Hispanic respondents were less likely than other respondents to agree with the statements, "Mammograms are now a very routine medical test" and "If you have questions about mammograms, you try to get the facts to answer them." Hispanic respondents were more likely than others to agree with the statements, "If your doctor gives you a breast exam, then you do not need to have a mammogram" and "Once you have a couple of mammograms in a row that show no problems, you don't need any more mammograms." All in all, Hispanic women were less likely than other respondents to agree with the benefits of mammography (46 percent Hispanics; 63 percent non-Hispanic whites, 60 percent non-Hispanic blacks), but were about as likely as others to agree with the costs of mammography (table 4).

Logistic regression analyses (table 5) revealed the importance of health care use, cues for screening, and perceptions of mammography for the screening behavior of Hispanics and non-Hispanics alike, although different predictors emerged for the three groups (from uniform sets of potential predictors used in the analyses).

Discussion

Breast cancer survival is lower among minority women of low income than among other women in the United States (3). The 5-year survival rate for women with breast cancer, for example, is 4 percent lower among Hispanic women than among non-Hispanic white women (4). This survival differential suggests relatively poor access to screening and treatment resources among women of low income despite recent increases in the use of breast cancer screening among all women (5,6). Access may be

inhibited by system barriers (7) and personal barriers (8).

In Rhode Island, Hispanic respondents were far less likely to be screened for breast cancer according to current guidelines than other respondents. This finding has been reported for low-income Hispanic populations elsewhere in the United States (9-12). Data from the 1987 National Health Interview Survey analyzed by Caplan and coworkers revealed that of women ages 50 and older, minority women were less likely than white women ever to have had a mammogram. Among women ages 50-64, for example, 34 percent of Hispanics and 31 percent of non-Hispanic blacks had ever had a mammogram, versus 44 percent of non-Hispanic whites (9).

Vernon and coworkers found that of 36,000 self-selected women ages 35 and older who had participated in the 1987 American Cancer Society Texas Breast Cancer Screening Project and had filled out a self-report questionnaire, 24 percent of 1,829 Hispanics had had a previous mammogram, compared with 33 percent of non-Hispanic whites and 27 percent of non-Hispanic blacks (10). Using a telephone survey administered to a stratified random sample of 471 San Diego residents in 1989, Elder and coworkers observed that among women ages 50 and older, 49 percent of Anglos had received a mammogram in the past year, compared with 19 percent of "low-aculturated" Latinas and 35 percent of "high-aculturated" Latinas (11).

In a 1990 telephone survey of women ages 35 and older who resided in Los Angeles County, Stein and Fox found that Hispanics were far less likely than non-Hispanic whites or non-Hispanic blacks ever to have had a mammogram (30 percent Hispanics, 57 percent non-Hispanic whites, 52 percent non-Hispanic blacks) (12).

The determinants of screening, as revealed in multivariate analyses of Rhode Island survey results,

Table 5. Logistic regressions: predictors of having been screened for breast cancer according to current guidelines¹ among women residents of minority low-income census tracts, 40 years and older, excluding women who received care for breast problems in the previous 1 or 2 years², Rhode Island, 1991, by ethnicity

Predictors	Odds ratios					
	Non-Hispanic white (N=463)	CL	Non-Hispanic black (N=138)	CL	Hispanic (N=93)	CL
Health care use:						
Seen primary provider past year	5.3	1.7-15.7	...	...	...	...
Gynecologic care in past year.....	2.7	1.4-5.1	6.3	2.7-14.9	...	...
Pap test in past year.....	2.5	1.3-4.7	...	...	12.0	2.9-49.8
Cues for screening:						
Screening mammogram ever recommended by provider	2.8	1.6-4.8	2.4	1.0-5.7	...	...
Breast self-examination in past year.....	...	...	...	...	9.3	1.5-56.3
Perceptions of mammography:						
Mammography effectiveness high.....	...	...	...	...	5.1	1.3-20.1
Mammography safety high	2.7	1.6-4.6	...	...	...	...
Perceived costs of mammogram	0.5	0.3-0.8	...	...	...	...
R ² for the model	0.27	...	0.15	...	0.32	...

¹For women ages 40-49: mammogram in previous 2 years; breast examination in previous year. For women ages 50 and older: mammogram and breast examination in previous year.

²Criteria for exclusion: for women ages 40-49: diagnostic mammogram in

previous 2 years; diagnostic breast examination in previous year. For women ages 50 and older: diagnostic mammogram or diagnostic breast examination in previous year.

NOTE: CL = confidence limits.

were broadly similar for Hispanic women and other women. Use of primary care, cues for screening, and perceptions of mammography all appear to have played roles in screening, although the concepts were represented by different variables in the final regression solutions for Hispanic women and other women. These results resemble those reported for all Rhode Island women ages 40 and older in 1987 (1) and reflect various individual findings from previous studies of Hispanic women in the United States (11,13,14).

Elder and coworkers found that use of mammography was strongly related to level of acculturation, as measured with a five-item scale (11). Solis and coworkers, in an analysis of data from the national Hispanic Health and Nutrition Examination Survey (HHANES), found that having (a) a routine place for health care, (b) health insurance coverage, (c) a regular provider, and (d) English language orientation predicted the use of preventive services, including physical breast examination (13).

Zapka and coworkers surveyed a stratified systematic sample of 169 women ages 45-75 scheduled for appointments in an eastern Massachusetts health clinic from July through September 1988 (79 percent Hispanics, 17 percent non-Hispanic whites, and 4 percent non-Hispanic blacks). This survey included their health insurance coverage, previous breast symptoms, perceptions of breast cancer and mammography, and a provider's recommendation for mammography. The researchers found that all of these conditions were related to ever having had a mammogram (14).

Interpreting cross-tabulation results in light of regression results from the Rhode Island survey, one may conclude that Hispanic respondents were less likely to be screened than other respondents primarily because they were less likely to have received relevant primary health care and to have experienced cues for screening, the latter flowing directly and indirectly from the former.

Zapka and coworkers' 1988 study of Latina community health center clients produced similar results (14). Not only were clients who had access to regular medical care more likely than similar women at large to receive mammograms, but even among health center clients, women with better health insurance coverage and those whose providers recommended mammograms were more likely than other women to have ever had a mammogram.

Although Hispanic Rhode Island respondents also differed from other Rhode Island respondents in their perceptions of breast cancer and mammography, these differences, in light of the regression results, appear to have had little effect on screening thus far. As Hispanic women gain greater access to primary health care, however, these perceptions may play more important roles in screening. Furthermore, the distinct pattern of Latina perceptions suggests the need for culturally sensitive screening messages as part of outreach interventions. Such messages should be delivered in Spanish (15) with concern for literacy (12,14,16) and "intragroup diversity" among recent immigrants from different countries (15).

One model of women's cancer screening intervention for Latinas, the NCI-sponsored A Su Salud

Program in El Paso, TX, has addressed these concerns by creating a network of volunteer "role models" who have themselves undergone breast and cervical cancer screening and who promote screening face-to-face in the community (17). The image of the volunteers as role models was enhanced by featuring them in the media. This approach facilitates sensitivity to cultural and personal factors which may affect screening and minimizes literacy issues.

Access to primary medical care is a significant problem in the Rhode Island Hispanic community related to recent, sometimes undocumented, immigration and its correlates; low educational attainment; low literacy in English; low income; and low rates of health insurance. Efforts to increase long-term breast cancer screening in this community should focus on access, while paying attention to its unique perceptions of breast cancer and mammography.

The literature suggests several remedies. As Hispanic women become acculturated to U.S. society, access to primary health care improves and screening increases (11). Language plays an essential role in acculturation (13). The cultural sensitivity of health care providers and their attention to the special health care needs of Hispanic women, especially those who are non-English-speaking, may also facilitate access and utilization (12,15).

Beyond language and culture, increasing access to primary health care may require similar measures for Hispanic and non-Hispanic women of low income. Decreasing the price of care for the uninsured and making mammography physically accessible to all should increase the rate at which most women of low income are screened for breast cancer (10,18-20). When access issues are addressed, however, the unique perceptions of some Hispanic women may limit the likelihood of screening. It may be prudent, therefore, to work on access and perceptions simultaneously.

Health Centers' Outreach

Based on the 1991 survey's results reported in this study, the Rhode Island Department of Health contracted with a local community health center to promote women's cancer screening, with an emphasis on screening mammography, among inner-city Hispanic women in one of two large Hispanic communities in Rhode Island. Following the A Su Salud model used in El Paso (17), the health center recruited two bilingual, bicultural outreach workers from the community to serve as role models for the promotion of women's cancer screening. They began with talks to small groups of Hispanic women at

'Decreasing the price of care for the uninsured and making mammography physically accessible to all should increase the rate at which most women of low income are screened for breast cancer.'

churches, community health fairs, and social service agencies; they also made appearances on local cable television programs for Spanish-speaking audiences.

Many one-on-one contacts with neighborhood women followed, supported by periodic public appearances. Screening services (provided at the community health center) and all necessary followup care (provided by a large, tertiary care hospital in the neighborhood) are free to uninsured women of low income. Women recruited for screening are invited to become regular primary care clients of the center. A media campaign focusing on screening mammography was designed and implemented to support community outreach efforts.

Focus groups of Hispanic women from the health center's service area were organized to learn more about participants' perceptions of cancer and women's cancer screening. The pervasive importance of family in Latinas' personal health care decisions emerged strongly from focus group sessions. On the basis of focus group results and the survey results reported in this paper, billboards, posters, and brochures were designed and distributed throughout the service area of the community health center. One of the two outreach workers was photographed with her family for billboards and posters with the message "*Cuidar de ellos . . . Significa cuida se a si misma*" (To care for them . . . Means to take care of yourself). The media campaign stressed four points:

- Breast cancer mortality is high for Hispanic women.
- Breast cancer is 90 percent curable when caught early.
- Mammograms detect breast cancer earlier than other methods.
- Mammograms are safe, simple, and do not take much time.

The community health center through which the Rhode Island screening program is being run was founded on the principle of community partnership. Residents of the center's service area are consulted

frequently for their input and feedback on new programs.

This approach, supported by the literature (21), has helped the center mount a number of very successful programs, including a Diabetes Resource Center to provide free medication and supplies to persons with diabetes who otherwise would not have access to them. Many of the people served in the center's programs are recent, undocumented immigrants who have learned to trust the discretion of the center's bilingual, bicultural staff. In short, community members have developed a sense of ownership, trust, and pride in the center which provides a firm foundation for special programs such as the women's cancer screening collaboration with the Rhode Island Department of Health.

In 9 months' time, 100 Hispanic women have received screening for breast cancer (physical breast examination and mammogram) through the Rhode Island screening program. Five abnormalities were found, resulting in appropriate followup care. A thorough evaluation of the program is underway. Although the work thus far has been supported by a small grant of \$25,000, the program is considered sufficiently successful by the center and the community that it will be continued after grant funds are exhausted.

Much remains to be done. The proportion of Rhode Island Hispanic women screened at baseline (20 percent) is very low, even in comparison with other women of low income. As more women are screened, the nature of barriers experienced by those who remain unscreened will undoubtedly change. Continuing surveillance will help new and existing programs adapt to change. Rhode Island's Hispanic community is the fastest growing ethnic community in the State. Meeting its needs in true partnership with community members will remain a public health challenge for many years to come.

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