Bridging Gaps in Breast Cancer Screening: A Comparative Study of Mexican Women in U.S. Rural and Urban Areas

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Abstract

Background: This study investigates breast cancer screening disparities among Mexican immigrant women in rural and urban U.S. communities, focusing on cultural beliefs, healthcare access, and geographical differences. **Methods:** A cross-sectional study of 350 Mexican immigrant women aged 40+ without prior cancer diagnosis was conducted in rural (<2000 population) and urban parts of the U.S. in 2015. Culturally tailored surveys during household visits, clinic appointments, and community meetings assessed cultural beliefs, mammography engagement, and family support. Comparative analyses t-tests and chi-square tests were conducted, with significance set at $P < .05$. **Results:** Rural women demonstrated higher adherence to spiritualismo ($M = 4.31$, SD = 1.13) compared to their urban counterparts ($M = 3.91$, SD = 1.36), marianismo ($M = 3.33$, SD = 0.45 vs $M = 3.21$, SD = 0.48), and machismo ($M = 3.02$, SD = 0.52 vs $M = 2.80$, SD = 0.61). The rural women also reported higher mammography rates (54.4% vs 45.6%), with 60.4% undergoing four or more mammograms. Despite barriers such as doctor non-recommendation (55.0% rural vs 45.0% urban) and embarrassment (67.9% rural vs 32.1% urban), rural women engaged more in family discussions about cancer screenings (61.7% vs 38.3%) and received more family assistance in finding health information (59.8% vs 40.2%). **Conclusions:** This study elucidates significant rural-urban disparities in cultural adherence and family support among Mexican immigrant women, underscoring the necessity for culturally tailored interventions to enhance breast cancer screening rates and health outcomes.

Introduction

Breast cancer disparities among Latinas in the United States (U.S.) remain a critical health concern. Although Hispanic women are 30% less likely to be diagnosed with breast cancer compared to non-Hispanic white women (90.2 cases per 100,000 vs 133.7 cases per 100,000), they are more likely to receive a diagnosis at a later stage, leading to poorer outcomes.[1] From 2014 to 2018, Hispanic women experienced higher mortality rates for certain cancers, such as cervical cancer, underscoring the need for targeted health interventions. Contributing factors include limited healthcare access, transportation challenges, immigration-related complications, and language barriers, particularly in rural areas where 40% of Hispanic women lack regular healthcare access, compared to 24% in urban areas.[1,2]

The U.S. Hispanic population reached 62.1 million in 2020, comprising 19% of the total U.S. population and making it the nation's second-largest racial or ethnic group, behind White Americans.[3] This group is defined broadly, including people who trace their roots to Latin America or Spain, and it is notably diverse, encompassing individuals of Mexican, Puerto Rican, Cuban, Salvadoran, and many other origins. Since 1970, when they represented just 5% of the population,

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Hispanics have become a major demographic force, accounting for about half of the U.S. population growth between 2010 and 2020 alone. The Hispanic population is also growing rapidly in regions where it has traditionally been smaller, such as North and South Dakota, which saw increases of 148% and 75%, respectively, between 2010 and 2020.[3] This demographic shift reflects both natural growth (more births than deaths) and sustained immigration over recent decades.

Given their significant and expanding presence in the U.S., Hispanic women represent a crucial demographic for public health initiatives, particularly for breast cancer prevention and screening programs. However, their diverse cultural backgrounds can influence healthcare behaviors in complex ways. For example, beliefs such as *spiritualismo*, *fatalismo*, *familismo*, and *marianismo* play a dual role in shaping health behaviors among Latina women.[4,5] *Spiritualismo* refers to a strong belief in spiritual forces or a higher power, which can provide emotional strength and resilience during medical processes like cancer screening. *Fatalismo* is the belief that life events are predetermined and beyond individual control, potentially discouraging proactive health behaviors like screenings due to a sense of inevitability regarding illness.[5] Conversely, *familismo* emphasizes strong family bonds and collective support, which can encourage health screenings by providing emotional backing and assistance in navigating the healthcare system.[5] However, *marianismo*, which reflects traditional gender roles emphasizing modesty, purity, and self-sacrifice among women, can hinder cancer screening participation due to discomfort in discussing personal health information or undergoing medical examinations, particularly with male doctors.[4] These cultural norms present both opportunities and challenges, significantly shaping how Latina women perceive and engage with healthcare services.

This study aims to analyze breast cancer screening disparities among Mexican immigrant women in Illinois by contrasting rural and urban environments. It seeks to identify the interplay of cultural beliefs, socioeconomic status, family dynamics, and geographical location in influencing mammography practices. The objectives are to define the interactive contributions of structural factors and Latino-specific beliefs in the utilization of breast cancer screening and to develop and pilot test a culturally sensitive intervention addressing these barriers. By understanding how these factors interact, we aim to create interventions that are not only structurally supportive but also culturally relevant, ultimately improving screening rates and health outcomes among this distinct population.

Methodology

Study Design

This study employed a cross-sectional design to examine breast cancer screening disparities among Mexican immigrant women residing in both rural and urban areas of Illinois. The primary aim was to explore cultural beliefs, mammography screening engagement, risk perceptions, and reasons for mammography attendance among these populations. Data were collected using a survey with close-ended questions designed to gather comprehensive information on the variables. The study received approval from the Institutional Review Board at the University of Illinois at Urbana-Champaign, and informed consent was obtained from all participants before any data collection began.

Setting

Data collection took place in a variety of settings across Illinois, encompassing both rural and urban environments. Rural areas were specifically defined using data from the U.S. Census Bureau and the United States Department of Agriculture (USDA) as regions with populations fewer than 2000 residents, distinctly separated from urban centers, to capture a diverse range of experiences from different living environments.[6,7] Participants were recruited from rural villages, including Onarga, Gilman, DePue, Arcola, and Capron, and towns such as Champaign and Chicago, ensuring accessibility and comfort for the participants while considering potential transportation limitations and language barriers. Data collection methods included household visits, trailer camps, clinics, and community organizations.

Population

The study targeted low socioeconomic Mexican immigrant women aged 40 and above who had not been previously diagnosed with cancer. A total of 350 participants were recruited from both rural and urban areas to examine breast cancer screening disparities. The inclusion criteria focused on women who met the age and socioeconomic conditions and had not been previously diagnosed with cancer. The recruitment strategy shifted from initial plans for random sampling to targeted and snowball sampling methods to effectively reach the intended demographic within budget and time constraints. Engaging multiple individuals from the same households allowed the study to gain a deeper understanding of family dynamics and their influence on health behaviors and beliefs. Community engagement strategies, such as collaborating with local organizations like the Latino Partnership and La Casa Culture in Champaign, Illinois, were employed to build trust and ensure culturally sensitive engagement.

Community Engagement and Cultural Sensitivity

Community engagement was integral to the study's approach. The research team liaised with local organizations and community leaders to build trust and ensure culturally

sensitive engagement. This approach was particularly important given the potential skepticism from participants due to their immigration status or past experiences with authority figures. Collaborations with organizations such as the Latino Partnership and La Casa Culture in Champaign, Illinois, were crucial in facilitating engagement. All data collection was conducted in Spanish to ensure participants' comfort and accuracy in their responses.

Cultural humility was a guiding principle throughout the study. The research team was trained to approach participants with respect for their cultural backgrounds, understanding the importance of norms such as collectivism, personalism, and harmony. This approach also involved acknowledging the researchers' own cultural biases and fostering an environment conducive to learning and mutual respect. Graduate research assistants completed training at the University of Illinois Urbana-Champaign focused on human subjects' protection and an additional 16-h training specific to the research project. This training emphasized aspects of Mexican culture that might affect research participation, cultivated empathy, and ensured respect for the autonomy and voluntary participation of study participants.

Survey Development

A survey with close-ended questions was developed, translated, and back-translated by a proficient Mexican Spanish community organizer to ensure cultural sensitivity and accuracy. Key terms such as *spiritualismo*, *machismo*, and *marianismo* were clearly defined to capture their nuanced cultural meanings: *Spiritualismo* reflects beliefs about spiritual or religious factors influencing health; *machismo* addresses attitudes related to traditional masculine norms; and *marianismo* explores traditional gender roles and expectations of self-sacrifice and modesty.[4,5] Pilot testing was conducted with a smaller group of Mexican-born women to refine the questionnaire and update interview protocols. Cognitive testing techniques were employed during the pilot phase to verify the readability and comprehensiveness of the survey instrument.

Measures

The study includes several demographic variables to provide a comprehensive understanding of the sample characteristics. Participants' ages were recorded to analyze the distribution within the sample and to explore how age may influence breast cancer screening behaviors. Marital status was categorized into groups such as single, married, widowed, or divorced to examine the impact of social support structures on health decisions. Yearly income was captured and rounded to one decimal place, reflecting the economic context of the participants, which could affect access to and utilization of mammography services. The length of stay in

the U.S., measured in years, was included to understand how time spent in the country might influence adaptation to healthcare practices and engagement in preventive health behaviors. Education level was recorded to identify any correlation between educational attainment and knowledge or attitudes toward breast cancer screening. Employment status was categorized as employed, unemployed, or retired, recognizing how work conditions, access to health insurance, and availability of time might impact participants' ability to engage in regular mammography screenings.

Beyond demographics, the study examined several other key variables to understand cultural and psychosocial factors influencing breast cancer screening behaviors. Acculturation stress measured the psychological strain experienced by participants due to cultural adaptation and discrimination; a higher score indicates greater stress, which may negatively impact their willingness to engage in preventive health activities.[4] Familismo assessed the influence of family values and obligations on health decisions; a higher score reflects a stronger emphasis on family involvement and prioritization of family needs over individual health actions. Modesty evaluated participants' adherence to cultural norms regarding privacy and body exposure, with higher scores indicating greater discomfort with medical examinations and discussing breast health, potentially creating barriers to mammography uptake. Spiritualismo measured beliefs about the impact of spiritual or religious factors on health outcomes; higher levels suggest a stronger tendency to attribute health conditions to spiritual causes, which may affect healthcare-seeking behavior. Social support was assessed to determine the perceived emotional and practical support from family, friends, and community; higher scores indicate stronger perceived support networks, which can encourage preventive health actions. Marianismo explored traditional gender roles and expectations, with higher scores reflecting greater adherence to norms of self-sacrifice, nurturing, and modesty that may discourage women from prioritizing their health. Acculturation gauged the extent of participants' adaptation to U.S. culture, including language proficiency and social integration, with higher scores indicating a greater level of integration, potentially facilitating better engagement with the healthcare system. Machismo assessed attitudes related to traditional masculine norms, where higher scores indicate stronger endorsement of these norms, which may indirectly affect women's health decisions. Mammography screening engagement was measured by whether participants had ever undergone a mammography, the number of mammograms in the last four years, and their routine mammography practices. Reasons for mammography attendance or non-attendance captured various personal and social reasons, including perceived need, physician recommendation, cost, embarrassment, fear of pain, lack of insurance, and transportation challenges, influencing whether participants attended

screenings. Lastly, risk perceptions assessed participants' perceived susceptibility to breast cancer compared to others, beliefs about the likelihood of currently having breast cancer, and perceived predisposition to other health conditions, with higher levels indicating greater perceived risk or concern.

Statistical Analysis

Descriptive statistics, including counts, percentages, means, and standard deviations, were calculated for all variables. Statistical analyses were conducted using *t*-tests and chi-square tests to compare cultural beliefs and mammography practices between rural and urban participants. The *t*-tests were employed to compare the means of continuous variables, while the chi-square tests examined associations between categorical variables. A *P*-value of less than .05 was considered statistically significant. This analytical approach ensured the findings were thorough, reliable, and able to address the primary research questions.

In this study, we used row percentages in our tables to present data comparisons between rural and urban groups. Row percentages show the proportion of participants within each response category (eg, "Yes" or "No" for having a mammogram) for rural and urban groups separately. This approach is used in medical and epidemiological research because it allows for a more direct comparison of subgroups, highlighting the differences in characteristics or responses between groups. By focusing on the proportion of responses within each subgroup, row percentages provide a clearer understanding of disparities and can help identify patterns that might be masked when using column percentages. This method is useful in studies examining health behaviors and outcomes across different populations, as it enables targeted analysis and supports the development of focused intervention.

Ethical Considerations

The study adhered to all ethical guidelines set by the Institutional Review Board at the University of Illinois at Urbana-Champaign. Confidentiality was maintained by de-identifying data and ensuring that interview sessions were conducted with the participants' comfort and privacy in mind. Researchers were trained to handle any emotional distress experienced by participants and to provide support as needed. Participants were informed of their rights, including the right to withdraw from the study at any point without any negative consequences.

Results

The sample consisted of 321 Mexican-born women residing in Illinois, with an average age of 50 years and an average

length of stay in the U.S. of 21 years. Most participants were married (58.6%), while 22.4% had attained secondary education, and 75.39% reported an annual income of less than $30,000. About 38.0% of the participants were employed full-time (Table 1). Rural and urban participants were similar in their educational attainment and income levels but varied in other aspects, such as family structure and employment status.

The analysis demonstrated that rural Mexican immigrant women (MIWs) demonstrated a stronger adherence to traditional cultural beliefs compared to their urban counterparts. Specifically, rural MIWs reported higher levels of *spiritualismo* ($M=4.31$, SD$=1.13$) compared to urban women ($M=3.91$, SD$=1.36$), as well as higher adherence to *marianismo* ($M=3.33$, SD$=0.45$) versus urban women ($M=3.21$, SD$=0.48$) and *machismo* ($M=3.02$, SD$=0.52$ vs $M=2.80$, SD$=0.61$) (Table 2). Differences in cultural attitudes also extended to perceptions of cancer risk, with 68.9% of rural women disagreeing with the statement, "I do not think I need to worry about ever getting breast cancer," compared to 31.1% of urban women, indicating heightened awareness or fear of cancer among rural participants (Table 3).

Screening rates for breast cancer were higher among rural MIWs, with 54.4% having had a mammogram compared to 45.6% of urban MIWs ($P=.023$). Notably, among those who underwent mammograms, rural women were more likely to have had multiple screenings, with 60.4% reporting four or more mammograms, compared to 39.6% of urban women (Table 4). Despite higher screening rates, rural participants faced significant barriers such as a lack of doctor recommendations (55.0% rural vs 45.0% urban, $P=.001$), procrastination (56.6% rural vs 43.4% urban, $P=.010$), and embarrassment during exams (67.9% rural vs 32.1% urban, $P<.001$) (Table 4).

Family involvement emerged as a significant factor influencing health behaviors. A greater proportion of rural women reported engaging in family discussions about cancer screenings (61.7% vs 38.3% in urban areas) and receiving family assistance in finding health information (59.8% vs 40.2%), suggesting that while cultural norms may present barriers to screening, strong familial networks can facilitate engagement with healthcare services ($P<.001$) (Table 4). The primary reasons cited for not participating in mammography screening included a lack of physician recommendation (77.8% in rural areas vs 22.2% in urban areas, $P=.001$) and procrastination (56.6% rural vs 43.4% urban, $P=.010$). Additionally, rural participants reported more discomfort with discussing their bodies with doctors (60.7% rural vs 39.3% urban, $P=.017$) and greater embarrassment during breast exams (67.9% rural vs 32.1% urban, $P<.001$). Despite these challenges, rural MIWs reported higher family engagement in health-related conversations, indicating that family support could mitigate some of these challenges ($P<.001$) (Table 4).

Table 1. Demographic Characteristics of Mexican-Born Women in Illinois in 2015, N = 321.

Variable	n	%
Marital status		
Married	188	58.6
Cohabitate	31	9.7
Separated	28	8.7
Single	23	7.2
Widow	22	6.9
Divorced	15	4.7
No response	14	4.4
Total	321	100
Education level		
Elementary/primary (grades 1-5)	79	24.6
Middle school (grades 6-8)	65	20.2
Secondary/precatory school	72	22.4
Commercial/vocational	26	8.1
University	15	4.7
Other	6	1.9
No response	58	18.1
Total	321	100
Yearly income		
Less than $30,000	242	75.4
$30,000 or greater	67	24.6
Total	321	100
Current employment		
Full time (>35 h/week)	122	38.0
Part time (<35 h/week)	61	19.0
Not working	132	41.1
No response	6	1.9
Total	321	100

	Min	Max	*M*	*SD*
Age	38	86	50.76	10.04
Length of stay in U.S. (years)	0	75	21.08	11.13

Discussion

The study found that rural MIWs reported stronger adherence to traditional cultural beliefs, which appeared to correlate with differences in health behaviors, such as mammography rates and regular screenings. While these cultural factors may help explain some of the disparities in screening behaviors, it is important to recognize that other factors, such as access to healthcare services and socioeconomic status, also play a meaningful role. The rural MIWs who did not participate in mammography cited a lack of doctor recommendations as a major barrier. The rural MIWs reported greater embarrassment related to breast examinations and discussions with doctors, yet they also noted stronger family support in navigating health information. This suggests that while cultural norms around modesty and gender roles might act as barriers to screening, the supportive role of family networks could help to mitigate these barriers to some extent.

The observed interplay between cultural beliefs and screening practices in rural MIWs aligns with the findings of Abraído-Lanza et al[8] who conducted a comprehensive review of the literature on acculturation and health among Latino populations in the United States. Abraído-Lanza et al[8] emphasized the complex relationship between acculturation and health behaviors among Latinas, highlighting that the process of acculturation involves adopting the cultural norms and practices of the host country, which can have both positive and negative effects on health outcomes. Our current study contributes a unique perspective by illustrating these dynamics specifically in rural settings, where traditional beliefs such as spiritualismo, machismo, and marianismo have a more pronounced impact on healthcare decisions among MIWs.

Additionally, our study suggests a potential link between these practices and specific cultural norms, indicating that traditional beliefs may play a meaningful role in shaping

health-seeking behaviors. This understanding of cultural factors within rural MIW communities can inform the development of targeted interventions to address healthcare disparities and promote culturally sensitive healthcare practices.

Table 2. Demographic Characteristics of Urban and Rural Mexican Immigrant Women in Illinois, 2015.

	N	M	SD	SE
Acculturation stress				
Rural	175	−0.02	0.60	0.05
Urban	126	0.01	0.65	0.06
Familismo				
Rural	176	4.16	1.13	0.09
Urban	124	4.12	0.94	0.08
Modesty				
Rural	176	2.95	1.44	0.11
Urban	124	2.96	1.36	0.12
Spiritualismo*				
Rural	194	4.31	1.13	0.08
Urban	127	3.91	1.36	0.12
Social support				
Rural	194	2.90	0.39	0.03
Urban	127	2.98	0.49	0.04
Marianismo**				
Rural	194	3.33	0.45	0.03
Urban	127	3.21	0.48	0.04
Acculturation				
Rural	194	1.61	0.58	0.04
Urban	127	1.55	0.54	0.05
Machismo				
Rural	194	3.02	0.52	0.04
Urban	126	2.80	0.61	0.05

Abbreviations: M, mean; SD, standard deviation; SE, standard error.
*Significant $P < .01$. **Significant $P < .05$.

In terms of breast cancer risk perception, the study reveals a noticeable difference between rural and urban MIWs. This aspect is particularly relevant when considering the qualitative emphasis placed by Szalacha et al[9] on the need to understand and leverage cultural beliefs to positively influence screening practices among Mexican-born Latinas. While Szalacha et al[9] highlighted the qualitative aspects, the quantitative approach of the current study brings a complementary perspective, showing how deeply ingrained cultural beliefs can potentially impact risk perception and screening frequency.

The study also sheds light on the barriers to screening, such as doctor nonrecommendation and embarrassment during exams, which are more noticeable in rural areas. This finding resonates with the observations of Ramirez et al[10] regarding discomfort during medical exams among Hispanic women but expands the context to underline the rural-urban divide. The research highlights the importance of a lack of doctor recommendations and embarrassment during medical exams as notable barriers, particularly in rural areas. This observation aligns with Talham et al's[11] findings on healthcare access and knowledge barriers. Our study's distinct contribution lies in its focus on how these barriers are magnified in rural settings, emphasizing the need for targeted healthcare strategies.

Recruiting hard-to-reach populations like rural MIWs poses significant challenges, as highlighted by recruitment strategies used in previous research involving community leaders at all stages of research.[12] Engaging community leaders and employing culturally sensitive recruitment methods such as Participatory Learning and Action (PLA) and community partnerships can facilitate ethical research with hard-to-reach populations. For example, involving trusted community members and using culturally appropriate spaces for recruitment can significantly enhance participation and

Table 3. Independent *t*-Tests of Study Measures for Mexican Immigrant Women (MIWs) Regarding Breast Cancer Screening and Cultural Beliefs Between Rural and Urban Areas of Illinois, 2015.

	t Test for equality of means					95% confidence interval of the difference	
	t	df	P	M_diff	SE	Lower	Upper
Acculturation stress	−0.523	299	.601	−0.04	0.07	−0.18	0.11
Familismo	0.292	298	.771	0.04	0.12	−0.21	0.28
Modesty	−0.016	298	.987	0.00	0.17	−0.33	0.32
Spiritualismo*	2.857	319	.005	0.40	0.14	0.12	0.68
Social support	−1.536	319	.126	−0.08	0.05	−0.17	0.02
Marianismo**	2.195	319	.029	0.12	0.05	0.01	0.22
Acculturation	0.993	319	.321	0.06	0.06	−0.06	0.19
Machismo*	3.388	318	.001	0.22	0.06	0.09	0.34

*Significant $P < .01$. **Significant $P < .05$.

Table 4. Crosstabulation of Mammography, Cancer Belief, Modesty, Crisis, and Family Support Items Among Illinois Mexican Immigrant Women in 2015(Rural Vs Urban).

	Rural		Urban	
	N	Row%	N	Row%
Has the participant ever had a mammography*				
Yes	123	54.4	103	45.6
No	53	70.7	22	29.3
Do not know	0	0.0	1	00.0
How many mammograms in the last four years*				
0	22	81.5	5	18.5
1	24	60.0	16	40.0
2	22	44.9	27	55.1
3	12	50.0	12	50.0
4	58	60.4	38	39.6
More than 4	14	73.7	5	26.3
Do not know/remember	33	58.9	23	41.1
Has the participant had routine mammography				
Yes	124	56.9	94	43.1
No	68	68.0	32	32.0
Do not know	1	50.0	1	50.0
Reasons for not having a mammogram				
No reason				
No	147	59.0	102	41.0
Yes	15	71.4	6	28.6
I did not think I needed such a test				
No	146	59.1	101	40.9
Yes	17	68.0	8	32.0
Doctor did not order me to have one**				
No	115	55.0	94	45.0
Yes	49	77.8	14	22.2
I have not had any problems				
No	126	57.3	94	42.7
Yes	36	70.6	15	29.4
I left it for later procrastinate*				
No	129	56.6	99	43.4
Yes	34	77.3	10	22.7
It is too expensive				
No	147	60.0	98	40.0
Yes	16	59.3	11	40.7
I am very embarrassed				
No	159	60.2	105	39.8
Yes	4	57.1	3	42.9
I am too young				
No	150	58.6	106	41.4
Yes	13	81.3	3	18.8
I don't have a doctor				
No	153	58.6	108	41.4
Yes	9	81.8	2	18.2
Other reasons				
No	161	60.5	106	39.5
Yes	1	25.0	3	75.0

(continued)

Table 4. (continued)

	Rural		Urban	
	N	Row%	N	Row%
When do you plan to get a mammography in the future				
In the next 6 months	74	56.1	58	43.9
Between 6 months and a year	55	62.5	33	37.5
1-2 years	23	53.5	20	46.5
3-4 years	4	80.0	1	20.0
5 years or more	1	50.0	1	50.0
When the doctor recommends	12	80.0	3	20.0
When I have symptoms	4	66.7	2	33.3
Do not plan on getting one	8	80.0	2	20.0
Do not know	13	65.0	7	35.0
In the last year, did a doctor ever recommend that you have a mammography				
Yes	91	61.5	57	38.5
No	98	59.4	67	40.6
Do not know	4	66.7	2	33.3
When was your most recent mammography exam				
Less than a year	90	59.6	61	40.4
1-2 years	45	54.2	38	45.8
3-4 years	23	82.1	5	17.9
5 or more years	10	71.4	4	28.6
Never	26	57.8	19	42.2
Do you perform self breast exams				
No	28	57.1	21	42.9
Yes—every month, always	89	61.4	56	38.6
Yes—every month but not always	13	50.0	13	50.0
Yes—every once in awhile	62	63.9	35	36.1
5.00	1	100.0	0	0.0
Do you have a doctor or somewhere to go for nonemergency health care				
Yes	161	59.9	108	40.1
No	32	65.3	17	34.7
Did your mom have routine mammography				
Never	61	56.5	47	43.5
Rarely	8	80.0	2	20.0
Sometimes	27	64.3	15	35.7
Every year	43	56.6	33	43.4
Do not know	33	58.9	23	41.1
Has anyone ever been diagnosed with breast cancer in your family				
No	147	58.8	103	41.2
Yes	17	68.0	8	32.0
Has your mother been diagnosed with breast cancer*				
.00	1	100.0	0	0.0
No	179	59.9	120	40.1

(continued)

Table 4. (continued)

	Place data gathered			
	Rural		Urban	
	N	Row%	N	Row%
Yes	10	90.9	1	9.1
Not sure	0	0.0	2	100.0
Has your sister been diagnosed with breast cancer				
No	182	60.9	117	39.1
One	10	62.5	6	37.5
Not sure	0	0.0	2	100.0
Has your daughter been diagnosed with breast cancer				
.00	1	100.0	0	0.0
No	189	60.4	124	39.6
One	1	100.0	0	0.0
Not sure	0	0.0	0	0.0
I believe that I have higher risks of having a breast cancer than other people I know				
False	88	58.3	63	41.7
True	17	63.0	10	37.0
Not sure	88	62.9	52	37.1
It is very likely that I have breast cancer				
False	121	59.9	81	40.1
True	0	0.0	3	100.0
Not sure	73	64.6	40	35.4
I may be predisposed to other conditions, but I do not think I would ever have cancer				
False	58	55.2	47	44.8
True	37	52.1	34	47.9
Not sure	78	65.0	42	35.0
I do not think I need to worry about ever getting breast cancer**				
False	124	68.9	56	31.1
True	21	42.0	29	58.0
Not sure	47	54.0	40	46.0
I am too young to be getting breast cancer				
False	143	60.3	94	39.7
True	11	68.8	5	31.3
Not sure	37	58.7	26	41.3
A cyst in the breast is always a sign of cancer				
False	66	61.1	42	38.9
True	80	61.1	51	38.9
Not sure	29	48.3	31	51.7
I do not feel comfortable speaking to a doctor about my body*				
Strongly agree	51	60.7	33	39.3
Agree	22	61.1	14	38.9
Neither agree nor disagree	4	26.7	11	73.3
Disagree	21	45.7	25	54.3
Strongly disagree	78	65.5	41	34.5
I feel embarrassment when a doctor examines my breasts, as a part of medical exam**				
Strongly agree	57	67.9	27	32.1
Agree	22	61.1	14	38.9

Table 4. (continued)

	Place data gathered			
	Rural		Urban	
	N	Row%	N	Row%
Neither agree nor disagree	2	15.4	11	84.6
Disagree	19	43.2	25	56.8
Strongly disagree	74	69.8	32	30.2
I am very discrete with my body even for a medical exam **				
Strongly agree	51	69.9	22	30.1
Agree	20	51.3	19	48.7
Neither agree nor disagree	3	25.0	9	75.0
Disagree	19	46.3	22	53.7
Strongly disagree	71	68.3	33	31.7
I would feel embarrassed to check my own breast for cysts **				
Strongly agree	44	71.0	18	29.0
Agree	18	58.1	13	41.9
Neither agree nor disagree	1	12.5	7	87.5
Disagree	24	46.2	28	53.8
Strongly disagree	72	66.1	37	33.9
I only see a doctor when I have a health problem				
Strongly agree	88	59.9	59	40.1
Agree	23	60.5	15	39.5
Neither agree nor disagree	5	41.7	7	58.3
Disagree	33	60.0	22	40.0
Strongly disagree	24	54.5	20	45.5
Although you may not have a history of breast cancer, it is important that you are checked regularly				
Strongly agree	151	59.7	102	40.3
Agree	21	48.8	22	51.2
Neither agree nor disagree	1	100.0	0	0.0
Disagree	1	100.0	0	0.0
Strongly disagree	1	100.0	0	0.0
Exams to detect cancer such as mammograms and clinical exams, are efficient methods to find cancer on time				
Strongly agree	152	58.9	106	41.1
Agree	20	54.1	17	45.9
Neither agree nor disagree	1	50.0	1	50.0
Disagree	2	100.0	0	0.0
Strongly disagree	1	100.0	0	0.0
It is better to detect health problems before they occur than having to deal aftermath				
Strongly agree	158	60.5	103	39.5
Agree	16	44.4	20	55.6
Neither agree nor disagree	0	0.0	0	0.0
Disagree	1	50.0	1	50.0
Strongly disagree	1	100.0	0	0.0

Table 4. (continued)

	Place data gathered			
	Rural		Urban	
	N	Row%	N	Row%
My grown up children and family friends, have recommended that I get checked for cancer				
Strongly agree	99	59.6	67	40.4
Agree	29	55.8	23	44.2
Neither agree nor disagree	8	42.1	11	57.9
Disagree	29	65.9	15	34.1
Strongly disagree	10	66.7	5	33.3
My family members and acquaintances have never advised me that I visit a doctor to check for cancer**				
Strongly agree	15	48.4	16	51.6
Agree	38	71.7	15	28.3
Neither agree nor disagree	6	30.0	14	70.0
Disagree	77	69.4	34	30.6
Strongly disagree	35	46.1	41	53.9
My family members and acquaintances have spoken with me about the importance of being checked for cancer*				
Strongly agree	103	61.7	64	38.3
Agree	37	56.1	29	43.9
Neither agree nor disagree	4	23.5	13	76.5
Disagree	21	72.4	8	27.6
Strongly disagree	8	47.1	9	52.9
In my family I am assisted in finding information about health*				
Strongly agree	104	59.8	70	40.2
Agree	38	55.9	30	44.1
Neither agree nor disagree	5	27.8	13	72.2
Disagree	19	86.4	3	13.6
Strongly disagree	7	46.7	8	53.3

*P < .05. **P < .01.

retention. Understanding and accommodating participants' knowledge and experiences render research more culturally sensitive and relevant, thereby allowing researchers to gain a deeper understanding of the health issues faced by immigrants and other vulnerable populations. This approach was employed by Vahabi et al[13] and Aglipay et al,[14] who used community partnerships to successfully recruit and retain participants.

In the context of rural MIWs, structural barriers such as lack of health insurance, transportation challenges, and limited access to healthcare resources can impede breast cancer screening.[12] These barriers are compounded by cultural contexts, including fatalismo, familismo, and marianismo, which interact with structural contexts to affect screening behavior. The study underscores the importance of understanding the interactive influence of these factors to develop effective interventions. Structural barriers and cultural beliefs must be addressed simultaneously to improve healthcare outcomes. For instance, addressing transportation issues and providing mobile mammography units in rural areas can help overcome access barriers, while culturally tailored education programs can address fatalistic beliefs and emphasize the importance of regular screenings.

The role of family in health decisions emerged as an influential factor, particularly in rural areas. This finding aligns with Documét et al's[15] research on the influence of social support in cancer screening among Latinas. Sonubi et al[4] further supports this observation by underlining the importance of familial and social networks in healthcare engagement among Latinas. Our study adds to this narrative by demonstrating how family influence is more evident in rural MIWs, impacting both their awareness and engagement in breast cancer screening.

The study emphasizes the need for healthcare policies and practices to consider the diverse needs of MIWs, particularly in underserved rural areas. Healthcare providers must be aware of the cultural beliefs prevalent among rural MIWs. This awareness can guide the development of culturally sensitive approaches to encourage open communication, reduce barriers to screening, and improve breast cancer screening rates.[4,5] Policies should also address disparities in healthcare access between rural and urban areas, ensuring the availability of mammography services in rural regions and supporting the training and recruitment of culturally competent healthcare providers.[4] Community initiatives that involve family-oriented strategy-targeted outreach programs, educational campaigns, and mobile mammography units can help promote screening behaviors among underserved populations.[5] The study's results highlight the importance of tailored healthcare strategies that consider the complex interplay of cultural beliefs, geographical context, and familial support, ultimately striving for equitable health outcomes among MIWs in both rural and urban settings.

Recent healthcare policy changes, including the expansion of Medicaid and the Patient Protection and Affordable Care Act (ACA), have potentially impacted access to healthcare services, particularly preventive screenings such as mammography.[16] These policy changes aimed to extend health insurance coverage to underserved populations, including Mexican immigrant women.[17] As a result, many previously uninsured or underinsured Mexican immigrant women may have gained access to healthcare services, including mammograms. The ACA mandates that health insurance plans cover a range of preventive services without cost-sharing, making mammography screenings more financially accessible.[18] Moreover, these policy changes have encouraged healthcare providers to recommend

preventive screenings to eligible patients, potentially addressing the barrier of doctor nonrecommendation identified in the study.[19]

Building upon the possible impact of recent healthcare policy changes, the development of culturally tailored interventions to improve breast cancer screening rates among Mexican immigrant women remains essential.[20] These interventions can utilize the benefits of expanded coverage and address disparities effectively.[20] One key aspect is the inclusion of cultural competency training for healthcare providers, ensuring they understand and address the unique cultural beliefs and preferences of Mexican immigrant women.[21] This training focuses on effective communication and building trust with patients from diverse backgrounds.

Limitations

Despite its several strengths, this study's limitations include its focus on specific areas in Illinois and a relatively small sample size, underscoring the need for more extensive and diverse research. Future studies should explore longitudinal trends to capture the evolving nature of cultural and healthcare factors influencing MIWs' health behaviors. Additionally, investigating the impact of recent policy changes on these communities' health practices could provide valuable insights for more inclusive and effective healthcare strategies. A larger and more diverse sample size, potentially including participants from various regions and backgrounds, would offer a more comprehensive understanding of these factors. Moreover, future research should examine the interactive effects of structural barriers and cultural contexts on breast cancer screening practices among MIWs to inform more targeted and effective interventions.

Conclusion

Breast cancer disparities among Latinas, particularly in rural areas and among foreign-born individuals, highlight the critical need for culturally sensitive interventions and accessible healthcare services. Our study reveals that while rural Mexican immigrant women (MIWs) exhibit a higher affinity for traditional beliefs and face significant screening barriers, they also report higher mammography rates and stronger family support. These findings underscore the importance of considering cultural contexts and health access disparities in policy.

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Declaration of Conflicting Interests

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