Breast and Cervical Cancer Screening: Impact of Health Insurance Status, Ethnicity, and Nativity of Latinas

Michael A. Rodríguez, MD, MPH[1]

Lisa M. Ward, MD, MScPH[2]

Eliseo J. Pérez-Stable, MD[3]

[1]Department of Family Medicine at the David Geffen School of Medicine, University of California, Los Angeles, Los Angeles, Calif

[2]Department of Obstetrics and Gynecology, Center for Women's Health, University of California, Davis, Sacramento, Calif

[3]Division of General Internal Medicine, Department of Medicine, Medical Effectiveness Research Center for Diverse Populations, Center for Aging in Diverse Communities, Comprehensive Cancer Center, University of California, San Francisco, San Francisco, Calif

ABSTRACT

PURPOSE Although rates of cancer screening for Latinas are lower than for non-Latina whites, little is known about how insurance status, ethnicity, and nativity interact to influence these disparities. Using a large statewide database, our study examined the relationship between breast and cervical cancer screening rates and socioeconomic and health insurance status among foreign-born Latinas, US-born Latinas, and non-Latina whites in California.

METHODS Data from the1998 California Women's Health Survey (CWHS) were analyzed (n = 3,340) using multiple logistic regression models. Utilization rates of mammography, clinical breast examinations, and Papanicolaou (Pap) smear screening among foreign-born Latinas, US-born Latinas, and non-Latina whites were the outcome measures.

RESULTS Foreign-born Latinas had the highest rates of never receiving mammography, clinical breast examinations, and Pap smears (21%, 24%, 9%, respectively) compared with US-born Latinas (12%, 11%, 7%, respectively) and non-Latina whites (9%, 5%, 2%, respectively). After controlling for socioeconomic factors, foreign-born Latinas were more likely to report mammography use in the previous 2 years and Pap smear in the previous 3 years than non-Latina whites. Lack of health insurance coverage was the strongest independent predictor of low utilization rates for mammography (odds ratio [OR] = 2.05; 95% confidence interval [CI], 1.53-2.76), clinical breast examinations (OR = 2.29; 95% CI, 1.80-2.90) and Pap smears (OR = 2.89; 95% CI, 2.17-3.85.)

CONCLUSIONS Breast and cervical cancer screening rates vary by ethnicity and nativity, with foreign-born Latinas experiencing the highest rates of never being screened. After accounting for socioeconomic factors, differences by ethnicity and nativity are reversed or eliminated. Lack of health insurance coverage remains the strongest predictor of cancer screening underutilization.

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CORRESPONDING AUTHOR

Michael A. Rodríguez, MD
David Geffen School of Medicine at UCLA
Oppenheimer Tower, Suite 1800
10880 Wilshire Blvd
Los Angeles, CA 90024
mrodriguez@mednet.ucla.edu

INTRODUCTION

Cancer is the second leading cause of death in the United States.[1] Tragically, Latinas in the United States have greater proportions of later stage breast cancer diagnoses,[2-3] later initiation of treatment, and worse breast cancer survival outcomes.[4,5] Latinas also experience twice the incidence of cervical cancer compared with non-Latina whites.[6] These disparities stem in part from infrequent screening practices for these cancers. Previous studies suggest that Latinas face added challenges in gaining access to needed preventive health services compared with non-Latina whites because they are less educated,[7-9] have lower incomes,[7-9] have lower rates of health insurance coverage,[9-14] and have limited English proficiency.[15] Studies that examined utilization of cancer screening services by nativity suggest that immigrants are less likely to receive a Papanicolaou

(Pap) smear.[16,17] Other studies, however, either suggest that birthplace is not a significant predictor of cancer screening utilization[18-20] or that foreign-born status increases the chances of cancer screening utilization.[21] The conflicting conclusions among these studies may be accounted for by differences in definitions of screening, lack of adjustments for predictive variables, and inclusion of heterogeneous Latina groups.

In addition, ethnicity, nativity, and health insurance status may interact in complex ways to influence access to appropriate preventive services. Understanding the mechanisms of these interactions will help inform interventions to reduce disparities in health care by increasing screening rates for breast and cervical cancer among Latinas. The Institute of Medicine has also recommended that data collection include subpopulations within ethnic populations, because these data will provide a better understanding on variations in care based on race and ethnicity.[22] Latinas are one of the largest and fastest growing populations in the United States; efforts to reduce disparities in screening rates for cancer among Latinas may be more effective if we more fully understand how overlapping characteristics may contribute to subgroups that are less likely to be screened. We conducted this study to help fill our knowledge gap about subpopulations of Latinas, those born in and outside the United States, by examining the relationship between rates of cancer screening utilization and health insurance coverage among foreign- and US-born Latinas compared with non-Latina whites using a statewide population-based California database.

METHODS

Data Source

This study used data from the 1998 California Women's Health Survey (CWHS), a cross-sectional household telephone survey in which Californian women aged 18 years and older were asked about their health-related behaviors and attitudes. The survey instrument included questions from previously conducted national or statewide surveys when ever possible.

A random digit dialing process selected telephone numbers. All women who were 18 years and older within a household were considered eligible to participate in the survey. Eligible household participants were contacted or systematically called again when there was no answer or a busy signal. The survey instrument was validated for use among Spanish-speakers, and interviewers were trained to administer the survey in multiple languages. Forty percent of the interviewing staff was fluent in Spanish so that interviews could be conducted in Spanish, as needed; more than 75% of foreign-born Latinas completed the survey in Spanish.

Data from the CWHS were weighted to make respondents statistically representative of all women in California according to age and race in accordance with the 1990 California population.

Questionnaire Items

Ethnicity was determined by the respondent's reply to whether she was of Hispanic origin. Nativity status was established by asking about country of birth. The degree of poverty was categorized as an income of 100% or less, between 101% and 200%, and greater than 200% of poverty-level income. Poverty was defined as an annual income of less than 200% of the federal poverty-level according to the number of family members and the total household income. The highest grade of school completed (less than a high school education, completion of high school, or education beyond high school) determined education level. Employment status was ascertained by asking whether the respondent was currently employed full-time, employed part-time, self-employed, out of work, a homemaker, a student, retired, or unable to work. Employment status was then dichotomized into full-time employment vs not full-time employment. Women were classified as uninsured if they lacked any source of health insurance at the time of the survey. Marital status was categorized into married and not married. Childbirth in the previous 3 years was determined by asking women whether they had children and the dates of their children's birth.

For breast cancer screening, all respondents aged 40 years and older were asked whether they ever had a mammogram and clinical breast examination, and the length of time since their last examination. Recent breast cancer screening was defined as receiving a mammogram and clinical breast examination in the previous 2 years.

For cervical cancer screening, all respondents were asked whether they ever had a Pap smear and how long it had been since their last examination. Recent cervical cancer screening was defined as having a Pap smear in the previous 3 years.

Statistical Analysis

We used χ^2 tests to determine the relationship between explanatory variables and outcomes of interest. Differences in cancer screening utilization between ethnic and nativity groups were determined after controlling for health insurance status.

We used multiple logistic regression models to examine the relationship between all explanatory variables and outcomes of interest. Three models were evaluated for differences in screening rates: mammography examinations in the preceding 2 years, clinical

breast examinations in the preceding 2 years, and Pap tests in the preceding 3 years. Spanish language was eliminated from each model because of the strong colinearity with nativity. Logistic regression was used to investigate interaction effects between nativity, income, education, and employment with childbirth, ethnicity, and outcomes of interest. The overall model fit was tested using the Wald statistic. Data were analyzed using SAS for Windows, version 8.2 (2003).

RESULTS

Descriptive Findings

The overall survey response rate was 70%, which reflects the proportion of contacted eligible households that resulted in a completed interview. Table 1 displays demographic and socioeconomic characteristics for foreign-born Latinas, US-born Latinas, and non-Latina whites (n = 3,340). Of the women surveyed, 510 (15%) were foreign-born Latinas, 341 (10%) were US-born Latinas, and 2,489 (75%) were non-Latina whites.

Foreign-born (mean age 38 years, standard deviation (SD) 12 years) and US-born Latinas (mean age 37 years, SD 15 years) were younger than non-Latina whites (mean age of 46 years, SD 19 years). Foreign-

born Latinas were more likely to be poor, have fewer years of education, be uninsured, be married, and have experienced childbirth within the previous 3 years compared with non-Latina white women.

The proportions of women receiving mammography, clinical breast examination, and Pap smear by ethnicity are featured in Table 2. Foreign-born Latinas had significantly lower rates of recent mammography compared with non-Latina whites. Foreign-born Latinas also had the highest rates of never having had a mammogram compared with both US-born and non-Latina whites. Regarding clinical breast examination, foreign-born and US-born Latinas had significantly lower rates of recent screening as well as higher rates of never having had a clinical breast examination than non-Latina whites. As for Pap smears, foreign-born Latinas and US-born Latinas were also more likely to have never had a Pap smear compared with non-Latina whites.

Cancer screening utilization rates among ethnic groups were assessed while stratifying by insurance status. No statistically significant differences were found in mammography utilization rates when controlling for health insurance status among women of different ethnicity or nativity groups. Differences in clinical breast examination utilization, however, were noted.

Among insured women, foreign-born Latinas and US-born Latinas more frequently lacked screening compared with non-Latina whites (26%, 29%, and 17%, respectively) ($P \leq .01$). Among uninsured women, 53% of foreign-born Latinas, 67% of US-born Latinas, and 50% of non-Latina white women had not received a clinical breast examination in the last 2 years ($P \leq .01$). Significant differences in Pap smear utilization rates by ethnicity and nativity persisted when stratifying by insurance data. Among women with health insurance coverage, 13% of foreign-born Latinas, 16% of US-born Latinas, and 15% of non-Latina white women reported that they had not had a screening in the previous 3 years ($P \leq .01$). Among uninsured women, a lack of screening was evident; 24% of foreign-born and 36% of US-born Latinas, as well as ??% of non-Latina white women, had not received this examination in the previous 3 years ($P \leq .01$).

Table 1. Sociodemographic Characteristics of Women, Aged 18 Years and Older, by Ethnicity and Nativity Status, 1998 (N = 3,340)

Characteristics	Foreign-Born Latinas % (n)	US-Born Latinas % (n)	Non-Latina Whites % (n)
Age, y			
18-39	64 (328)	65 (223)†	44 (1,105)
40-59	26 (131)	20 (70)	30 (736)
≥60	10 (51)	14 (49)	26 (648)
Income level*			
≤100% poverty	56 (250)	29 (93)	10 (223)
101%-200% poverty	29 (129)	21 (66)	19 (432)
>200% poverty	15 (66)	50 (159)	71 (1,620)
Educational level*			
<High school	62 (317)	21 (71)	8 (193)
Completed high school	18 (92)	31 (106)	26 (645)
>High school	20 (100)	48 (164)	66 (1,651)
Employment, full-time	32 (163)	38 (130)	35 (883)
Insurance status,* uninsured	44 (213)	19 (57)	10 (198)
Current marital status, married	56 (286)	45 (154)	53 (1,325)
Birth in the last 3 years*	30 (120)	29 (72)	20 (274)
Spanish language interview*	76 (386)	5 (16)	N/A
Total, n	510	341	2,489

Note: Data derived from the 1998 California Women's Health Survey, weighted to make respondents statistically representative of all women in California according to age and race in accordance with the 1990 California population.

NA = not applicable.

* χ2 tests determined differences were significant, $P \leq .01$ for each characteristic.
† Proportions in each age group do not equal 100% due to rounding.

Table 2. Proportion of Women Receiving Papanicolaou Test, Mammography, and Clinical Breast Examination, by Ethnicity, 1998 (N = 3,340)

Cancer Screening Examination	Foreign-Born Latina % (n)	US-Born Latina % (n)	Non-Latina Whites % (n)
Mammography			
Recently screened (within 2 y)[1]	66 (147)[†]	75 (119)	78 (1168)
Never screened[1]	21 (48)[†‡]	12 (20)	9 (132)
Clinical breast examination			
Recently screened (within 2 y)[1]	66 (148)[†]	73 (117)[§]	82 (1235)
Never screened[1]	24 (53)[†‖]	11 (18)[§]	5 (69)
Papanicolaou smear			
Recently screened (within 3 y)	85 (559)	85 (378)	85 (2021)
Never screened[1]	9 (59)[†]	7 (29)[§]	2 (63)

Note: Data derived from the 1998 California Women's Health Survey weighted to make respondents statistically representative of all women in California according to age and race in accordance with the 1990 California population. Percentages may not total 100% due to missing responses.

* P values for utilization rates between ethnic and nativity groups are significant, P <.01.

† Foreign born Latina vs non-Latina White.

‡ Foreign born Latina vs US-born Latina, P <0.05.

§ US-born vs non-Latina White

‖ Foreign-born Latina vs US-born Latina.

Multivariate Analysis

After using logistic regression (Table 3), 6 variables remained significantly associated with no recent mammogram. Lack of health insurance strongly predicted no recent mammogram (odds ratio [OR] = 2.05; 95% confidence interval [CI] 1.53-2.76). Poverty (OR = 1.69, 95% CI, 1.33-2.14) and being unmarried (OR = 1.35; 95% CI, 1.11-1.63) also predicted lack of recent mammogram. Foreign-born Latina status was protective for recent mammography utilization (OR = 0.60; 95% CI, 0.45-0.81), as was full-time employment (OR = 0.79; 95% CI, 0.65-0.95). Age was weakly protective for mammography utilization (OR = 0.90; 95% CI 0.89-0.91).

After adjusting for factors associated with recent clinical breast examination, 6 variables remained predictive of no recent clinical breast examination. Lack of health insurance coverage was the strongest predictor of no recent clinical breast examination (OR = 2.29; 95% CI, 1.80-2.90). Likewise, poverty independently predicted lack of recent screening (OR = 2.12; 95% CI, 1.71-2.64). Low educational attainment (less than high school education) was predictive of no recent clinical breast examination as well (OR = 1.49; 95% CI, 1.16-1.92). US-born Latinas and unmarried women had similar likelihoods of no recent clinical breast examination (OR = 1.38, 95% CI 1.06-1.81; and OR = 1.39; 95% CI 1.16-1.68, respectively). In contrast, full-time employment predicted an increased likelihood of receiving clinical breast examination in the last 2 years (OR = 0.66, 95% CI 0.54-0.81).

Six variables were significant in a model of no recent Pap smear utilization after adjusting for other predictor variables. Lack of health insurance coverage was the strongest predictor of no recent Pap smear (OR = 2.89; 95% CI, 2.17-3.85). Poverty predicted lack of Pap smear in the previous 3 years (OR = 1.58, 95% CI, 1.23-2.03) as did being unmarried (OR = 1.39, 95% CI, 1.12-1.72). In contrast, Foreign-born Latina status (OR = 0.59, 95% CI 0.41-0.84), full-time employment (OR = 0.66; 95% CI, o.52-0.84), and recent childbirth (OR = 0.30, 95% CI, 0.20-0.45) predicted an increase in recent Pap smear utilization, as did childbirth in the previous 3 years (OR = 0.30, 95% CI 0.20-0.45).

DISCUSSION

Closing the gap in ethnic disparities for access and health outcomes is a top priority for this nation. This study found significant disparities in unadjusted rates of breast and cervical cancer screening across ethnicity and nativity. Foreign-born Latinas had the highest rates of never being screened with mammography, clinical breast examinations, and Pap smears when compared with US-born Latinas and non-Latina whites. Additionally, foreign-born Latinas had the lowest rates of recent breast cancer screening among all 3 groups. This underscores the importance of examining Latino subgroups to better understand the role of ethnicity in preventive health services utilization.[22] Furthermore, it shows that foreign-born Latinas are a group that may benefit from public health efforts tailored to improve utilization of cancer screening services.

As expected, our results also showed the vital roles that health insurance and socioeconomic status play in cancer screening for breast and cervical cancer. When stratifying by insurance status, all ethnic and native groups showed an 11% to 48% decrease in the percentage of uninsured women receiving timely screenings. Because a greater proportion of foreign-born Latinas are uninsured compared with the other subgroups, they are at greater risk of lacking timely cancer screening. This study mirrors national surveys suggesting that those who are poor,[7,8] less educated,[8,23] and uninsured[7,24] are at a greater risk for underutilization of services that screen for breast and cervical cancer. Although increased

Table 3. Adjusted Odds Ratios of the Association Between Explanatory Variables and Lack of Recent Papanicolaou Smear, Mammography, and Clinical Breast Examination (N = 3,340)

Variable	Mammography Examination in Previous 2 Years		Clinical Breast Examination in Previous 2 Years		Papanicolaou Smear in Previous 3 Years	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Foreign-born Latina[2]	0.60	0.45-0.81	1.19	0.90-1.56	0.59	0.41-0.84
US-born Latina	0.91	0.69-1.20	1.38	1.06-1.81	1.11	0.80-1.54
Uninsured*	2.05	1.53-2.76	2.29	1.80-2.90	2.89	2.17-3.85
Less than high school education	1.20	0.89-1.61	1.49	1.16-1.92	1.37	1.01-1.86
≤200% poverty*	1.69	1.33-2.14	2.12	1.71-2.64	1.58	1.23-2.03
Employment full-time	0.79	0.65-0.95	0.66	0.54-0.81	0.66	0.52-0.84
Age 5 y*	0.90	0.89-0.91	1.00	0.99-1.01	1.02	1.02-1.03
Unmarried*	1.35	1.11-1.63	1.39	1.16-1.68	1.39	1.12-1.72
Childbirth in last 3 y*	–	–	–	–	0.30	0.20-0.45

Note: Data derived from the 1998 California Women's Health Survey weighted to make respondents statistically representative of all women in California according to age and race in accordance with the 1990 California population. Papanicolaou data include all women, whereas mammography and clinical breast examination data include women ≥40 years of age.

OR = odds ratio; CI = confidence interval.

* Models are adjusted for age in 5-year intervals, birthplace/ethnicity (US white as referent vs Latina-foreign and Latina US), poverty level (≤200% vs >200%), education (more vs less than high school graduate), employment (not full-time vs full-time), insurance (any insurance vs none), marital status (married vs not married), and giving birth (in the last 3 years vs not).

Latina cancer screening rates have been reported in the past decade,[25] this study shows that Latinas still remain at risk of underutilizing preventive screening services, and foreign-born Latinas are at an even greater risk for substandard utilization of breast and cervical cancer screening services. Lack of health insurance remains a serious obstacle that needs to be addressed to improve utilization of cancer screening services for all uninsured women. Given the disproportionate rates of uninsurance, low income, and low educational attainment among foreign-born Latinas, culturally and linguistically appropriate screening interventions for this population may help reduce ethnic health disparities as well.

This study contributes new knowledge on the impact of ethnicity and nativity as a predictor of cancer screening utilization. Among Latinos in Texas and California, higher levels of acculturation were associated with more timely utilization of cervical and breast cancer screening.[16,26,27] Studies that included both socioeconomic factors and ethnicity as explanatory variables reported that socioeconomic factors, such as poverty, educational attainment, and health insurance status, predicted utilization rates to a much greater extent than ethnicity.[9,17,23,26] Nevertheless, in one study foreign-born status was still predictive of underutilization for cancer screening.[19] While our study confirms the association between socioeconomic status and utilization rates, a surprising finding was that foreign-born status was positively associated with screening in the model of Pap smear and mammography utilization after adjusting for confounding variables. The difference in results between our study and previous studies may

be attributed to our focus on the Latinas in California, which decreased the heterogeneity and increased the likelihood of finding differences.

The findings in this study are also consistent with literature showing that foreign-born women have better than expected outcomes in a variety of areas when compared with non-Latina whites after adjusting for socioeconomic status. Despite limitations in accessing health care, immigrants to the United States have lower all-cause and cause-specific mortality rates.[28] In the year 2000, California foreign-born Latinas had a life expectancy of 84.3 years, whereas US-born Latinas had a life expectancy of 82.6 years, and overall female life expectancy for non-Latina whites was 80.1 years.[29] Similarly, Latinas give birth to relatively fewer low–birth-weight babies compared with white non-Latinas despite socioeconomic disadvantages and lower rates of prenatal care.[30-31] It has been suggested that minority women may experience increased access to screening services through programs linked to income and a lack of health insurance coverage.[7] In a previous study conducted by Pérez-Stable et al, birthplace was not a significant predictor of obtaining cancer screening tests. This finding suggests that being involved in a health care plan may diminish differences in preventive services utilization for foreign-born Latinas.[18] This study is consistent with our findings that show, when adjusted for insurance status and other variables, foreign-born Latinas were actually more likely to report cancer screening utilization. Nevertheless, delays in breast cancer diagnosis among Latinas[2] and higher rates of cervical cancer[6] suggest that screening levels remain

inadequate. These data provide support for additional research on Latino subpopulations to identify resiliency factors that may benefit other groups, as well as provide support for policy efforts to cover all US residents with health insurance, regardless of legal status.

Although foreign-born Latinas were more likely to receive mammography and Pap smear screenings after adjusting for insurance status and other socioeconomic factors, US-born Latinas were not. Some literature suggests that having strong traditional ethnic belief systems may explain the differences observed between nativity groups. For example, Mexican-American women who held strong traditional Mexican family values were more likely to receive mammograms.[27] Foreign-born Latinas may hold stronger beliefs in their susceptibility to and in the seriousness of breast cancer[31] and thus may be more motivated to receive breast cancer screenings. In contrast, foreign-born women may also have more fatalistic views toward health, which could discourage them from seeking preventive services.[16,32] To prevent misconceptions stemming from identification of Latinos as a homogeneous group regarding preventive health care behavior,[33] more work is needed to investigate the factors motivating foreign-born Latinas to obtain screenings. Diverse public health strategies will likely be needed to improve utilization rates for screening services among Latinas.

This study has several limitations. Telephone surveys exclude households that lack telephone service; therefore, this limitation may have disproportionately affected those foreign-born Latinas, functionally impaired persons, and residents of rural areas who are more likely to lack a telephone.[21] Telephone surveying may also overrepresent women living in large households. This characteristic may be associated with ethnicity, nativity, and socioeconomic status factors found to be significant in this study. In addition, self-reported answers are subject to recall and social-desirability bias, which may lead to higher estimates of screening; however, overestimates in self-reported screening rates do not appear to differ much by Latino ethnicity.[34,35] Also, the sensitive nature of nativity may exacerbate misclassification bias and reduce completion and response rates. Misclassification of birthplace can bias results to the null, resulting in underestimation of the actual differences found in the study.

The unequal burden of breast and cervical cancer among Latinas is an important dilemma and challenge for our nation. The high uninsurance rates among foreign-born Latinas may explain some of the disparity. The results of this study suggest that if we improve access to care for foreign-born Latinas, they will use cancer screening services appropriately. The outcomes also illustrate the heterogeneity of Latinas and the importance of including nativity when conducting analysis of immigrant groups, because these women have an unequal burden of factors to be addressed before utilization of cancer screening services can improve. Specific programs that may help include culturally and linguistically appropriate delivery of care, as well as public health messages to increase awareness of publicly funded programs to prevent cancer. These findings also provide new insight into the needs of poor, uninsured non-Latina white women. Recent trends in health policy that curtail state and national funding of social services for the medically underserved in an attempt to reduce budget deficits may adversely affect access for all women. It is important to advocate for policies that ensure access to high-quality cancer screening and treatment for all patients.

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