Reducing Muslim mammography disparities: Outcomes from a religiously tailored mosque-based intervention

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Background

- Breast cancer is the second leading cause of cancer death in women
- In 2015, while 65.3% of U.S. women above 40 have had a mammogram, these rates have historically been disproportionally low in racial and ethnic minorities
- Muslim women have low rates of mammography. For example:
  - 37 % of urban American Muslim women did not obtain a mammogram in the last 2 years
  - Only 58.1% Arab American women reported having a mammogram every 1-2 years
  - South Asian American women have a 40.3% rate of obtaining a mammogram in the last 2 years.
- 3 domains for low mammography rates - access, cultural & religious beliefs, and interpersonal factors
- To date, there are no effective theoretical models about how to use religion-related factors to increase mammography screening rates for women.

Objective

- To describe the design of, and participant-level outcomes related to, a religiously-tailored peer-led group education program that addressed mammography-related barrier beliefs of American Muslims.

Methods

Intervention:

- CBPR methods were used including multi-disciplinary community advisory board
- Phase 1 - Community survey (n=240)
- Phase 2 - Mosque based FG's (n=50) with women from mosques to identify salient behavioral, normative and control beliefs regarding mammography.
- Phase 3 - KI Interviews with women from mosques to elicit ideas about intervention design.
- Phase 4 – Mosque based intervention design and deployment
  - Led by religiously and ethnically concordant peer educators
  - The classes involved facilitated discussions and guest-led didactics covering religion and health, mammography, health care access
  - Survey data from group education participants was collected pre-intervention, post-intervention, 6 months post-intervention, and one-year post-intervention. Survey instruments recorded changes in mammography intention, likelihood, confidence and resonance with barrier and facilitator beliefs.

Measures:

- Survey data collected pre-intervention, post-intervention, 6 months post-intervention, and one-year post intervention
- Survey instruments recorded changes in mammography intention, likelihood, confidence and resonance with barrier and facilitator beliefs

Theory –3R Model:

The structural elements and messages of the classes tackled barrier beliefs in at least one of 3 ways:

- Reprioritizing- introducing another religious belief that has greater resonance with participants such that the barrier belief is marginalized,
- Reframing the belief within a religious worldview such that it is consistent with the health behavior desired, and
- Reforming- using a religious scholar to provide "correct" interpretations of religious doctrine.

Results

Table 1. Sociodemographic characteristics of study participants, N = 58

| Race/Ethnicity (n = 52)	%
South Asian	55.8
Arab/Arab American	34.6
Marital Status (n = 55)	**%**
Married	89.1
Widowed	3.6
Divorced/Separated	7.3
Country of Origin (n = 54)	**%**
South Asian	55.6
Arab World	25.9
United States	9.3
Education (n = 56)	**%**
Less than High School	12.5
High school diploma/GED	19.6
Associates Degree	19.6
Bachelor's level or equivalent	33.9
Advanced degree (post-baccalaureate, Masters, Doctoral)	14.3
Annual Income (n = 46)	**%**
Less than $20,000	40.0
$20,000 - $49,999	37.0
$50,000 - $74,999	13.0
$75,000 or more	13.0
Health Insurance (n = 51)	**%**
Yes	72.6
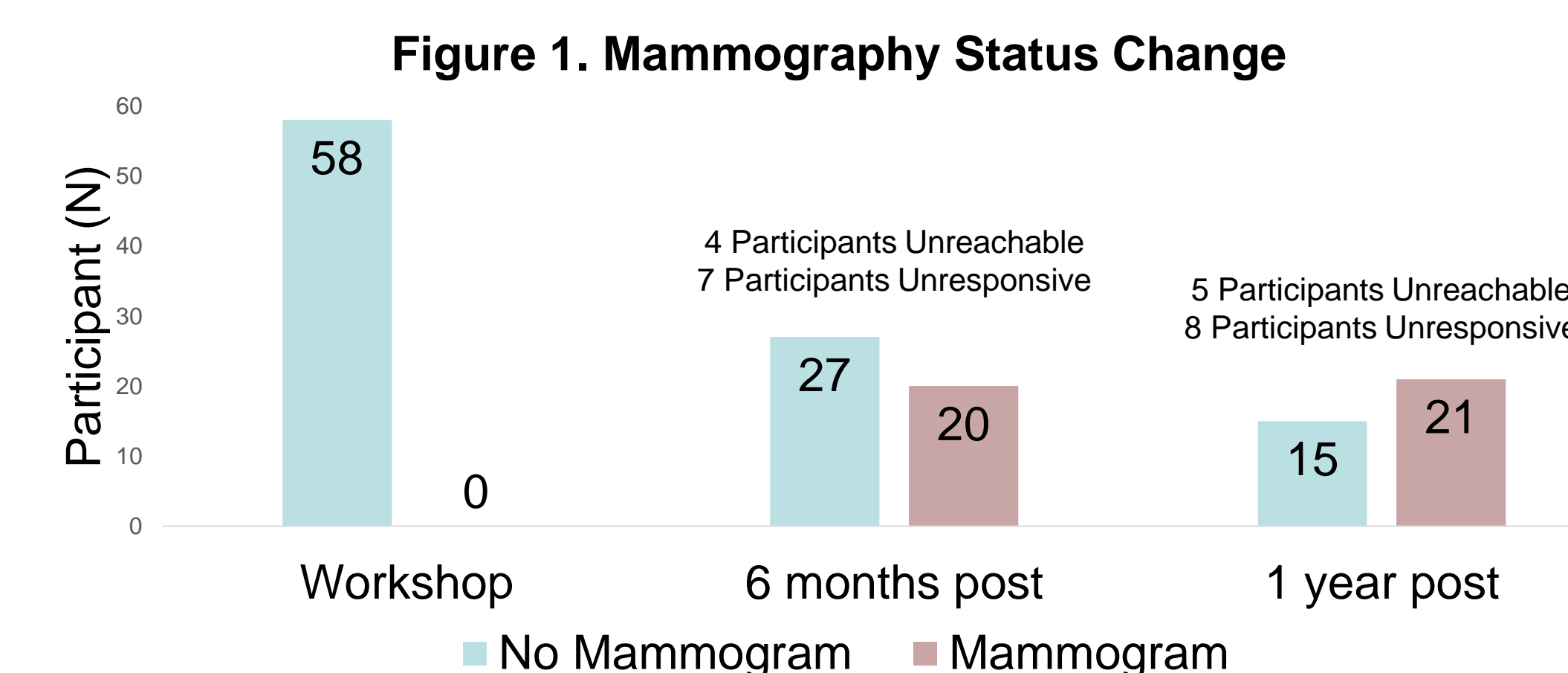
Table 2. Change in intention to receive a mammogram and other proxy measures

Measure	Mean Δ in Intention (P-Value)	
	Pre to Post	Pre to 6-month
Intention	0.19 (0.15)	0.02 (0.86)
Likelihood	0.29 (0.01)	0.18 (0.20)
Confidence	0.18 (0.24)	0.30 (0.10)

Table 3. Characteristics of women and how they impact their prime-ability to receive the intervention

Variable	Δ in Likelihood Pre-Post		Δ in Confidence Pre-6 month	
	Coefficient	p-value	Coefficient	p-value
Age	-0.02	0.92	0.29	0.10
Ethnicity	-0.15	0.32	0.19	0.27
Country of Origin	-0.18	0.21	-0.08	0.61
Duration in US	0.10	0.51	0.47	<0.00
Marital Status	0.33	0.02	-0.26	0.09
Level of Education	0.14	0.33	0.31	0.04
Income	0.38	0.02	0.16	0.37
Health Insurance	0.00	0.98	-0.14	0.39
Religiosity	-0.17	0.24	0.17	0.29
Barrier	-0.32	0.02	-0.33	0.03
Facilitator	0.01	0.92	-0.25	0.11
Mammography Knowledge	0.15	0.28	0.24	0.12
modesty	-0.01	0.96	-0.12	0.46
fatalism	-0.16	0.26	-0.34	0.02

Figure 1. Mammography Status Change

Participant (N): Workshop — No Mammogram 58, Mammogram 0. 6 months post — No Mammogram 27, Mammogram 20 (4 Participants Unreachable, 7 Participants Unresponsive). 1 year post — No Mammogram 15, Mammogram 21 (5 Participants Unreachable, 8 Participants Unresponsive).

■ No Mammogram   ■ Mammogram

Table 4. Change in Likelihood Pre-Post

Variable	Slope Δ	p-value
Country of Origin	-0.8640	0.02
Marital Status	0.9818	<0.00
Health Insurance	-0.5886	0.04
Modesty	0.0286	0.03
PMIR (Negative Religious Coping Subscale)	0.0510	0.14
Δ in Barrier Beliefs	0.0758	0.01

Table 5. Change in Confidence Pre-6 months

Variable	Slope Δ	p-value
Marital Status	-1.4815	0.02
Religiosity	0.0242	0.10
Δ in Knowledge	-0.4371	0.04

Discussion Points

- Analyses between pre-intervention and post-intervention responses concluded that there was a statistically significant increase in mean perception of likelihood to obtain a mammogram (0.29, P = 0.01).

- Ordinal logistic regression models comparing pre-intervention to post-intervention responses determined that barrier beliefs were the only significant predictor of a change in intention or likelihood to receive a mammogram. For every one unit decrease in barrier beliefs, the odds of being in a higher level of intention to receive a mammogram increase by 15.3%. Similarly, for every one unit decrease in barrier beliefs, the odds of being in a higher level of likelihood to receive a mammogram increase by 15.1%.

- Ordinal logistic regression models comparing pre-intervention to 6-month follow-up responses identified a Negative Religious Coping subscale, fatalism, and barrier beliefs as predictors of a change in confidence to obtain a mammogram. For every one unit decrease in the Negative Religious Coping subscale, the odds for a higher confidence in ability to obtain a mammogram increased by 23.5%. For every one unit decrease in fatalism, the odds for a higher confidence in ability to obtain a mammogram increased by 16.6%. For every one unit decrease in barrier beliefs, the odds for a higher confidence in ability to obtain a mammogram increased by 19.1%.