

Sociodemographic and Cultural Factors Associated with Mammography Screening among Latina Women.

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Abstract

Latina women are less likely to report having had a screening mammogram at the recommended frequency compared to non-Latina women. It is important to identify those factors associated with lower screening frequency in order to develop strategies to improve adherence among Latinas. Information on the frequency of mammography screening was collected from 303 Latina women aged 40 - 76 years. Associations of age, education, hormone replacement therapy (HRT), family history of breast cancer, country of birth, years living in the US, and acculturation score with ever had a mammogram, and had a mammogram in the past 1-2 years were assessed using logistic regression. Age and HRT use were significantly, positively associated with ever had a mammogram or had a mammogram in the past 1-2 years ($p < 0.05$). Compared to Mexican women, Puerto Ricans and Guatemalans were 4.8 and 3.4 times, respectively, more likely to have ever had a mammogram, and Guatemalans 5.9 times more likely to have had a mammogram in the past 1-2 years. Living in the US for 17 or more years ($OR = 5.00$) and an acculturation score greater than one ($OR = 2.19$) were associated with having ever had a mammogram. Education and family history of breast cancer were not associated with mammography screening. These results suggest that public health efforts are needed to increase breast cancer screening among young Latina women, who are less acculturated, were born in Mexico, and have lived in the US for fewer years. **J. of Women's Cancer Vol 5: 22-24, 2005.**

Despite recent controversies regarding the benefits and potential risks of screening mammography (1-4), leading research and health promotion institutions continue to recommend screening mammography every 1-2 years for asymptomatic women aged 40 years and older (1, 4, 5). Among Latina women, breast cancer is the most commonly diagnosed cancer and the most common cause of cancer mortality (6). According to data from the National Health Interview Survey, Latina women were only slightly less likely to report having had a mammogram within the past two years as white non-Latinas and black non-Latinas (61%, 68% and 66%, respectively) (7). While these percentages are encouraging, one of the goals of Healthy People 2010 is to increase the percentage of women receiving a mammogram within the preceding two years to 70%. Therefore, it is important to identify those women who are not currently being screened according to the recommended guidelines in order to increase the overall proportion of women screened. Among Latinas, previous research suggests that cultural and socioeconomic factors may be associated with screening procedures. For example, results of some studies show that low acculturation, Mexican ethnicity, and short period of time living in the US are associated with low mammographic screening rates among Latinas (8-10). In addition, low mammography rates have been associated with younger age, low education, low income and lack of insurance coverage (10-18), and having a usual source of health care appears to be one of the strongest predictor of having a recent mammogram (13-16, 19, 20).

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The Chicago Breast Health Project (CBHP) was designed to provide access to a state-of-the-art mammography screening center, and to collect information on sociodemographic, breast cancer risk factors, cultural factors as well as the frequency of breast cancer screening in a sample of Latina women living in Chicago. Using this information, we examined the associations of sociodemographic factors, level of acculturation, place of birth and length of residency in the US with having ever had a mammogram and having had a mammogram in the past 1-2 years. Because a family history of breast cancer and use of hormone replacement therapy (HRT) are also two established breast cancer risk factors, and each of these two factors are indicators of enhanced medical screening, we also considered whether these factors were associated with mammography screening. The results of this study may be useful for identifying those Latina women who are not being screened, or not being screened at the recommended frequency in this community.

MATERIALS AND METHODS

The Chicago Breast Health Project Study Design and Sample.

Details regarding the CBHP study design have been published elsewhere (21). In summary, health care providers from three community health clinics that serve Latina communities in Chicago referred eligible women to the project for a screening mammogram. Eligibility criteria included age 40 years or older, no personal history of breast cancer, not pregnant at the time of the study, no suspicious lumps, and no screening mammogram within the last 12 months. Project coordinators contacted the women to confirm eligibility and willingness to participate, and scheduled a mammogram appointment. On the day of the appointment, women provided written informed consent. The research protocol met ethical approval by the Institutional Review Board of Northwestern University.

Between November 2000 and June 2002, a total of 504 women were referred to the project, and 325 women participated. There were no differences in the mean age of participants and non-participants (53 and 52 years, respectively, $p=0.25$), and there was a slightly higher proportion of women whose primary language was Spanish among participants than non-participants (90% and 85%, respectively), however this difference was only marginally significant ($p=0.08$). Among the 325 participants, we excluded

22 women who were not Latina resulting in a final sample size of 303 Latina women for this analysis.

Data collection

Bi-lingual and bi-cultural research assistants collected all data (Spanish/English). Translations of all the questionnaires were done using a back translation approach with decentering. The back translation method (forward/backward/forward) employs two independent translators in sequence, from English to Spanish and then Spanish to English. Comparisons are then made of the two versions in the original (English) language to identify inconsistencies, and loss of information or change of meaning. A questionnaire was interviewer administered in-person, and included information on age, race/ethnicity, highest level of education attained, reproductive history, exogenous hormone use (current and past), family history of breast cancer, place of birth, and years living in the US. Level of acculturation was assessed using the method of Marin and Marin (22), which includes questions related to language preferences for reading, speaking and thinking. The scores range from one to five, in which five indicates the highest degree of acculturation. The questionnaire also queried women on their breast cancer screening practices. Specifically, women were asked if they ever had a mammogram, and how long ago they had their last mammogram.

Statistical Methods

For all analyses, age was categorized into 10-year intervals and education was categorized into less than high school and high school or more education. HRT use was categorized as never, past or current users, however due to the small percentage of past (11%) and current hormone users (19%), these categories were grouped together (ever use) for the univariate and multivariate analyses. Family history of breast cancer was defined as any first or second degree female blood relative with breast cancer, because there were too few women with only a first degree relative ($n=15$). Because years of living in the US and acculturation score were not normally distributed, the cut-point for years of living in the US was based on the median (i.e., 17 years), and the cut-point for acculturation score was 1 versus >1 due to the large amount of subjects with acculturation scores of 1 (70%).

We defined two dichotomous dependent variables.

The first variable was ever had a mammogram versus never had a mammogram. To assess the factors associated with having a mammogram at the recommended frequency, a second variable was defined as had a mammogram in the past 1-2 years versus all other women. Univariate associations of sociodemographic and cultural factors with the dependent variables of mammography screening were assessed using the chi-square test, and multivariable logistic regression was used to assess the independent associations. Because of the strong relationship between years of living in the US and acculturation score, we fit three separate models for each outcome. Model A included age, education, HRT, family history of breast cancer, and place of birth. In addition to the variables included in Model A, Model B included years of living in the U.S, whereas Model C included acculturation score. It is important to note that inclusion of years of living in the US and acculturation score did not confound the associations of the other independent variables, thus the results from Model A are shown for these variables.

Results

Table 1 shows the distributions of selected sociodemographic, health and cultural characteristics among the 303 Latina participants. Approximately 23% of the women were at least 60 years of age or older, and most women had less than a high school education, never used HRT and did not have a family history of breast cancer.

TABLE 1: Distribution of selected sociodemographic, and cultural factors Latina women in the Chicago Breast Health Project.

Characteristic	n	%
Age group (yrs)		
40-49	123	-40.6
50-59	110	-36.3
≥ 60	70	-23.1
Education		
< High school	198	-65.4
≥ High school	105	-34.6
Hormone replacement therapy		
Never	214	-70.6
Past	32	-10.6
Current	57	-18.8
Family history of breast cancer		
No/don't know	265	-87.5
Yes	38	-12.5
Place of birth		
Mexico	194	-64
Puerto Rico	44	-14.5
Guatemala	21	-6.9
Other	44	-14.5
Years in the US ^a		
< 17 years	149	-49.8
≥ 17 years	150	-50.2
Acculturation score		
<1	213	-70.3
> 1	90	-29.7

a Data missing for 4 women

In addition, most women were born in Mexico, and most had a very low level of acculturation (score = 1).

As shown in Table 2, nearly three-fourths of the participants ever had a mammogram. However, among all women only 54.1% had a mammogram within the past 1-2 years.

TABLE 2: Distribution of reported frequency of mammography screening among Latina women in the Chicago Breast Health Project.

Characteristic	n=303	(%)
Ever had a mammogram		
no	84	-27.7
yes	219	-72.3
Time since last mammogram		
never	84	-27.7
>4 years	21	-6.9
3-4 years	34	-11.2
1-2 years	164	-54.1

In univariate analyses (Table 3), ever had a mammogram was significantly positively associated with age ($p<0.0001$), ever use of HRT ($p<0.0001$), family history of breast cancer ($p=0.01$), living in the US for 17 years or more ($p<0.0001$), and acculturation score ($p=0.005$). However, women born in Mexico were less likely than women born in Puerto Rico, Guatemala or elsewhere to have ever had a mammogram ($p=0.0004$). Education was not associated with ever had a mammogram. Having had a mammogram in the past 1-2 years was positively associated with older age ($p<0.0001$), ever use of HRT ($p<0.0001$) and living in the US for 17 years or more ($p=0.001$). In addition, Mexicans were less likely than Puerto Ricans, Guatemalans, and women from other Latin countries to have had a mammogram in the past 1-2 years ($p=0.002$). There were no associations of education, family history of breast cancer or acculturation score with having had a mammogram in the past 1-2 years.

In the multivariable analyses (Table 4), women aged 50-59 years were 4.1 times more likely and women aged 60 years and over were 3.5 times more likely to report that they ever had a mammogram compared to women in the youngest age group. Similarly, there appeared to be a positive relationship between age and having had a mammogram in the past 1-2 years; women aged 50-59 years were 3.1 times as likely and women aged 60 years and older were 3.5 times as likely to have had a mammogram in the past 1-2 year compared to women aged 40-49 years. There was no association of education with screening mammography in this study. Use

of HRT was significantly and positively associated with both ever had a mammogram and with had a mammogram in the past 1-2 years. Although not statistically significant, the OR associated with ever had a mammogram was 2.0 (95% CI, 0.62-6.53) for a positive family history of breast cancer.

but only 54% of women had a mammogram within the past 1-2 years. The results of the CBHP show that the factors most strongly associated with ever having had a screening mammogram were older age, HRT use (i.e. current and past), having lived in the US for more than 17 years and

TABLE 3: Associations of sociodemographic and cultural factors with mammographic frequency in Latina women in the Chicago Breast Health Project.

Characteristic	Ever had a mammogram (n=303)			Had a mammogram in the past 1-2 years (n=303)		
	Yes (%)	No (%)	p-value	Yes (%)	No (%)	p-value
Age group (yrs)						
40-49	54.5	45.5		34.2	65.8	
50-59	85.4	14.6		67.3	32.7	
≥ 60	82.9	17.1	<0.0001	68.6	31.4	<0.0001
Education						
< High school	69.7	30.3		53.5	46.5	
≥ High school	77.1	22.9	0.17	55.2	44.8	0.78
Hormone replacement therapy						
Never	65.4	34.6		45.8	54.2	
Ever	88.8	11.2	<0.0001	74.2	25.8	<0.0001
Family history of breast cancer						
No/don't know	69.8	30.2		53.2	46.8	
Yes	89.5	10.5	0.01	60.5	39.5	0.4
Place of birth						
Mexico	65	35		46.9	53.1	
Puerto Rico	93.2	6.8		65.9	34.1	
Guatemala	90.5	9.5		85.7	14.3	
Other	75	25	0.0004	59.1	40.9	0.002
Years in the US ^a						
< 17 years	56.4	43.6		45	55	
≥ 17 years	88	12	<0.0001	63.3	36.7	0.001
Acculturation score						
<1	67.6	32.4		53.5	46.5	
>1	83.3	16.7	0.005			

^aData missing for 4 women.

Compared to women born in Mexico, women born in Puerto Rico were 4.8 times and women born in Guatemala were 3.4 time more likely to have ever had a mammogram. Additionally, women born in Guatemala were 5.9 times more likely to ever have a mammogram in the past 1-2 years compared to Mexican women. Having lived in the US for 17 or more years (OR=5.00) and women with acculturation levels higher than one (OR=2.19) were positively and independently associated with ever had a mammogram. Acculturation score was not associated with having had a mammogram in the past 1-2 years, although having lived in the US for 17 or more years was significantly and positively related.

Discussion

As mentioned previously, one of the goals of Healthy People 2010 is to increase the proportion of women aged 40 years and older who had a screening mammogram within the preceding two years to 70% (7). In the CBHP, approximately 72% of women reported having ever had a mammogram,

an acculturation score greater than one. There was a nonsignificant positive association with a family history of breast cancer. In addition, older age, HRT use, and having lived in the US for 17 or more years were associated with having a mammogram at the recommended frequency (i.e., within the past 1-2 years). Women born in Mexico were least likely to have ever had a mammogram or to have had a mammogram in the past 1-2 years compared to women born in Puerto Rico and Guatemala. Education was not associated with mammography screening in this study. The results of the CBHP are consistent with those of other studies, which also showed that women aged 50 years and older were more likely to report a previous mammogram than women aged 40-49 years (18, 19). Because of the controversial effectiveness of mammography for women in this age group (1), it is possible that some physicians may be less likely to recommend routine screening mammography for women who are 40-49 years old.

In addition to age, other factors such as greater amount of time spent in the US, ethnicity and acculturation score, which are interrelated, have

also been associated with frequency of mammography screening in other studies. For example, research has shown that Latina women who have lived in the US for a longer time, who immigrated at age 16 years or younger or who were born in the US are more likely to obtain clinical breast care (8, 9).

particularly important for developing culturally competent interventions aimed at increasing screening. Indeed, a failure to recognize cultural heterogeneity among Latina groups is referred to as "ethnic glossing," and can impact the efficacy of an intervention (24). Our findings of differences in screening practices between

TABLE 4. Multivariable associations of sociodemographic and cultural factors with mammographic frequency in Latina women in the Chicago Breast Health Project.

	Ever had a mammogram (n=303)		Had a mammogram in the past 1-2 years (n=303)	
	Odds ratio	(95% CI)	Odds ratio	(95% CI)
Model A				
Age group (yrs)				
40-49	1.00		1.00	
50-59	4.07	(2.03-8.14)	3.09	(1.72-5.57)
≥ 60	3.50	(1.60-7.62)	3.49	(1.79-6.82)
Education				
< High school	1.00		1.00	
≥ High school	1.61	(0.84-3.08)	1.07	(0.61-1.88)
Hormone replacement therapy				
Never	1.00		1.00	
Ever	2.55	(1.18-5.54)	2.37	(1.30-4.33)
Family history of breast cancer				
No/don't know	1.00		1.00	
Yes	2.00	(0.62-6.53)	0.81	(0.36-1.80)
Place of birth				
Mexico	1.00		1.00	
Puerto Rico	4.75	(1.32-17.09)	1.86	(0.85-4.04)
Guatemala	3.43	(0.72-16.40)	5.93	(1.58-22.29)
Other	1.22	(0.54-2.74)	1.43	(0.69-2.95)
Model B^a				
Years in the US ^b				
<17 years	1.00		1.00	
= 17 years	5.00	(2.58-9.67)	1.92	(1.12-3.31)
Model C^c				
Acculturation score				
>1	1.00		1.00	
>1	2.19	(1.06-4.54)	0.96	(0.52-1.76)

^a Model B comprises all variables included in Model A & years in the US.

^b Data missing for 4 women.

^c Model C comprises all variables included in Model A & acculturation score.

In addition, a higher level of acculturation was associated with higher mammogram screening rates (9, 10, 23). We and others found that Mexican ethnicity is an important determinant of mammography screening among all Latina women (7-9). In our univariate results, we show that only 47% of Mexican but nearly 66% of Puerto Rican women and 86% of Guatemalan reported having a mammogram in the past 1-2 years. Identification of differences in the reported frequency of mammography screening among Latina groups is

women born in Mexico and those born in Puerto Rico also are supported by research showing that Latinas, and in particular Mexicans, often have less access to health care. For example, Latinas who have resided in the US for 15 years or more, and even those Latinas born in the US, are significantly less likely to be insured than non-Latina whites (25). Data from the 1996 Medical Expenditure Panel Survey, showed that Mexicans (male and female adults) are less likely to have public health insurance than Puerto Ricans in the

US (26). This is probably due to the fact that Puerto Ricans are American citizens, and thus have greater access to public health services (26). Most studies found that having insurance coverage is associated with having a screening mammogram (9-15). Reasons for higher screening among Guatemalan women compared to Mexican women are unclear and further research is needed to corroborate this finding.

To our knowledge, this is the first study to show a positive association of HRT use with mammography screening among Latina women. Our results are similar to that of another study which showed that women who attend a mammography clinic are more likely than non-attendees to have a prescription for HRT (27). It is likely that women who use HRT are closely followed by their health care provider (i.e., having a usual source of health care) and undergo routine screening mammography because of the known link between HRT and breast cancer risk (28).

Though not statistically significant, we also found that women with a family history of breast cancer were more likely to report having ever had a mammogram than women without a family history. The lack of statistical significance may be due to the small number of women who reported a positive family history. Regardless, several studies have shown that educational interventions aimed at developing personalized risk information showed that women with a family history of breast cancer were more likely to participate in mammography screening than women without a family history (29).

A primary strength of the CBHP was the collection of data on sociodemographic and cultural factors from a large number of Latina women, which allowed for a detailed analysis of the predictors of mammography screening. Another advantage of this project is the relatively high participation rate and an apparent comparability of the participants to the non-participants, which enhances our ability to generalize our results to the target community. In addition, several barriers of participation to Latinas in research studies, such as structural, cultural, and linguistic factors (30), were taken into consideration in the design of the CBHP. For example, transportation to the screening facility was provided, and, as previously mentioned, the project coordinators were bi-lingual and Latina, and written material was available in Spanish and English.

It is also important to recognize the potential limitations of this study. First, in one study of women enrolled in a managed care health plan, the sensitivity of self-reported screening mammography in Latina and non-Latina women was high, however the specificity was slightly lower in the Latina women (31). Unfortunately, we did not assess the accuracy of self-reported screening data in the CBHP. But it is important to recognize that our results should be interpreted in accordance with "simpatía," which is a Latino cultural value that refers to the need to establish smooth interpersonal relationships. There is a growing body of evidence showing the desire for Latinos to endorse socially acceptable behavior, and thus avoid less desirable behavior, which would be consistent with an over-reporting of screening mammography (32-34). Second, although we asked women whether they had insurance, type of insurance, and family income, approximately 51% of our study population did not provide this information.

Therefore, we were not able to assess the relationships of these measures of socioeconomic status with mammography utilization. Third, the women included in this project were very low acculturated (i.e., over 70% of women had an acculturation score of 1). The limited range on this measure precluded a detailed analysis of the associations of acculturation with the frequency of mammography screening. Finally, as described earlier, having a usual source of health care has been shown to increase the probability of having a mammogram for the first time, or having a follow up mammogram (13-16, 18-20). Unfortunately, we did not assess whether our participants had at least a usual source of health care. However, because our sample was based on a clinic population it is likely that a large proportion of the women had some access to usual care. Regardless, we were unable to assess this variable as a predictor of mammography screening.

In summary, we found that the factors most strongly associated with ever having had a mammogram and having had a mammogram at the recommended frequency to be aged 50 years or older, being born in Puerto Rico or Guatemala, and a greater number of years living in the US. Other factors associated with mammography screening were HRT use, a higher acculturation score and perhaps a family

history of breast cancer. These data indicate that customized health intervention programs are needed targeting women who are younger, Mexican, and/or have lived in the US for shorter amount of time, and perhaps who are low acculturated. Such programs could be useful for achieving the Healthy People 2010 goal of screening at least 70% of all women with mammography at the recommended intervals.

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