Correlates of Mammography Screening Among Hispanic Women Living in Lower Rio Grande Valley Farmworker Communities

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Factors contributing to the underuse of mammography screening by female Hispanic farmworkers aged 50 years and older in the Lower Rio Grande Valley were determined through home-based, Spanish-language personal interviews ($N = 200$). Questions covered adherence to screening mammography guidelines (mammogram within 2 years), health care access, sociodemographic characteristics, and theoretical constructs related to breast cancer screening in the literature. Multivariate findings indicated that adherent women were 3.6 times more likely to have health insurance. Self-efficacy for obtaining a mammogram and decisional balance were also significantly related to adherence; age, income, and education variables were not associated, perhaps because of restricted variation. Results indicate continuing efforts are needed to ensure that medically underserved migrant farmworker women have access to health care services. In addition, efforts to increase their self-efficacy in obtaining a mammogram and to counter negative attitudes and opinions by stressing the positive prognosis associated with early detection are warranted.

Keywords: *Hispanic; breast cancer; mammography; farmworker; transients and migrants*

Breast cancer remains a major health concern for Hispanic women, despite decreases in the disease incidence during the past decade (American Cancer Society, 2001). Although Hispanic women, overall, have lower breast cancer rates than non-Hispanic Whites, diagnosis is often made later and, subsequently, Hispanic women experience poorer 5-year survival rates (Boyer-Chammard, Taylor, & Anton-Culver, 1999; Chen, Trapido, & Davis, 1994; Richardson et al., 1992; Vernon, Tilley, Neale, & Steinfeldt,

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1985). This mortality difference can be explained, in part, by the underuse of mammography screening.

In this study, we explored the relationship of sociodemographic variables, access-to-health-care variables, and selected constructs with mammography screening in data that were collected as part of the *Cultivando la Salud* (Cultivating Health) program.* Our aim was to investigate the independent effect of self-efficacy, perceived susceptibility, subjective norms, and decisional balance—in explaining mammography screening while controlling for sociodemographic variables and access to health care. Results of cross-sectional studies have shown that the factors most strongly and consistently associated with having a screening mammogram are access-to-health-care variables, particularly health insurance or regular source of health care (Coughlin & Uhler, 2002; Mandelblatt et al., 1999; Zambrana, Breen, Fox, & Gutierrez-Mohamed, 1999).

Age, income, and education also appear to be associated with mammography screening in Hispanic women, although their relationship is not as consistent. Screening is positively associated with younger age (Balcazar, Castro, & Krull, 1995; Calle, Flanders, Thun, & Martin, 1993; Ramirez, Suarez, Laufman, Barroso, & Chalela, 2000; Wu, Black, & Markides, 2001), higher income (Calle et al., 1993; Rakowski, Fulton, & Feldman, 1993; Smith & Haynes, 1992), and more years of education (Ramirez, Talavera, et al., 2000; Tortolero-Luna, Glober, Villarreal, Palos, & Linares, 1995; Zambrana et al., 1999). Women with less knowledge about breast cancer and screening are less likely to have had mammograms, together with those holding such cultural beliefs as fatalism, fear of cancer detection, and embarrassment associated with the procedure (Fernandez, Tortolero-Luna, & Gold, 1998).

THEORETICAL FRAMEWORK

Although constructs from theory are important for explaining mammography screening behavior, only a few studies have reported on theory-based mammography screening for Hispanics (Fulton, Rakowski, & Jones, 1995; Mishra et al., 1998; Richardson et al., 1987; Smiley, McMillan, Johnson, & Ojeda, 2000). In this study, we will investigate the predictive power of selected constructs from various theories and models to explain screening behavior of Hispanic women living in farmworker communities.

Of the studies published using the traditional Health Belief Model (HBM; Rosenstock, 1974), findings suggest that perceived susceptibility had the greatest predictive power, and in several studies, it explained the greatest variance in mammography screening (Aiken, West, Woodward, & Reno, 1994; Allen, Sorensen, Stoddard, Colditz, & Peterson, 1998; Bastani et al., 1994; Burack & Liang, 1987; Champion, 1984; Kurtz, Given, Given, & Kurtz, 1993; Rutledge, Hartmann, Kinman, & Winfield, 1988; Stein, Fox, Murata, & Morisky, 1992). When perceived susceptibility was added to a multivariate model that included measures of objective risk, prediction of mammography adherence was significantly increased (Aiken et al., 1994). Stein and colleagues (1992) assessed the constructs of the HBM on prior mammography use and the intention to obtain a future mammogram. A predictive path model indicated that perceived suscepti-

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bility was the most powerful predictor of future intention to be screened and was significantly related to prior screening.

Self-efficacy—originally conceived within social cognitive theory and added to the HBM (Rosenstock, 1974), theory of planned behavior (Ajzen, 1991), incorporated into the Transtheoretical Model (TTM), and now developed into a theory itself (Bandura, 1977)—has been shown to be important for mammography screening. Previous studies have found that self-efficacy was strongly related to mammography screening (Allen et al., 1998; Kurtz et al., 1993). Kurtz and associates found higher levels of self-efficacy in women who complied with mammography screening guidelines, whereas Allen and colleagues (1998) saw it as the strongest predictor in multivariate logistic regression models assessing mammography intentions of women who had previously underused screening.

Data from cross-sectional and prospective studies also suggest that subjective norms from the theory of reasoned action (Allen et al., 1998; Champion, 1992; Fishbein & Ajzen, 1975; Lechner, de Vries, & Offermans, 1997; Lerman, Rimer, Trock, Balshem, & Engstrom, 1990; Montaño & Taplin, 1991; Montaño, Thompson, Taylor, & Mahloch, 1997; Savage & Clark, 1996) help explain cancer screening behavior, including mammography, in women. Montaño and colleagues (1997) surveyed 584 low-income, inner-city women and found that current subjective norms predicted previous mammography screening behavior and were significantly correlated with future intention. Subjective norms explained 27% of the variance in future intention to undergo mammography.

Decisional balance, a summary index constructed from the pros and cons of the behavior, based on Janis and Mann's (1977) theory of decision making, has also been shown to be important in the decision to participate in mammography screening. Decisional balance captures the complex cognitive factors that go into an individual's decision to undergo mammography screening and has been shown to influence movement across stage of change, the central premise of the TTM (DiClemente & Prochaska, 1982). Research indicates that decisional balance is correlated with the stage of change, therefore helping to increase the belief that mammography is important in promoting movement from one stage of change to the next (Rakowski et al., 1992; Rakowski et al., 1993). Studies that examined decisional balance and mammography screening also found a significant predictive relationship between decisional balance and breast cancer screening (Crane et al., 1998; Schwartz et al., 1999).

METHOD

Study Sample

A convenience sample of 200 Hispanic women living in *colonias* in Cameron and Hidalgo counties, located in the Lower Rio Grande Valley of Texas, were interviewed in August 2000. *Colonias* are rural neighborhoods that are typically located within 150 miles of the border and are characterized by their lack of basic utility services (U.S. Department of Housing and Urban Development, 2000). For the study, *colonias* with a high percentage of farmworker residents were identified by interviewing migrant health clinic staff and community leaders within the counties.

Approximately 220 women were approached at their homes by female Hispanic interviewers and were asked to participate in the survey. The overall participation rate was

91%. Only women 50 years or older were included in the study. Furthermore, the participant or a family member must have been a farmworker for more than 5 years. Women with a previous diagnosis of breast or cervical cancer were not interviewed. All study participants gave written consent before the interview and received a $20 cash incentive upon completion.

Data Collection

Study participants were interviewed in Spanish; each interview lasted approximately 2 hours. All interviewers were female; were bilingual; lived in the Lower Rio Grande Valley; and attended a 2-day interviewer training on recruitment, the informed consent process, and how to conduct the survey.

Survey Instrument

The survey developed for the *Cultivando la Salud* study included 336 items—demographic, general health, knowledge, attitudinal, and cancer screening questions. In addition, scales assessing mammography self-efficacy, decisional balance, perceived susceptibility, and subjective norms were included, based on the breast cancer screening literature and prior focus group research with the target population. The instrument was evaluated by experts for face validity. The instrument was also translated into Spanish and then translated back into English. In addition, the instrument was also pretested with a group of 50 female Hispanic migrant farmworkers to examine response format and question clarity. Based on these findings, the Likert-type scale questions were asked in two stages: first, "agree, undecided, or disagree," and then, how strongly she felt about her agreement or disagreement.

MEASURES

Study Variables

Study variables were based on items from the mammography screening literature or developed by the *Cultivando la Salud* evaluation team. Scales measuring the theoretical constructs of perceived susceptibility, mammography self-efficacy, subjective norms, and decisional balance (pros and cons) were evaluated to examine their internal consistencies using the study sample. They were also subjected to an exploratory factor analysis to examine their performance. For the factor analysis, principal component analysis with a varimax rotation was used. Items were judged to be important if there was a component loading of .40 or greater, with no loading of that degree or more on another component.

Mammography Adherence

Mammography adherence was assessed by asking study participants the specific month and year of their last mammogram. Participants who could not remember the date of their last mammogram were asked to estimate the number of years (< 1, 1, < 2, or > 2 years) since their last screening mammogram. Respondents who had a mammogram screening within 2 years of the interview date were classified as adherent to screening

guidelines. Those whose last mammogram was more than 2 years prior or who had never had a mammogram were classified as nonadherent.

Perceived Susceptibility

To assess perceived susceptibility to breast cancer, a four-item scale was used. Three items were taken from a scale developed by Vernon, Myers, and Tilley (1997) for colorectal cancer, which had an internal consistency of .79. An additional item was from Champion's (1984) study of compliance with mammography screening guidelines. Items used a 5-point Likert-type scale (1 = *strongly agree* and 5 = *strongly disagree*). Items are summed to derive a score. Principal component analysis identified only one component, which accounted for approximately 76% of the variance. Cronbach's alpha for this four-item scale with the current sample was .90.

Self-Efficacy

Self-efficacy for obtaining a mammogram was assessed by using a 12-item scale. These items had previously been developed and used by Rakowski and associates (1997). Items for this scale are scored on a 5-point Likert-type scale (1 = *strongly agree* and 5 = *strongly disagree*). A score is calculated by summing each item score. Principal component analysis of the 12-item scale identified only one component, which accounted for 61% of the total variance. Cronbach's alpha for this scale was .94 with the current sample.

Subjective Norms

A six-item scale measured mammography subjective norms. This scale was adapted from a scale created by Vernon and associates (1997) to measure the role of social influence from friends and family for undergoing colorectal cancer screening. The six items are measured on a Likert-type scale (1 = *strongly agree* and 5 = *strongly disagree*). Items are summed to derive a subjective norms score. Principal component analysis found that all the items in this scale loaded onto one factor, explaining 60% of the variance. Cronbach's alpha for this scale was .87 with the current sample.

Decisional Balance

Scales for the pros and cons that constitute decisional balance (Prochaska, DiClemente, Velicer, Ginpil, & Norcross, 1985; Velicer, DiClemente, Prochaska, & Brandenburg, 1985) were created by combining items developed by Rakowski and associates (1992, 1993) and Stoddard and colleagues (1998), who used them in studies examining intention to obtain mammography screening. Decisional balance was derived by subtracting the cons score from the pros score (Prochaska et al., 1994; Velicer et al., 1985). The survey included 9 pros and 20 cons items. The scales used a 5-point Likert-type scale (1 = *strongly agree* and 5 = *strongly disagree*). When principal component analysis was performed, six components emerged, with only three of them having eigenvalues greater than 1. The first component consisted of all 9 pros items and made up the pros scale. The second and third components consisted of 12 cons items, which were retained for the cons scale. Combined, all three components accounted for 60% of the variance.

Cronbach's alphas for the pros and cons scales were .90 and .87, respectively, based on the current sample.

Sociodemographic Characteristics and Access to Health Care

Sociodemographic variables for the present analysis include age, years of education, marital status, income, place of birth, and number of years lived in the United States. Participants were also asked if they had a regular source of care and health insurance.

Data Analysis

Descriptive statistics were generated to characterize the sociodemographic profile of the study sample. Bivariate analysis examining the relationship of mammography adherence with sociodemographic variables, health care access variables, and theoretical constructs (self-efficacy, perceived susceptibility, mammography subjective norm, and decisional balance) were performed by conducting chi-square tests for categorical variables and t tests for continuous variables. Linearity of independent variables and multicollinearity between them were also assessed. All independent variables were linear, and no correlations between the independent variables exceeded .70. Study participants with missing data were excluded using pairwise deletion for bivariate analysis. For logistic regression, study participants with missing data were excluded from the analysis using listwise deletion ($n = 10$). There were no significant differences between those excluded and the remaining study sample based on sociodemographic characteristics. Age for the logistic regression was recategorized into two age-groups (50-59 years and 60 + years) given the small number of women in the oldest group. Median splits were used to categorize subject norms (median = 24), perceived susceptibility (median = 12), mammography self-efficacy (median = 40), and decisional balance (median = 0) into high and low categories. Multivariate logistic regression was used to estimate the independent effects of predictors of mammography adherence after controlling for other variables in the model. To build the final multivariate model, univariate logistic regression was used to examine potential candidate variables. Variables whose univariate test had $p < .25$ or had previously been found to be important in the literature were retained for the final multivariate model. Results were considered significant when $p < .05$. Data were analyzed using SPSS v. 11.0.

RESULTS

Sample Characteristics

Study participants were between 50 and 89 years old ($M = 60$ years, $SD = 9.71$) (Table 1). Most respondents were between 50 and 59 years old, earned less than $10,000 during the previous year, and were born in Mexico. Just 8% were high school graduates. Almost two thirds of the sample reported not having health insurance, but nearly three quarters of participants reported receiving health care from a regular source. Twenty-two percent of participants were born in the United States, the rest in Mexico. Thirty-eight percent of respondents reported that they were adherent to screening guidelines.

Table 1. Sample Characteristics ($N \sim 200$)

Variable	*N*	%
Sociodemographic variables		
Age		
50-59 years	115	57.5
60-69 years	47	23.5
70-89 years	38	19.0
Income		
< $10,000	147	73.5
≥ $10,000	48	24.5
Marital status		
Married	129	64.5
Not married	71	35.5
Education		
≤ 6 years	161	80.5
≥ 7 years	36	18.0
Place of birth		
United States	44	22.0
Mexico	156	78.0
Length in United States		
< 20 years	52	27.2
≥ 20 years	120	62.8
Entire life	19	9.9
Access-to-health-care variables		
Insurance		
Yes	75	37.5
No	124	62.0
Regular source of care		
Yes	150	75.0
No	49	24.5

Bivariate Analysis

Mammography adherence did not differ significantly across age-groups, income levels, marital status, education, county of birth, or years in the United States (Table 2). Only health insurance and regular source of care were significantly associated with being adherent with screening guidelines. Results of the *t* tests comparing mean scale scores of respondents by adherence show that women who were adherent had higher mean mammography self-efficacy scores (Table 3). Adherent women, on average, who perceived that social influences wanted them to undergo mammography screening, had a higher mean subjective norm value. Similarly, adherent women also scored higher on decisional balance, that is, their pros of having a mammogram outweighed their cons, compared with nonadherent women.

Multivariate Analysis

Women with health insurance were more likely to adhere to screening guidelines (Table 4). Participants who had health insurance were nearly 3.6 times more likely to have

Table 2. Bivariate Associations Between Mammography Adherence, Sociodemographic, and Access-to-Health-Care Variables ($N \sim 200$)

Variable	Yes (n)	%	p Value
Sociodemographic variables			
Age			.282
50-59 years	63	54.8	
60-69 years	21	44.7	
70-89 years	16	42.1	
Income			.645
< $10,000	74	50.3	
≥ $10,000	26	54.2	
Marital status			.460
Married	67	51.9	
Not married	33	46.5	
Education			.482
≤ 6 years	79	49.1	
≥ 7 years	20	55.6	
Place of birth			.306
United States	25	56.8	
Mexico	75	48.1	
Length in United States			.566
< 20 years	45	26.3	
≥ 20 years	108	63.2	
Entire life	18	10.5	
Access-to-health-care variables			
Insurance			.003
Yes	48	64.0	
No	52	41.9	
Regular source of care			< .001
Yes	87	58.0	
No	13	26.5	

Table 3. Mean Scale Scores for Theoretical Constructs by Adherence Status

	Adherent				
	Yes	*SD*	No	*SD*	p Value
Decisional balance	4.97	8.19	−5.15	9.44	< .001
Perceived susceptibility	12.05	3.27	12.36	3.21	.499
Mammography self-efficacy	54.55	7.62	43.92	13.13	< .001
Subjective norms	23.16	3.86	20.52	4.93	< .001

had a mammogram within the preceding 2 years. Only mammography self-efficacy and decisional balance were associated with adherence after controlling for other variables. Those with the highest level of mammography self-efficacy were almost 2.1 times more likely to be adherent to mammography screening when compared with those in the lower

Table 4. Final Multivariate Logistic Model Predicting Mammography Adherence

	β	*SE*	Wald	*p* Value	Odds Ratio	95% CI
Sociodemographic variables						
Age						
50-59 years	.26	.40	0.43	.51	1.30	0.59, 2.84
60-89 years					1.00	
Education						
≤ 6 years	–.23	.47	0.25	.61	0.78	0.31, 2.00
≥ 7 years					1.00	
Income						
< $10,000	–.10	.41	0.06	.81	0.91	0.41, 2.04
≥ $10,000					1.00	
Access-to-health-care variables						
Insurance						
Yes	1.28	.40	10.20	.001	3.58	1.63, 7.83
No					1.00	
Regular source of care						
Yes	.68	.37	3.34	.06	1.98	0.95, 4.13
No					1.00	
Theoretical constructs						
Decisional balance						
High	.92	.37	6.17	.01	2.51	1.26, 5.17
Low					1.00	
Perceived susceptibility						
High	–.29	.36	0.67	.41	0.74	0.37, 1.50
Low					1.00	
Mammography self-efficacy						
High	.73	.37	3.86	.04	2.10	1.10, 4.36
Low					1.00	
Subjective norm						
High	.81	.44	3.38	.06	2.25	0.95, 5.32
Low					1.00	

NOTE: Nagelkerke $R^2 = .38$; CI = confidence interval.

self-efficacy group. Similarly, individuals with higher decisional balance scores were nearly 2.5 times more likely to be adherent to screening compared with individuals who had lower decisional balance scores.

DISCUSSION

In this study, we examined the association of selected factors with mammography adherence in women 50 years of age and older who lived in farmworker communities in the Lower Rio Grande Valley of Texas. Only 38% of the participants reported having had a mammogram in the previous 2 years. This proportion is lower than the national average of 60% for Hispanics and far lower than the rate for non-Hispanic White women reported in the 1998 National Health Interview Survey (National Cancer Institute, 2001). Although as a whole, the rate of mammography screening has generally increased for

Hispanics, subgroup differences have been found (Blackman, Bennett, & Miller, 1999; Ramirez, Suarez, et al., 2000; Ramirez, Talavera, et al., 2000) with Mexican American women and women of Mexican origin having the lowest rates. The rate found in this study is similar to that found in other cross-sectional studies examining Hispanic subgroup differences (Ramirez, Talavera, et al., 2000).

Consistent with other studies, we found that insurance was a predictor of screening mammography in the multivariate analysis (Coughlin & Uhler, 2002; Mandelblatt et al., 1999; Ramirez, Suarez, et al., 2000; Ramirez, Talavera, et al., 2000; Valdez et al., 2001; Zambrana et al., 1999). Health insurance removes the financial barriers to care. However, only 38% of study participants reported having insurance in our study. This suggests that efforts are needed to make insurance available to migrant farmworker women. In addition, although not statistically significant, regular source of care also seems important. Having access to a regular source of care holds the potential for preventive health services, such as mammograms. The majority of women in our study (75%) reported having access to a regular source of care. Efforts should be made to ensure that clinical encounters stress the importance of preventive health behaviors such as mammography.

Mandelblatt and colleagues (1999) reported that, controlling for other variables, a Hispanic woman with health insurance was twice as likely to have had a mammogram. In the present study, health insurance was the strongest predictor of adherence. Women who were adherent were 3.6 times more likely to have a mammogram if insured. Yet, of all racial and ethnic groups in the United States, Hispanics are least likely to have health insurance (Facione, 1999; Zuvekas & Weinick, 1999). Stein, Fox, and Murata (1991) found that in their sample of Hispanic women, lack of health insurance reduced use of mammography screening more than any other barrier. In the present study, 38% of respondents reported having health insurance. Eighty percent of those with insurance reported having a private or state-sponsored health insurance, and 20% reported having Medicare. Even with insurance, 36% of women did not adhere to screening guidelines, which suggests other barriers to screening.

Previous studies of Hispanic women have found that older age and lower levels of education are associated with the lower likelihood of having a mammogram (Suarez, Roche, Nichols, & Simpson, 1997), as is lower income (Calle et al., 1993; Frazier, Jiles, & Mayberry, 1996; Rakowski et al., 1993). Our findings were not statistically significant for age, education, or income. They may reflect, however, the small sample size of relatively homogeneous women and may not have provided adequate power to detect these differences. Lack of variability in the distribution of income and education also may have contributed to our findings.

In our study, we found that 62% of women were nonadherent to mammography screening. Although access may explain a large portion of why these women are not adherent, it is important to recognize the role of knowledge. Studies have measured the level of knowledge that Hispanic women have about breast cancer and breast cancer screening (Carpenter & Colwell, 1995; Fernandez et al., 1998; Gonzalez, 1990; Ramirez, Suarez, et al., 2000; Suarez et al., 1997). In general, these studies have found that Hispanic women lack knowledge about cancer, signs and symptoms of cancer, early detection methods, and the frequency of cancer screening. Suarez and associates (1997) in a study of Mexican American women living in the Southwest found that the only statistically significant predictors of having a mammogram were knowledge of mammography screening guidelines and breast cancer detection methods. Valdez and colleagues (2001) found that Hispanic women who were more knowledgeable about breast cancer and cancer screening had higher odds of having a recent or previous mammogram compared with those with

lower levels of knowledge. In our study, we asked study participants, "Are there any ways a woman can find out if she might have breast cancer?" We found that 60% of adherent women and 40% of nonadherent women identified mammography as a way to detect breast cancer. These differences were not statistically significant. Nonetheless, increasing knowledge about mammography and early detection in migrant farmworker women is essential and should be an active component of any health outreach program.

We also examined the relationship of selected theoretical constructs with mammography screening. In the final model, only two constructs emerged as predictors of screening. When comparing models that contained both demographic and access-to-health-care variables to the final model, including the theoretical constructs accounted for an additional 21% of the variance explained, suggesting the importance of these constructs in the decision to have a mammogram. Our findings suggest that these theoretical variables can serve as cognitive targets for health promotion programming.

Self-efficacy represents an individual's belief in his or her capability to accomplish a certain task or behavior. To date, research examining the role of self-efficacy for mammography screening has been limited and not examined with Hispanic women. A literature review examining the self-efficacy construct suggests strong relationships between self-efficacy and health behavior change and maintenance (Strecher, DeVellis, Becker, & Rosenstock, 1986). Studies examining breast self-examination have found that high levels of self-efficacy are important for breast self-examination, even among Hispanic women (Fox & Roetzheim, 1994; Saint-Germain & Longman, 1993; Savage & Clark, 1996; Walker & Glanz, 1986). Experimental manipulations of self-efficacy suggest that it can be enhanced and that enhancement is related to subsequent health behavior change. We found that self-efficacy is an important element for mammography screening in Hispanic women from farmworker communities. As mammography self-efficacy scores increased, the odds of mammography screening adherence increased. We also saw that adherent women scored higher on the Self-Efficacy Scale. This suggests that previous participation or behavioral enactment leads to greater self-efficacy and, potentially, to rescreening. Also, given the cultural differences, low literacy levels, and language barriers that exist among the women in this sample, high levels of mammography self-efficacy seem necessary to navigate the many behavioral steps (i.e., referral, scheduling an appointment, arranging transportation) required to undergo screening.

Results from other studies indicate that decisional balance is correlated with stage of adoption. Central to the TTM is the idea that people pass through a series of progressively more committed stages in the course of adopting a new health behavior. In our study, having greater decisional balance increased the likelihood of being adherent to mammography screening. Therefore, helping to increase the pros and reduce the cons of mammography is important for promoting movement from one stage of adoption to the next, particularly for the preaction stages (Rakowski et al., 1992; Rakowski et al., 1993). Other studies of decisional balance and mammography screening have found a significant predictive and positive relationship between decisional balance and breast cancer screening (Crane et al., 1998; Schwartz et al., 1999).

For this study, the sample was conveniently selected and from a particular area along the border. Therefore, it cannot be considered to be representative of Hispanic women 50 years and older living in farmworker communities. Generalizing findings to migrant Hispanic farmworkers in Texas or nationally must be done cautiously. However, given the uniqueness of this transient population, it would be difficult to use study designs that employ random sampling strategies. First, migrant farmworkers are not well documented, and the creation of a representative sampling frame is difficult to construct. Sec-

ond, the transient nature of study participants presents a series of obstacles in data collection. A convenience sample skirts these issues and provides this first look at the mammography screening practices of this underserved community. However, efforts are needed to better document and track migrant workers so that representative samples can be drawn and followed. One possibility that should be investigated is the use of household sampling schemes that are typically used in community and rapid epidemiological assessments (Bennett, Radalowicz, Vella, & Tomkins, 1994). Migrant farmworkers generally reside in close proximity to each other, such as *colonias* in the Southwest, allowing for the possibility of drawing a more systematic sample based on household or residence.

Several other study limitations must also be acknowledged. First, data were self-reported and not validated. However, most studies of self-reported cancer screening behaviors, including mammography and Pap smear, find self-report to be fairly accurate for recent time periods, although women may overestimate the frequency of screening (Hiatt et al., 1995; Suarez, Goldman, & Weiss, 1995; Zapka et al., 1996). Second, this study did not distinguish between screening and diagnostic mammograms, which could overestimate the rate of actual screening in this sample. Third, we included women aged 50 into the study sample. Women who just turned 50 might not have been expected to have received a mammogram yet. Additional analyses were conducted that excluded women aged 50, and there were no differences in the results. Fourth, because interviewers collected the data, the possibility of interviewer effects and social desirability are also relevant. Interviewers attended training and learned how not to influence responses of respondents. Fifth, the small sample size limited extensive analysis of the data and can be attributed to the large odds ratios seen. The final multivariate logistic model had to be restricted by the number of independent predictor variables that could be entered into the model. Sixth, those who had previously had a mammogram and were not adherent were grouped with those who never had a mammogram. It is possible that distinct differences exist between women who could be classified as late and those who have never had a mammogram. However, no significant differences for sociodemographic and access-to-health-care variables were found between these two groups in this study. Lastly, because the data obtained for this study were entirely cross-sectional, inferring causality should be done cautiously.

IMPLICATIONS FOR PRACTICE

Findings from this study have several implications for cancer prevention and control. Our findings suggest that breast cancer screening practices of Hispanic women living in farmworker communities may be below the national target for mammography screening. The Healthy People 2010 objective for mammography is to increase to 70% the proportion of women 40 and older who received a mammogram within the previous 2 years (U.S. Department of Health and Human Services, 2000). Effective policies and strategies are needed to increase the rates of screening for these women to the national target.

We examined the applicability of four theoretical constructs in predicting mammography screening. Two were found to be significantly associated with mammography screening: mammography self-efficacy and decisional balance. These constructs provide a foundation that can be used to help develop cognitive-behavioral interventions for migrant Hispanic farmworker women to increase mammography screening rates. Interventions that increase the sense of self-efficacy regarding mammography screening are warranted. Possible interventions could include teaching strategies and skills (i.e.,

patient-provider communication, overcoming barriers) that are needed to schedule and obtain a mammogram. Interventions should also target the opinions and beliefs about mammography. Interventions that increase the pros and decrease the cons associated with mammography are warranted to influence these women to an action stage.

However, even if such interventions are successful, the likelihood that screening will occur remains low if the women continually face access barriers. We found access-to-health-care variables to be significantly associated with mammography screening adherence. Continued efforts are needed to ensure that medically underserved Hispanic women have health care access and routine mammography screening. Ensuring that Hispanic women in farmworker communities qualify for and use benefits established by Medicare, if eligible, and the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) is essential to increasing screening rates. The NBCCEDP helps low-income, uninsured, and underserved women gain access to early detection screening programs for breast cancer. Continued efforts should focus on outreach and increasing awareness of programs that remove health access and financial barriers.

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