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Mobile versus Fixed Facility: Latina Attitudes and Preferences for Obtaining a Mammogram

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Introduction

Although Latinas represent the largest and one of the fastest growing minority populations in the U.S.,¹ health inequities in breast cancer survival persist. Specifically, Latinas are more likely than Non-Latina Whites to be diagnosed with late-stage disease, experience poorer quality of life, and die from their disease.²

Previous studies cite Latinas' low adherence to screening mammography guidelines as a major contributing factor to these inequities.^{2,3} In response, interventions to promote screening have incorporated community health workers to address psychosocial factors.^{4,5} However, these interventions do not address logistic and systemic barriers (e.g. transportation, language differences between patients and providers). Some healthcare facilities have deployed mobile mammography services to address some of the barriers related to transportation and knowledge about location of services.⁶⁻⁸ Many mobile mammography services deployed in Latina communities also use Spanish-speaking staff to overcome language barriers, and subsidize the mammograms, thereby addressing barriers related to cost or lack of insurance.^{5,9}

Literature supporting mobile mammography services as a strategy to increase screening rates among Latinas is mixed, with some studies showing increased screening uptake^{6,10} and others showing no change.⁵ Little is known about reasons underlying facility preferences, but one study suggested that Latinas may prefer the traditional clinic setting (fixed facility) for a mammogram due to concern about service quality in mobile facilities.¹¹ Conflicting findings may be partially due to heterogeneity among Latinas, resulting in wide variation in behavioral uptake of mobile mammography services.

Little work has quantified this variation in facility preferences or has explored predictors of facility preferences. Such research is warranted, as a “one-size-fits-all” approach to mobile mammography screening may not be the best strategy. Identifying predictors of facility preferences could, for example, specify the need for targeted outreach campaigns, including what populations should be targeted (e.g., by demographics) and what health messages are most likely to resonate (e.g., breast cancer risk, information about mobile mammography services). So far as we are aware, no study has previously explored how experiences with mobile mammography services changes attitudes toward to these services.

A recent prospective multilevel intervention study in Western Washington (*¡Fortaleza Latina!*) showed no significant increase in Latinas obtaining a screening mammogram at clinics that offered new mobile mammography services compared to clinics with no change in mammography services provided. This current study uses a mixed methods approach to explain these results through participants' perspectives. First, we focus on individual-level risk factors, including demographic (e.g., age, socioeconomic status, transportation preferences), access (e.g., insurance status), and psychosocial (e.g., breast cancer beliefs and risk), that have been well-documented as barriers to screening mammography. Because of the limited questions available in the quantitative *¡Fortaleza Latina!* survey, we then further investigate these reasons using qualitative methodology (in person interviews). Thus, we aim to acquire the “richness of data” that answers why many Latinas prefer fixed facilities.

Methods

This study used a sequential, emergent mixed method design. First, the baseline survey data of the trial (¡Fortaleza Latina!) was retrospectively analyzed for location preferences for obtaining a mammogram and to test for relationships among location preferences and variables such as sociodemographic and healthcare access factors. At the time of this analysis, the ¡Fortaleza Latina! trial was complete. Based on the quantitative study results, a qualitative study (Mujeres Móviles) then evaluated the experiences and perceptions of Latinas before and after using mobile mammography services in a separate, but similar Latina population.

Quantitative study

Procedures—A secondary analysis was performed on baseline survey data from the ¡Fortaleza Latina! study, a randomized controlled intervention seeking to improve screening mammography rates among non-adherent Latinas living in Western Washington State (2011-2014). The design and methods for this study are reviewed in detail elsewhere.^{5,12,14,15} Eligibility criteria for the ¡Fortaleza Latina! study included self-identified Latina/Hispanic women aged 42-74 who received healthcare at a participating clinic within the past 5 years and had not received a mammogram within the past 2 years.

Survey—The survey included 161 closed and open-ended questions. A community health clinic staff member conducted the survey over the phone or in person, in either English or Spanish, depending on the participant's preference. The current study focuses on the measures described below.

Socio-demographic, healthcare access, and transportation questions included age, country of birth, years in the US, primary language spoken, employment, income, education, and marital status. Participants were also asked healthcare access questions including “Where do you go for care?” and “Do you have insurance?”; previous medical experience questions, such as “Have you used medical services in the past year?” and “Have you ever had a mammogram?”; and transportation questions, such as “Are you satisfied with public Transportation?”, “Do you use public transportation?”, and “Do you own a car?”

Breast cancer risk and beliefs questions included two measures previously validated among U.S. Latinas.^{16,17} The first summary score assessing Latina's perceptions of their own risk for developing breast cancer (perceived breast cancer risk), scored as “low,” “moderate,” “high,” or “don't know,” was derived from the summation of two baseline survey questions: “How likely do you think it is that you will develop breast cancer in the future? Would you say your chance of getting breast cancer is low, moderate, or high?” and “Compared to other women your age, would you say that you are more likely to get breast cancer, about the same as, or less likely?” The second summary score characterized study participants' perceived personal need for a mammogram (perceived need for mammogram), scored as “low,” “moderate,” “high,” or “don't know.” This score was derived from five survey questions that assessed participants' beliefs about their need for a mammogram based on symptoms, age, performance of breast self-exam, and personal motivation, and was scored on an abbreviated 4-point Likert scale.¹⁸

Location preferences for obtaining a mammogram were measured by the following close-ended question: “If you needed a mammogram and could choose where to get one, would you prefer a clinic or hospital (fixed facility), a mammography van (mobile mammography services), or no preference?” For the purposes of quantitative analysis, responses to this question were re-categorized as “prefers fixed facility” and “no preference or prefers mobile mammography services” because few women preferred mobile mammography services. Women who preferred a fixed facility to obtain a mammogram were then asked, via an open-ended question, “Can you tell me your reason for preferring a clinic or hospital (fixed facility)?” Three authors (JRS, YM, LM) evaluated these responses using the techniques of content analysis,^{19,20} which involved an individual independent review of the responses and generation of a list of common themes by each author. The authors then generated six categories based on these themes: *General quality of services*, *Privacy/comfort*, *Staff quality*, *Physical equipment and location of services*, *Multiple reasons*, and *Other* (including no reason given). These three authors then sorted responses into the categories independently and then reviewed as a group, with any differences in categorization resolved by consensus.

Analyses—We performed binomial regression to identify significant associations between Latinas' location preference for obtaining a mammogram and the socio-demographic, transportation, healthcare access and behaviors factors identified above, as well as perceived breast cancer risk and personal need for a mammogram. We performed two sets of analysis; the first with the referent group “prefer mobile mammography services or no preference,” and the second with the referent group “no preference,” excluding the women (n=9) who indicated that they preferred the mobile mammography services.

Qualitative study

Procedures—Participants for the qualitative portion of the study (*Mujeres Móviles*) were recruited within two time periods that spanned 4 months (July-August 2014; Feb-March 2015) because of staffing needs and an effort to minimize disruption to mammography services workflow. Women were recruited and interviewed until thematic saturation occurred.^{21,22} Eligibility criteria for this study included Latinas 40 years or older obtaining a mammogram on the Seattle Cancer Care Alliance's mobile mammography services in the Seattle metropolitan area. Fliers advertising this study were distributed to patients in the waiting area before obtaining a mammogram at a mobile mammography service and interested women provided their name and phone number for a telephone interview at a later date. Eligible patients interested in the study completed a brief questionnaire and a 20-30 minute audio-recorded phone interview. Study participants were given a \$20 gift card for their participation. All materials were in English and Spanish, depending on participants' preferences.

Instrument—Participants in *Mujeres Móviles* completed a brief sociodemographic survey that included questions regarding age, place of birth, years in the US, primary language, income, education level, and insurance (yes/no). Then, one of the authors (LM) conducted individual interviews (after the mammogram) in Spanish with participants to explore participants' initial perceptions prior to obtaining a mammogram and their experiences with mobile mammography services. Questions focused on eliciting participants' positive and

negative experiences obtaining a mammogram using mobile mammography services, and recommendations for improving these services. Questions included “What was your experience with the mobile mammography service?”, “Do you plan to talk to your friends and/or family about your experiences?” and “what suggestions do you have to improve the mobile mammography service?”

Analyses—The audio-recorded interviews were transcribed verbatim and translated from Spanish to English. The transcriptions were then uploaded to Atlas.ti. Baseline data were electronically abstracted and then also uploaded to Atlas.ti. The constant comparison method was used among two authors (LM, YM) who served as coders. Content analysis with deductive and inductive approaches was used to identify evolving themes from the data. A code book was developed and finalized to categorize different ideas that were linked to a specific theme. The coders met regularly during data collection and analysis to discuss and come to a consensus about emerging themes.

Results

¡Fortaleza Latina! study population characteristics

Table 1 summarizes the sample characteristics of the women in the quantitative portion of this research (¡Fortaleza Latina! study). Less than 1% of women had missing data for the variables of interest, with the exception of household income, which was not reported by 18% of study participants. Analyses were conducted with and without income adjustment, with similar findings. Therefore, income was excluded from the regression analysis. Overall, most of the population was Spanish-speaking (91.8%, n=494), unemployed (53.6%, n=285), had less than a high school education (61.3%, n=326) and were married (59.1%, n=289). Additionally, Latinas participating in this study tended to have a moderate self-perceived risk for breast cancer (51.5%, n=276) and a high self-perceived need for a mammogram (82.1%, n=441). Most women were satisfied with public transportation (71.9%, n=373), and 87.3% (n=468) reported household automobile ownership.

Of the 538 women, most (92.4%) reported never obtaining a mammogram at a mobile mammography service (data not shown). More than half of participants (51.3%, n=276) indicated that they preferred a fixed facility for obtaining a mammogram, while the remaining 1.7% (n=9) and 46.3% (n=249) reported preferring mobile mammography services and having no preference, respectively.

Reasons for fixed facility preference for obtaining a mammogram among ¡Fortaleza Latina! participants

Women who preferred receiving a mammogram in a fixed facility were asked why they had this preference (Table 2). Concern about privacy and comfort was the most frequently given reason for preferring a fixed facility (15.6%, n=84), followed by multiple reasons or a reason not otherwise specified (13.2%, n=71) and concerns about general quality (10.6%, n=57). Staff quality was a concern for some women (6.7%, n=36), and others cited the physical equipment and location of services (5.2%, n=28) as the reason for preferring a fixed facility.

When asked to compare the overall quality of a mammogram performed at a fixed facility with a mammogram performed at a mobile mammography service, 51.3% (n=276) felt that the quality was equal, 33.1% (n=178) felt that the quality at the clinic or hospital was better, 0.4% (n=2) believed the quality at the mobile mammography service was better, and 14.9% (n=80) were unsure (data not shown).

Predictors of location preferences for obtaining a mammogram

Table 3 summarizes the binomial regression of sociodemographic, health care access, transportation, and breast cancer belief variables by location preference for obtaining a mammogram, with the referent group being “no preference/prefers mobile mammography services.” This analysis showed that women with a history of a prior mammogram had 1.7 times greater odds of expressing no location preference for obtaining a mammogram or preference for obtaining a mammogram using mobile mammography service versus women with no history of a prior mammogram. When the nine women who indicated that they preferred mobile mammography services were excluded, the relationship between a history of a prior mammogram and location preference was no longer statistically significant. Other variables showed no significant association with location preferences for obtaining a mammogram, which remained true when the women who preferred mobile mammography services (n=9) were excluded.

Mujeres Móviles study population characteristics

Thematic saturation occurred after interviewing 18 women for Mujeres Móviles, the qualitative portion of the study. Demographics for those participants are summarized in Table 1. Overall, the demographics for both the ¡Fortaleza Latina! and Mujeres Móviles study populations were similar; most women spoke Spanish as their primary language, earned less than \$30,000 a year, and had no health insurance. Similar to ¡Fortaleza Latina! participants, many participants of Mujeres Móviles (38.9%, n=7) declined to answer questions about their income. The median age of participants was 57 years. Of the women who participated in the Mujeres Móviles study, approximately a third (33.3%, n=6) had more than one mammogram using a mobile mammography service.

Opinions before experiences with mobile mammography service

Similar to women in the ¡Fortaleza Latina! study, women in the Mujeres Móviles study with no prior history of a mammogram reported worrying about the staff and general quality, privacy and comfort, and physical equipment and location of mobile mammography services before they had a mammogram at a mobile service. Many women formed these negative opinions about mobile mammography services after talking with friends and family. In regards to the staff and general quality, one woman stated,

“I had heard that... they [mobile mammography services] are dirty, they aren't appropriate, that all of the doctors are all trainees... they are people that are talking with others. And they didn't know very much, that they aren't secure.”

In regards to privacy and comfort, one woman stated, “It [the clinic (fixed facility)] feels more private and more secure.” In regards to physical equipment and location, another woman stated, “They [the clinic (fixed facility)] must have better equipment than the van.”

Opinions after experience with mobile mammography services

Despite these initial negative perceptions, most women in the Mujeres Moviles study reported a positive experience after their visit to the mobile mammography service. In contrast to their initial concerns, women reported the highest satisfaction with privacy and comfort after their experience with mobile mammography services. For example, one woman stated:

“Honestly, I liked everything... everything is air conditioned, on the van...I was even talking to my husband. They have it so nice there. It didn't even seem like a van. It seems like a well-established office.”

In contrast with their initial concerns, women also reported satisfaction with general and staff quality after their experience with mobile mammography services.

For example, one woman stated,

“The young lady [staff] was very talkative with me, trustworthy, friendly.”

Professional manners were also appreciated by participants, with one woman saying, “I saw that everything was very professional...everything clean and everything very professional.”

Another participant echoed this sentiment:

“It is something delicate, one's breasts. And I think that it's good, to be a person who is trained to do it [mammography], because when they move your breasts it hurts when they pull wrong and that woman [mobile mammography staff] was very... with much care and very professional. And that is what I like this time. I was very satisfied; I remained very satisfied today with the service.”

Recommendations for the Mobile Mammography Services

Despite overall satisfaction with their experiences obtaining a mammogram on the mobile mammography services, some women had recommendations to improve the experience. Some women cited issues with its location and schedule and suggested outreach to local businesses to increase awareness of mobile mammography services.

For example, one participant stated:

“I think that, notifying the people...for example the Safeway that is close by and there were other pharmacies. Inform all of the people that are there, to the managers.”

Another woman suggested informing primary care doctors about the location and schedule to increase awareness. Finally, women in the study acknowledged the common negative perception of mobile mammography services among Latinas with no history of a prior mammogram using mobile mammography services and suggested addressing misperceptions and fears prior to their appointments. One woman stated,

“Well I think that [I'd] inform them to not be fearful. That it [the mobile mammography service] is something practical, something good, and something quick. If they are embarrassed, nobody will see them. Simply make their

appointment, to [go to] the doorbell, and ring the doorbell, and they will open the door and they'll get on alone and others will not see them. There alone, leaves another person. Everything was very good. One enters, and another leaves.”

Discussion

Mobile mammography services have been proposed as a way to increase the screening mammography rates in medically underserved communities.²³⁻²⁷ Yet, previous studies have yielded conflicting results regarding whether these services increase screening mammography among Latinas.^{6,10} These findings suggest a need to address Latinas' preferences and attitudes about mobile mammography services, before introducing or continuing this service.

We found that more than half of Latinas participating in the ¡Fortaleza Latina! study preferred a fixed facility for obtaining a mammogram. These women expressed concerns about the privacy and comfort of mobile mammography services as well as general quality, the quality of the staff and equipment, and the location of services. Similarly, participants in the Mujeres Móviles study reported initial apprehension about the quality, staff, and privacy and comfort of mobile mammography services before using these services to obtain a mammogram. To note, our findings overall contradict those of Derosé et al.,⁹ who found that the majority of Latina participants were comfortable using mobile mammography services. They were however in alignment with Chen et al., who found that women expressed concern about the quality of mobile mammography services when compared with fixed facilities.¹¹ The differences in findings between our and other studies could be due to geographic region (Los Angeles versus Pacific Northwest), year of data collection (1990s vs 2010s), and connection of mobile mammography services to community versus hospital organizations. For example, the mobile mammography service (a van) used in the Mujeres Móviles study was affiliated with an NCI-designated cancer center (the Seattle Cancer Care Alliance) and its reputation in the community may have helped overcome initial concerns Latinas with no prior history of a mammogram had with these services. These institutional affiliations may have the added benefit of improving outcomes of Latinas recalled from screening and diagnosed with cancer by facilitating continuity with higher levels of care that would further help build the mobile mammography services' reputation in the community. Future work is warranted to explore how differences in mobile mammography service affiliation and other differences impact use among underserved populations. In addition, the results of this study will be shared with stakeholders to raise awareness to improve perceptions of these services among Latinas.

Sociodemographic factors, health care access, transportation, and beliefs about breast cancer were largely not associated with location preference for obtaining a mammogram. The notable exception was history of a prior mammogram, with those with no prior history of a mammogram preferring a fixed facility. This pattern was reflected in our qualitative findings. Specifically, we found that despite initial concerns, participants in our qualitative study were very satisfied with the quality of the services and personnel. Indeed, they explicitly referenced how their experiences contrasted their initial concerns.

This study has limitations. First, we used separate samples for the quantitative and qualitative aspects of this study. While the two samples shared similar demographic characteristics, women in both studies may have differed by factors not measured. Second, we also note possible selection bias in our qualitative sample, inherent in all qualitative research, and suggest confirmation of our findings with other methods in future research. Our sample size for the qualitative portion of our study was within the range of previous qualitative research^{28,29} and we used sequential (quantitative-qualitative), emergent (i.e. post-hoc/not planned), predominantly quantitative-focused mixed method design, to interpret our quantitative survey results through participants' perspectives rather than our own explanations for various reasons Latinas believe the quantitative results occurred.¹⁶ Finally, our analysis uses cross-sectional data. Thus, some socio-demographic data (e.g., insurance status, income) represent a single static time point that may not reflect the women's typical status.

In summary, many Latinas prefer a fixed facility to obtain a mammogram because of concerns about the quality, safety, and privacy of mobile mammography services. Future breast cancer screening programs that plan to use mobile mammography services should first investigate the target community's perceptions about mobile mammography services, and consider ways to address concerns about such issues as quality, safety, and privacy.

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Take Home Points

1. Latinas in this sample prefer to obtain their mammograms at a fixed facility, primarily because of concerns about privacy and quality with mobile mammography services.
2. Even Latinas with no history of a prior mammogram were more likely to prefer a fixed facility over a mobile facility.
3. Latinas who used the mobile mammography services associated with an academic medical center and comprehensive cancer center had favorable reactions to the quality, safety, and privacy of the service.
4. Future breast cancer screening programs planning to use mobile mammography services as a strategy to increase screening mammography rates in a community may be well served to first investigate and address the target community's perceptions about these services.

Table 1
Population Characteristics of ¡Fortaleza Latina! and Mujeres Móviles Study Participants

	¡Fortaleza Latina! (n=538)	Mujeres Móviles (N=18)
	Median (range)	
Sociodemographics		
Median age in years (range)	50 (42-74)	57 (40-67)
Median years in the US (range)	22 (5-67)	22 (3-54)
	N (%)	N (%)
Place of birth		
Mexico	435 (80.9%)	17 (94.4%)
Other	103 (19.1%)	1 (5.6%)
Primary language spoken		
Spanish	494 (91.8%)	17 (94%)
Not Spanish	44 (8.2%)	1 (6%)
Employment		
Employed	247 (46.4%)	-
Unemployed	285 (53.6%)	-
Income		
Less than \$30,000	370 (68.6%)	7 (38.9%)
\$30,000 or more	71 (13.2%)	0 (0.0%)
No answer	97 (18.0%)	11 (61.1%)
Education		
< High school	326 (61.3%)	9 (50%)
High school	206 (38.7%)	9 (50%)
Marital status		
Married/living with partner	289 (59.1%)	-
Other	200 (40.9%)	-
Health Care Behaviors and Access		
Usual place of care		
Hospital/Emergency Dept.	44 (9.3%)	-
Clinic	430 (90.7%)	-
Insurance status		
Insured	148 (27.6%)	8 (33.3%)
Uninsured	389 (72.4%)	12 (66.7%)
History of a prior mammogram		

	¡Fortaleza Latina! (n=538)	Mujeres Móviles (N=18)
	Median (range)	
Yes	399 (74.2%)	-
No	138 (25.7%)	-
Transportation		
Public transport satisfaction		
Satisfied	373 (71.9%)	-
Not satisfied	146 (28.1%)	-
Public transport use		
Yes	220 (41.1%)	-
No	315 (58.9%)	-
Household car ownership		
Yes	468 (87.3%)	-
No	68 (12.7%)	-
Breast Cancer Beliefs (summary score)		
Perceived breast cancer risk		
Don't know	29 (5.4%)	-
Low	151 (28.2%)	-
Moderate	276 (51.5%)	-
High	80 (14.9%)	-
Perceived need for mammogram		
Low need/unsure	42 (7.8%)	-
Moderate need	54 (10.1%)	-
High need	441 (82.1%)	-

Table 2
Reasons for preferring a fixed setting for mammogram among ;Fortaleza Latina!
participants

	Frequency	Percent
Prefers mobile mammography service/no preference	249	46.3
No preference	9	1.7
Prefers fixed facility	276	51.3
Privacy and comfort	84	15.6
Multiple reasons, or reason not otherwise specified	71	13.2
General quality	57	10.6
Staff quality	36	6.7
Physical equipment and location of services	28	5.2
Total	534	100

Table 3
Predictors for preferring a fixed facility to obtain a mammogram among ;Fortaleza
Latina! participants (n = 538)

Sample Characteristics	OR (95% CI)	P
Sociodemographics		
Age *	1.0 (0.9, 1.0)	0.687
Years in US	1.0 (0.9, 1.0)	0.201
Place of Birth		
Mexico	1.1 (0.6, 1.8)	0.879
Other	--	-
Employment		
Employed	0.9 (0.6, 1.3)	0.457
Unemployed	--	-
Education		
< High school	1.5 (0.9, 2.3)	0.070
High school	--	-
Marriage		
Married/living with partner	1.1 (0.7, 1.6)	0.733
Other	--	-
Health Care Access and Behaviors		
Usual place of care		
Hospital/Emergency Dept.	1.0 (0.5, 2.0)	0.931
Clinic	--	-
Health insurance status		
Yes	0.9 (0.5, 1.4)	0.551
No	--	-
History of a prior mammogram		
Yes	1.7 (1.11, 2.66)	0.041
No	--	-
Transportation		
Public transport satisfaction		
Satisfied	1.2 (0.8, 1.9)	0.487
Not satisfied	--	-
Public transport use		
Yes	1.1 (0.8, 1.7)	0.539
No	--	-

Sample Characteristics	OR (95% CI)	P
Household car ownership		
Yes	0.63 (0.35, 1.13)	0.121
No	- -	-
Breast Cancer Beliefs (summary scores)		
Perceived need for a mammogram	0.90 (0.66, 1.23)	0.496
Perceived breast cancer risk	1.66 (0.73, 3.79)	0.227

*
presented as a continuous variable