



Hispanic Men and Women's Knowledge, Beliefs, Perceived Susceptibility, and Barriers to Clinical Breast Examination and Mammography Practices in South Texas Colonias

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Abstract

Breast cancer is the second leading cause of cancer death among women of all ethnicities. Though the disease is not a primary concern within male populations male perceptions and beliefs of breast cancer screening may contribute to a partner's or loved one's decision to engage in regular mammograms or clinical breast examinations. The current study seeks to explore a comparative analysis of breast cancer knowledge, beliefs, susceptibility, and barriers to female breast cancer and breast cancer screening among Hispanic men and women residing in the *Colonias* of South Texas. Using a multistage systematic sampling design, 2,812 men and women were surveyed from the two South Texas Counties; Maverick and Val Verde. Individuals between the ages of 20 and 75 ($n=2360$) were included in the analysis. T-tests and linear regression models were used to examine gender differences in, knowledge, beliefs, susceptibility, and barriers to breast cancer and breast cancer screening. Significant differences were found between males and females across all measures. Regression analysis demonstrates Hispanic women hold more favorable beliefs about breast cancer and early detection, display higher perceived barriers to clinical breast examinations and mammography, and view themselves more susceptible to the development of breast cancer than their male counterparts. Results framed within a cultural context suggest outreach efforts within South Texas *Colonias* should consider inclusion of male family members in efforts to increase favorable views toward and engagement in regular breast cancer screening.

Keywords Breast cancer knowledge · Hispanics · Colonias · Mammography · Barriers · Clinical breast examination

Introduction

Breast cancer is the second most commonly diagnosed cancer and the leading cause of cancer death among women of all ethnicities [1]. A projected 39,510 deaths in the United States over the course of 2012 were expected to be the result

of breast cancer [2]. Women of Hispanic descent have been shown to experience higher breast cancer mortality rates as compared to non-Hispanic white females despite lower rates of occurrence [3]. Additionally, early detection procedures including mammography and clinical breast examinations are utilized at lower rates among Hispanic women compared to non-Hispanic white women [4]. As such, Hispanic women are less likely to be diagnosed at the early stages of breast cancer and typically present at clinics when the disease reaches more advanced stages where treatment options are limited [3].

Previous studies have examined levels of breast cancer knowledge, beliefs, perceived barriers and susceptibility among Hispanic women and its corresponding impact on adherence to breast cancer screening guidelines [5–12]. However, few studies have considered male views of female breast cancer screening.

Traditionally, cultural aspects within populations of Hispanic decent are anchored within strong patriarchal family

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structures in which machismo combined with a strong sense of familism and family cohesion impact decisions made within family units [13, 14]. The machismo/familism dynamic has been postulated to influence the manner in which Hispanic family members make decisions about their individual health care practices and needs. Galanti notes that family members, especially women, are more likely to abstain from decisions about health care until the entire family has been informed and weighed in on the decision [14]. In order to expand the understanding of breast cancer and breast cancer screening perceptions within Hispanic women, these cultural dynamics and norms should be further investigated.

This study expands the current body of literature by taking into account these traditional cultural dynamics and examining the perceptions of breast cancer screening among co-habiting Hispanic female and male family members residing in south Texas *colonias*.¹ To date few studies have explored the perceptions of male family members when assessing determinants of female breast cancer screening within underserved Hispanic populations. In assessing these different views, a baseline can be established for male perceptions of female breast cancer screening within this region and provide an indication of family perceptions and support when it comes to engaging in breast cancer screening practices.

Methods

This study was derived from a larger study that investigated breast cancer knowledge, attitudes, and beliefs of breast cancer screening among Hispanic females residing in south Texas *colonias* [12]. Data were collected through a survey conducted in two South Texas border counties: Maverick and Val Verde. Multistage systematic sampling was employed to select one male and one female adult from each randomly selected household located within the *colonias* of the two counties. Interviews were conducted during the week (mornings and evenings) and during weekends to accommodate and capture individuals with different work

schedules. A total of 2812 individuals were interviewed, resulting in 947 females and 451 males from Maverick county and 902 females and 512 males from Val Verde county. Local community members and *promotoras* [community health workers] assisted in questionnaire development, which were pre-tested before the final implementation of the survey. Interviews were conducted from October 2010 through March 2011, in English and/or Spanish depending on the preference of the study participant. All *promotoras* administering the survey instrument received training in interpersonal communication, face-to-face interview techniques, probing techniques, introduction to survey instruments, and mock survey sessions. Each interview lasted for approximately 30 min. In addition to social and demographic characteristics, the male and female surveys included items on breast cancer knowledge, perceived seriousness, susceptibility, benefits, and barriers to breast cancer screening. Following the completion of the survey, participants received a payment of \$10. The study protocol was reviewed and approved by the university Institutional Review Board. Each of the study participants provided informed consent prior to their participation in the survey process. All female and male survey participants between the ages of 20–75 were included in the present study ($n=2360$). Independent samples T-test were conducted to assess mean differences in female and male perceptions of breast cancer and breast cancer screening practices. Linear regression models were constructed to predict the influence of gender on the level of breast cancer knowledge, perceived susceptibility, perceived benefits, and perceived barriers to clinical breast examination and mammography among females. All regression models controlled for age, education, income, marital status and health insurance status.

Measures

Measures used in this study were derived from a parent study which employed an altered version of the Health Belief Model developed by Rosenstock [15]. These measures include indices which were constructed to capture overall knowledge of breast cancer, perceived barriers to clinical breast exams (CBE), perceived barriers to mammography screening, perceived susceptibility of females to breast cancer, and beliefs of breast cancer and breast cancer screening (see Table 1). These measures are examined among the sample of Hispanic males and females, as cognitive aspects have been shown in previous studies to influence engagement in early the detection practices for breast cancer [11, 16, 17]. For details on each measure including the operationalization of all variables and their reliability scores were discussed in a previous publication [12].

¹ *Colonias* are defined as unincorporated, primarily Hispanic, townships located within a radius of 150 miles from the U.S Mexico border, outside of the jurisdiction of local cities (U.S. Department of Housing and Urban Development, 2008). Characterized by their lack of basic infrastructure *colonias* often lack running water, sewage and drainage systems, electricity, and maintained roadways. In addition to insufficiencies in infrastructure, *colonias* also exhibit high poverty rates, language and literacy barriers, higher than average unemployment, insufficient public transportation, lack of medical providers and health benefit coverage, and unfamiliarity with available government assistance programs (Federal Reserve Bank of Dallas, 2007; U.S. Department of Housing and Urban Development, 2008).

Table 1 Operationalization of measures and reliability scores

Measures	Cronbach alpha	Questions
Knowledge	0.791	<p>Are women who have family members with breast cancer more likely to get breast cancer?</p> <p>Do women with breast cancer usually have to have their breasts removed?</p> <p>Can bumping and bruising the breasts lead to breast cancer?</p> <p>Can touching or squeezing the breasts lead to breast cancer?</p> <p>Are women with large breasts more likely to get breast cancer than women with small breasts?</p> <p>Exercise can decrease my chances of developing breast cancer</p> <p>A healthy diet can decrease my chances of developing breast cancer</p> <p>Smoking increases my chances of developing breast cancer</p>
Susceptibility	0.830	<p>It is likely that I/my partner will get breast cancer</p> <p>My/my partner's chances of getting breast cancer in the next few years are great</p> <p>I feel that I/my partner will get breast cancer sometime during her life</p>
Beliefs	0.704	<p>Breast cancer that is found early-when it is just getting started-has a good chance of being cured</p> <p>If a woman has breast cancer, it is better she not know</p> <p>The treatment for breast cancer may not be as bad if the cancer is found early</p> <p>The side effects of the treatment for breast cancer are worse than the cancer itself</p> <p>A woman's family benefits if she has a mammogram</p> <p>If a woman has a clinical breast exam from a doctor or nurse, she does not need mammogram</p> <p>Mammograms often lead to surgery that is not needed</p> <p>Women are more likely to go for mammograms if their doctors tell them it is important</p> <p>Having mammograms cause a lot of worry or anxiety about breast cancer</p> <p>Having mammograms every year or two gives women a feeling of control over their health</p> <p>Once a woman has a couple of mammograms that are normal, she does not need any more for a few years</p> <p>Women do not have a mammogram unless they have a breast problem or pain</p> <p>Having a mammogram is just looking for trouble</p> <p>If a woman has a mammogram and nothing is found, she does not need to worry as much about breast cancer</p> <p>Having a mammogram helps women find breast lumps early</p> <p>Having a mammogram is the best way for a woman to find a very small lump</p> <p>Having a mammogram will decrease a woman's chances of dying from breast cancer</p>
Barriers to Clinical Breast Examination	0.865	<p>The embarrassment caused by having a clinical breast exam would make most women have second thoughts about having one</p> <p>Women have so many other problems that they cannot be bothered with having a clinical breast exam</p> <p>The cost of clinical breast exam would cause women to hesitate getting one</p> <p>It is very hard for women to get to a place where they do clinical breast exams</p> <p>There is so much different information about how often women should have clinical breast exams that it is confusing</p> <p>The pain caused by having a clinical breast exam is bad enough to make women put off getting one</p> <p>Women put off clinical breast exams because they may find out something is wrong</p> <p>Women do not know how to go about getting a clinical breast exam</p> <p>Having a clinical breast exam takes too much time</p> <p>Having a clinical breast exam is painful</p> <p>People who do clinical breast exams are rude</p> <p>Some women cannot remember to make an appointment for a clinical breast exam</p> <p>Some women have other problems more important than getting a clinical breast exam</p> <p>Some women are too old to need a clinical breast exam</p>
Barriers to mammography screening	0.909	<p>The embarrassment caused by having a mammogram would make women have second thoughts about having one</p> <p>Some women have so many other problems that they cannot be bothered with having a mammogram</p>

Table 1 (continued)

Measures	Cronbach alpha	Questions
		The cost of mammograms would cause some women to hesitate getting one
		It is very hard for women to get to a place where they do mammograms
		There is so much different information about how often women should have mammograms that it is confusing
		The pain caused by having a mammogram is bad enough to make a women put off getting one
		Some women are afraid to have a mammogram because they might find out something is wrong
		Some women are afraid to have a mammogram because they do not understand what will be done
		Some women do not know how to go about getting a mammogram
		Having a mammogram is to embarrassing
		Having a mammogram takes too much time
		Having a mammogram is painful
		People who do mammograms are rude
		Having a mammogram exposes women to X-rays they do not need
		Women cannot remember to make appointments for mammograms
		Women have other problems more important than getting a mammogram
		Some women are too old to need a mammogram

Table 2 Socio-demographic characteristics of the study sample

	Females (n = 1536)		Males (n = 848)		Overall		p-Value
	Count	Percent	Count	Percent	Count	Percent	
Insurance							
No	897	59.3	471	55.5	1368	57.9	0.077
Yes	616	40.7	377	44.5	993	42.1	
Marital status							
Married/living with partner	1136	75.0	682	81.6	1818	77.3	0.000
Other	379	25.0	152	18.4	533	22.7	
Education level							
Elementary	387	25.7	197	23.7	584	25.0	0.056
Middle/Jr. High	240	16.0	126	15.1	366	15.7	
High School	626	41.6	393	47.2	1019	43.6	
College and above	251	16.7	116	13.9	367	15.7	
Income							
Less than \$25,000	1029	81.0	526	74.7	1555	78.7	0.001
\$25,000 and above	242	19.0	178	25.3	420	21.3	
Age							
20–39	603	39.3	292	34.4	895	37.5	0.020
40–75	933	60.7	556	65.6	1489	62.5	

Results

Bivariate Analysis

Hispanic males and females between the ages of 20 and 75 were selected for this study. All respondents were in cohabitating relationships within each household. Cross tabulations and chi square analysis were performed to provide a snapshot of the population and look at potential associations among genders (see Table 2).

The majority of males and females were between the ages of forty and seventy-five (65.6% vs. 60.7%; $p < 0.05$). Male respondents were more likely to be married or living with their partner than females (81.6% vs. 75.0%; $p < 0.001$). Educational attainment was similar for both groups with the majority of respondents completing at least a middle school education (43.6%; $n = 1019$) and earning an income of below \$25,000 per year, males earning slightly more than females, (74.7% vs. 81.0%; $p < 0.001$). Insurance status was similar with a total of 57.9% of respondents reporting no form of health insurance (55.5% vs. 59.3%; $p < 0.07$). T-test

Table 3 T-test, means, and standard deviations of HBM measures between males and females

	Females		Males		p value
	n	(Mean, SD)	n	(Mean, SD)	
Susceptibility	1488	(9.56, 2.10)	753	(8.60, 2.27)	0.000
Knowledge	1430	(4.32, 1.50)	386	(4.74, 1.81)	0.000
Barriers to clinical breast examination	1361	(56.61, 12.32)	766	(53.01, 8.96)	0.000
Barriers to mammography	962	(61.67, 13.12)	744	(56.92, 10.50)	0.000
Beliefs	1335	(67.05, 6.73)	740	(65.29, 7.05)	0.000

Table 4 Regression analysis on measures of HBM

Independent variables	Knowledge about breast cancer	Perceived susceptibility to breast cancer	Benefits to breast cancer	Perceived barriers to clinical breast examination	Perceived barriers to mammography screening
Gender (male)	-0.05 (-0.39, 0.00)	0.21 (0.77, 1.20)***	0.14 (1.40, 2.75)***	0.15 (2.54, 4.77)***	0.16 (2.55, 5.11)**
Age	0.07 (0.00, 0.01)*	-0.00 (-0.01, 0.01)	0.06 (0.00, 0.06)**	0.12 (0.05, 0.14)***	0.11 (0.04, 0.15)**
Education	0.06 (0.00, 0.18)*	0.01 (-0.09, 0.14)	0.17 (0.77, 1.52)***	-0.04 (-1.00, 0.23)	-0.04 (-1.17, 0.22)
Income	0.10 (0.19, 0.62)***	0.02 (-0.17, 0.35)	0.11 (1.04, 2.72)***	-0.09 (-3.78, -1.02)**	-0.11 (-5.05, -1.72)***
Marital status	0.08 (0.11, 0.49)**	0.02 (-0.17, 0.35)	0.05 (0.08, 1.66)**	0.04 (-0.19, 2.43)	0.03 (-0.65, 2.40)
Insurance	0.01 (-0.14, 0.21)	-0.02 (-0.30, 0.15)	-0.03 (-1.20, 0.29)	-0.02 (-1.69, 0.62)	-0.02 (-1.89, 0.82)

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

concluded that all sample means for core measures, knowledge of breast cancer, perceived barriers to clinical breast exams (CBE), perceived barriers to mammography screening, perceived susceptibility of females to breast cancer, and beliefs of breast cancer and breast cancer screening, are significantly different from one another indicating diversity in the views and perceptions of Hispanic males and females concerning breast cancer and screening ($p < 0.0001$) (see Table 3).

Hispanic women perceive higher levels of susceptibility to the development of breast cancer, increased barriers to both CBE and mammography, and hold more favorable beliefs toward screening as compared to their male partners. On the other hand, male partners held higher levels of knowledge regarding female breast cancer, lower perceived susceptibility of their partners to the development of breast cancer, lower barriers to both CBE and mammography, and less favorable beliefs regarding their partner's breast cancer screening.

Multivariate Analysis

Linear regression models were used to view potential influences of gender on breast cancer knowledge, perceived susceptibility, perceived benefits and perceived barriers to both CBE and mammography practices controlling for respondents' age, income, education, marital status, and insurance (see Table 4).

Difference in beliefs of breast cancer and breast cancer screening persist by gender with the introduction of control variables. Perceived susceptibility is significant in that females are shown to perceive themselves as being more susceptible to breast cancer than their male counterparts perceived them to be ($p < 0.0001$). Additionally, females perceive greater benefits to breast cancer screening than males ($p < 0.0001$). Furthermore, perceived barriers to both CBE and mammography screening were greater among females than for males ($p < 0.0001$). Breast cancer knowledge was not significant in the model controlling for demographic variables ($p < 0.053$).

Increasing age was associated with greater perceived barriers to CBE ($p < 0.0001$) and mammography ($p < 0.001$), as well as increased levels of knowledge ($p < 0.032$) and more positive beliefs ($p < 0.030$) of breast cancer screening. Higher incomes were shown to be associated with a decrease in the perception of barriers to CBE ($p < 0.001$) and mammography ($p < 0.0001$), along with higher knowledge levels ($p < 0.0001$) and more positive beliefs of breast cancer screening ($p < 0.0001$). Higher levels of educational achievement ($p < 0.050$; $p < 0.0001$) and being married ($p < 0.002$; $p < 0.032$) also contributed to higher knowledge and more favorable beliefs of breast cancer and screening among Hispanic females.

Discussion

Though previous studies have explored Hispanic women's perceptions on breast cancer and breast cancer screening [11, 12, 16, 18, 19] few have incorporated the views of Hispanic males. Cultural dynamics at play within traditional Hispanic households including the importance of family opinion and emphasis on patriarchal authority in decision making [14] supporting the need to view preventative care not only in an individual context but in the context of cultural family dynamics.

The present study found that male respondents perceived fewer benefits to breast cancer screening for their female family members, while at the same time perceiving them to be less susceptible to the development of breast cancer comparatively. This difference in male perceptions of screening importance combined with the view of their family member's being less susceptibility to breast cancer may contribute to resources being diverted to other more pressing needs of the family over breast cancer screening. This dynamic has been seen within the traditional Hispanic culture where men, as head of the household, make the final decisions on the allocation to resources, in which family needs often take precedence over individual needs [13].

This study also finds that barriers to breast cancer screening are elevated among female respondents as compared to male respondents. The conceptualization of barriers within this study is multifaceted and constructed to encompass not only access barriers, such as monetary cost and transportation, but the potential barriers of pain and embarrassment during the exam. This difference in the perception of barriers may be due to the nature of questioning presented and the presence of women who have previously been screened within our sample, as females who have participated in clinical breast exam or mammography are more likely to score higher on these measures [20].

Several limitations do exist within this study. Data are of a cross-sectional nature therefore limiting causal generalization of findings to other populations. Data were collected through self-reporting which may be open to bias due to influences of social desirability and recalling of past events. However, findings do provide competing views of female breast cancer screening from a gendered perspective. Findings shed more light on the perceptions of Hispanic males and females on female breast cancer screening practices. To reduce the influence of these limitations, future research should employ a longitudinal panel design to further explore if these perspectives of screening remain consistent over time, or if these perspectives change due to other factors.

Conclusion

In conclusion, this study sought to compare Hispanic male and female knowledge, beliefs, perceived barriers and susceptibility to breast cancer and breast cancer screening among Hispanic women in South Texas *colonias*. This study supports a more holistic and culturally driven view of breast cancer screening practices among women residing in south Texas *colonias*. Differences exist in the way Hispanic male and females view breast cancer and early detection practices within this population. Community outreach and intervention programs within these regions should take these factors into account when constructing outreach tactics. Inclusion of the family unit in educational efforts may increase the number of women utilizing early detection procedures if the support and positive views of the family unit are present. Emphasis on the importance and benefits to early detection for the female family members and implications of early detection relative to the family unit may be useful in constructing a positive view of screening and promote engagement in these practices. Future studies should investigate differences among males and females within this region from a more in depth familial perspective; in doing so potential interactions and outcomes of these views relative to mammography and CBE may be revealed. Overall, the inclusion of both male and female partners in future outreach efforts may serve to better lines of communication and increase effectiveness of local efforts within South Texas border *colonias*.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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