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ORIGINAL PAPER

Testing a Religiously Tailored Intervention with Somali American Muslim Women and Somali American Imams to Increase Participation in Breast and Cervical Cancer Screening

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Abstract
Somali American women have low rates of breast and cervical screening. This research aimed to test the feasibility and impact of religiously tailored workshops involving Somali American Muslim women and male imams to improve intention to undergo breast or cervical cancer screening. Religiously tailored workshops addressing cancer screening (each approximately 3 h in length) were conducted with 30 Somali American women and 11 imams. Pre- and post-test surveys measured attitudes toward screening, screening intention, and workshop experience. The workshops were feasible, and both the women and the imams found the workshops enjoyable as well as informative. The discussions of religiously tailored messages had a positive impact on attitudes toward cancer screening, and, for the women, a positive impact on intention to screen. Religiously tailored messages can be an important community asset for engaging Somali American Muslim women around the value of breast and cervical cancer screening.

Keywords Cancer screening · Breast · Cervical · Religious · Immigrant · Muslim · Somali · Qualitative · Focus group

Background

Over one-quarter of a million Somalis have settled in North America [1], and Minnesota is home to between 50 and 80,000 Somali Muslims, which is the largest population of Somali Muslims in North America. Somali American Muslim women develop and die from cervical cancer at among the highest rates in the world, and have similar rates of breast cancer as other US women [2]. However, breast and cervical screening rates among Somali American Muslim immigrants are alarmingly low, with reported rates as low as 29% for mammography and 25% for pap tests at urban clinics [3], compared with 72% and 82% respectively for the general US female population [4]. Lack of screening contributes to preventable late-stage diagnoses, increased treatment burden, and increased mortality [5–7].

There are challenges to overcome in engaging the Somali American Muslim community in undertaking preventative

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health care activities [8, 9], including cancer screening [10–12]. Similar challenges have been reported for the approximately 5–7 million Muslims in the US [13, 14], as well as for Muslim women in the UK [15]. The multiple barriers that impact screening rates among Somali American Muslims have not been fully addressed by existing interventions, which contributes to persistent racial disparities in breast [16, 17] and cervical cancer [16, 18] screening. Barriers include limited health literacy [19], lack of knowledge about cancer [20, 21], patient concerns regarding pain and provider perceptions associated with female circumcision [20, 22], as well as cultural and religious beliefs that can be construed to discourage medical screening [19, 23–26]. Religion-based barriers include concerns about modesty, where it is considered inappropriate to show private parts of the body to others, including medical providers [10, 12, 21, 27]. Modesty concerns among Somali American women can be partially mitigated by having a female or Muslim doctor [21], as indicated by a report of increased screening with female physicians [28]. The cultural/religious belief that disease and its progression is the will of God also introduces some reticence toward screening [10, 27, 29, 30]. Similarly, the reported belief that worship practices and faith protect and diminish disease risk [11, 31] negatively impacts screening behaviors [29, 32].

Despite the range of barriers to breast and cervical cancer screening, research studies have indicated that Somali American women are interested in taking part in screening [21]. Cultural adaptation in screening promotion efforts can be effective in engaging ethnic minorities [33] and may help improve screening for Somali women. Religion is seen as a key part of health and wellness in the Muslim faith, due to a 'God-centered' view of health and illness [34], and cultural adaptation in screening that involves Islamic religious leaders, or imams [35], may help to address disparities [36]. Addressing religion-attributed barriers for Somali American Muslims by using religiously tailored messages in support of screening may increase the acceptability of screening messages [27]. In particular, views on modesty [10, 12, 21, 27], and pre-destination [10, 27, 29, 30], can be countered through health promoting messages that are grounded in Islamic values [27].

Previous research has identified religiously tailored messages that address religiously informed barriers to breast and cervical cancer screening [27]. Although the literature tends to position religion as a barrier to screening [29], it can also serve as an important cultural asset which may be leveraged to promote screening [12] and to provide support in dealing with cancer [37]. In this research study, religiously tailored messages were tested in the form of two workshops to help promote breast and cervical cancer screening. One workshop was held with Somali American women, and the other workshop was held with imams who, as spiritual leaders of influence, may be able to share such messages through a variety of mosque communities. The aim of the research was to test the feasibility and impact of these workshops on both groups of participants. In this paper, we present findings from a pilot experiment testing the delivery of these religiously tailored messages in community-based workshops to Somali American Muslim women and male imams.

Methods

Procedures

Religiously tailored messages were developed through a process of identifying faith-attributed barriers [10] and partnering with a local mosque in a major metropolitan area to develop brief videos to address interpretation of faith. The messages were previously tested for acceptability with groups of Somali American women and men and found to be relevant and impactful [27]. The messages addressed the central importance of Islamic values promoting a balance between mind, body, and spirit, and are summarized in Table 1.

Participants attended one 3-h-long religiously tailored workshop. 3 h allowed for video content to be presented, facilitated discussions, time to gather over food and tea and breaks for prayer. The video content was presented, and participants were invited to discuss the value of breast and cervical cancer screening and the role of religious values in relation to encouraging cancer screening. There were three videos, running between 5 and 7 min long each. Interpretations of religion that may have been barriers to uptake were also addressed through discussions following each video, where religiously informed barriers to screening such as modesty and predestination, and counter health promoting messages, were discussed. The messages and key areas of discussion were developed in collaboration with community partners, and had been tested for feasibility [27]. A summary of the messages is presented in Table 1: The workshops were facilitated by Imam Sharif Mohamed, who is a member of the research team and who developed the messages in collaboration with others on the team [27].

Participants

Somali American women were recruited through a local mosque and were invited to participate if they were interested in learning more about breast or cervical cancer screening. Outreach was conducted in the community by the mosque, and 30 women agreed to participate in one workshop. Current self-reported screening status was collected but was not used as an inclusion criterion, so women could attend regardless of whether they were up to date on

Table 1 Key religiously attributed barriers and messages

Religiously attributed barrier	Religiously-informed barrier belief	Religiously tailored screening promoting message
Modesty	It is immodest to have breast or cervical cancer screening It is not modest to show private parts of your body to others It is not modest to show private parts of your body to a male or non-Muslim doctor	Islam promotes modesty in both intention and action. Talking about your body and receiving care is not being immodest in the right context, such as with a trusted and respectful medical provider addressing breast or cervical cancer screening
Faith practice	Observance of faith before concerns of body and mind	Islam teaches a person to see their mind, body, and soul in a holistic manner, to keep in balance and in interaction with the world. This would include care of the person through actions such as screening for breast and cervical cancer
Predestination	Cancer is given by Allah, or God, and is your fate Cancer is the result of the will of Allah Illness may be caused by a lack of faith	A belief in predestination does not prevent one from striving to ward off harm. Cancer screening can promote a balanced and careful life that respects the will of Allah
Preventative health care	Muslims are protected from cancer by faith Cancer is a Western disease and not something that happens in our community	Prescreening for diseases, such as breast and cervical cancer, can be an important part of living a healthy, balanced lifestyle and is consistent with Islamic principles Screening can be a faithful thing to do Islam values support prevention being better than cure

screening for breast or cervical cancer. Additionally, previous qualitative findings have indicated that prior screening experience may be a deterrent to future screening [27], and there is no current data that tests if prior screening is predictive of future screening by Somali women. By including those who have, and those who have not previously engaged in screened, we aimed to test feasibility with a diverse range of participants. Potential participants were only excluded if they considered the topics of breast or cervical cancer screening to be distressing; however, none were excluded from the study.

Local imams were also invited to attend a workshop with the same content, but the focus was around educating imams and encouraging local conversations and dialogue at their own mosques. A total of 11 local imams were recruited to participate in one workshop, representing 11 different mosques in the community.

Measures

Participants completed surveys developed by the research team before and after the workshop, and were not tested for psychometric properties. The surveys assessed demographics, screening experiences, and religiously informed beliefs about screening, as well as the experience of the workshop itself. Surveys were translated into Somali and available in either Somali or English. A bilingual research assistant was present to assist with reading the surveys for those who had limited literacy.

Statistical Methods

Demographic and survey results were summarized using descriptive statistics (means and standard deviations [SD] or counts and percentages). The research team chose to record responses using three-item scales, indicating yes, no, or maybe. Change in each item on the questionnaire from before to after the workshop was assessed by McNemar's exact tests. In general, there were very few "maybe" responses (with the exception of question 2); therefore, "maybe" was grouped with the unfavorable response for each question. SAS v.9.4 (SAS Institute Inc., Cary, NC) was used for analysis and p values < 0.05 were considered statistically significant.

Ethical Approval

This study was reviewed and approved by the appropriate Institutional Review Board. Informed consent was obtained from individual participants.

Findings

Participant Demographics

The Somali American female participants ($n = 30$) were on average 47.3 ± 11.1 (mean $\pm$ SD) years old, and 73% (22/30) had less than a high school degree (see Table 2). All participants were born outside of the U.S. and, on average, had lived in the U.S. for 11.6 ± 5.6 years. Notably, 93% (28/30)

Table 2 Demographics and baseline characteristics of sample

	Somali American female participants	Imam participants[a]
N	30	10
Age	47.3 ± 11.1 (range 30–70)	52.5 ± 10.0 (range 40–70)
Highest education completed		
Never attended school	8 (27%)	0 (0%)
Some primary or secondary school	14 (47%)	1 (10%)
→Highest grade completed	7.4 ± 3.2 (range 2–12)	2 (20%)
Graduated from high school/GED	8 (27%)	5 (50%)
Some college/graduated from college	0 (0%)	4 (40%)
More than a bachelor's degree	0 (0%)	0 (0%)
Born in the USA		
Yes	0 (0%)	0 (0%)
No	30 (100%)	10 (100%)
→If no, number of years in the USA	11.6 ± 5.6 (range 1–23)	15.8 ± 3.8 (range 8.5–20)
Has a regular doctor		
Yes	28 (93%)	6 (60%)
No	2 (7%)	4 (40%)
Has health insurance		
Yes	28 (93%)	
No	2 (7%)	
→If yes, type of health care coverage		
Medicare	1 (3%)	
Medicaid/MA	24 (80%)	
State provided insurance	3 (10%)	
Insurance through employer	0 (0%)	
Insurance purchased privately	0 (0%)	
Mammogram in last 3 years		
Yes	14 (47%)	
No	16 (53%)	
Pap smear in last 3 years		
Yes	19 (63%)	
No	11 (37%)	

Values are *n* (%) or mean ± SD (range)

[a]Missing $n = 1$ imam response

had a regular doctor, 93% (28/30) reported having health insurance, about half reported having a mammogram in the past 3 years (14/30, 47%), and just under two-thirds reported having a pap smear in the past 3 years (19/30, 63%).

The imams ($n = 11$ total, $n = 10$ filled out the surveys) were on average 52.5 ± 10.0 years old. Four (40%) had some college or a college degree, and an additional 5 (50%) had graduated from high school. Six (60%) had a doctor they regularly saw. All were born abroad.

Impact on Attitudes Toward Cancer Screening

Participants were asked to rate their agreement with a series of statements regarding their attitudes toward cancer screening. Both before and after the workshop, all female Somali American participants (30/30, 100%) reported that if they had breast or cervical cancer, it would be best to find out as soon as possible (Table 3). The other three items on the survey had slight changes from before to after the workshop, although none were statistically significant. Compared with before the workshop, after the workshop more participants agreed that cancer screening could detect cancer before they would notice symptoms themselves (before: 63% vs. after: 80%; $p = .06$), and more disagreed that having a cancer screening could be bad for them or cause them harm (before: 70% vs. after: 87%; $p = .18$). The results were fairly similar for the imam participants (Table 3).

Table 3 Change in perceptions of breast and cervical cancer screenings from before to after the workshop

	Female Somali American participants			Imam participants		
	Pre	Post	*p* Value	Pre[a]	Post[a]	*p* Value
N	30	30		10	10	
If I [a woman] had breast or cervical cancer, it would be best to find out as soon as possible			1.00			1.00
No/maybe	0 (0%)	0 (0%)		2 (20%)	1 (10%)	
Yes	30 (100%)	30 (100%)		8 (80%)	9 (90%)	
Cancer screening can detect cancer before I [a woman] might notice any symptoms myself [herself]			0.06			0.25
No/maybe	11 (37%)	6 (20%)		4 (40%)	1 (10%)	
Yes	19 (63%)	24 (80%)		6 (60%)	9 (90%)	
Having a cancer screening could be bad for me [a person], or cause me [them] harm[a]			0.18			1.00
No	21 (70%)	26 (87%)		5 (56%)	6 (67%)	
Yes/maybe	9 (30%)	4 (13%)		4 (44%)	3 (33%)	
I plan to get a mammogram or pap smear in the next year			0.13			
No/maybe	6 (20%)	2 (7%)				
Yes	24 (80%)	28 (93%)				

Values are *n* (%). *p* values from McNemar's exact tests

[a]Missing $n = 1$ imam response

Impact on an Individual's Religiously Attributed Belief Barriers

Participants were also asked to rate their agreement with statements to reflect their individual beliefs about religious barriers, in particular whether screening was seen as immodest or as going against the participant's beliefs about their faith. The majority of female Somali participants reported that it did not go against their faith to undergo breast or cervical cancer screening, and the workshop did not significantly change the percentages of those that did not agree that it goes against their faith or would be an immodest thing to have (Table 4). After the workshop, more imam participants indicated that it would not be immodest for women to undergo breast or cervical cancer screening, and that it did not go against their faith to support women undergoing cancer screening.

Experience of Workshop

The workshop did lead to changes in behavioral intention. All 30 women who attended the workshop reported learning beneficial information and said that attending the workshop made it more likely that they would get screening.

Table 4 Change in perceptions of breast and cervical cancer screenings from before to after the workshop

	Female Somali American participants			Imam participants		
	Pre	Post	*p* Value	Pre	Post	*p* Value
N	30	30		10	10	
Having breast or cervical cancer screening would be an immodest thing to do			0.69			0.25
No	25 (83%)	27 (90%)		7 (70%)	10 (100%)	
Yes/maybe	5 (17%)	3 (10%)		3 (30%)	0 (0%)	
It goes against my faith to undergo [support women undergoing] breast or cervical cancer screening			> 0.99			0.48
No	27 (90%)	26 (87%)		8 (80%)	10 (100%)	
Yes/maybe	3 (10%)	4 (13%)		2 (20%)	0 (0%)	

Values are *n* (%). *p* values from McNemar's exact tests

Overall, the workshops were very well received (Table 5). Almost all female Somali American participants (29/30, 97%) reported the workshop was enjoyable, and everyone (30/30, 100%) reported that they learned useful information and would recommend this workshop to a friend, and that attending the workshop made it more likely that they would get a mammogram or pap test in the next year (see Table 5). All of the imam participants who filled out the survey reported the workshop was enjoyable (10/10) and that they learned useful information. Almost all (9/10) reported they would recommend this workshop to a friend, and 9/10 said that they planned to share the information they learned in future sermons within their mosques.

Discussion

The aim of the research was to test the feasibility and impact of religiously tailored workshops in helping to promote breast and cervical cancer screening within the Somali Muslim community. One workshop was held with Somali American women, and the other workshop was with imams, who as spiritual leaders of influence may be able to share such messages through a variety of mosque communities and to reflect an important aspect of the wider social environment.

Our findings indicate that the workshops were feasible, and both the Somali American women and imams found the workshops enjoyable as well as informative. The discussions of religiously tailored messages addressing cancer screening had a positive impact on attitudes toward cancer screening, and, for the women, a positive impact on intention to screen.

That individual Somali American Muslim women have religiously attributed barriers to medical screening, including concepts of modesty, has been well established [19, 23–26]; however, in this sample, most of the women felt that screening was not an immodest thing to do even before the workshop. However, there was some increase in disagreement with the statement that 'having breast or cervical cancer would be an immodest thing to do' following the faith-message-based workshops. Thus, this sample likely was more open to and had more positive attitudes toward screening, which is supported by their higher-than-expected self-reported screening rates. The next challenge will be to test these messages and workshops with Somali American Muslim women who are not currently up to date with their cancer screening.

Table 5 Workshop feedback questions

	Female Somali American participants	Imam participants
N	30	10
The workshop was enjoyable		
No	0 (0%)	0 (0%)
Maybe	1 (3%)	0 (0%)
Yes	29 (97%)	10 (100%)
I learned useful information		
No	0 (0%)	0 (0%)
Maybe	0 (0%)	0 (0%)
Yes	30 (100%)	10 (100%)
I would recommend this workshop to a friend		
No	0 (0%)	0 (0%)
Maybe	0 (0%)	0 (0%)
Yes	30 (100%)	9 (90%)
Missing	0 (0%)	1 (10%)
Attending this workshop has made it more likely I will get a mammogram or pap test in the next year		
No	0 (0%)	
Maybe	0 (0%)	
Yes	30 (100%)	
I plan to share the content of the workshop today in my own sermons		
No		0 (0%)
Maybe		1 (10%)
Yes		9 (90%)

Values are *n* (%)

Attitudes toward screening also showed high positive baseline results. All 30 women agreed that if a woman had breast or cervical cancer it was best to find out as soon as possible, as measured by pre-workshop and post-workshop surveys, indicating positive attitudes toward breast and cervical cancer screening. This may indicate that there is more willingness and openness to screening than previously assumed, and that there may be a need to more carefully examine how other barriers impact screening intentions and uptake. Despite the positive attitudes and beliefs, the workshop still led to some changes in recognizing the value of early screening, with fewer women and imams indicating that screening may cause harm in post-workshop surveys than in pre-workshop surveys. These patterns will need to be replicated in a fully powered study with a more diverse sample.

This research was informed by social ecological approaches. These address the role of individual health behaviors, such as intention to undergo cancer screening, in the context of interpersonal, community, cultural, and structural barriers for engaging in the behavior [38] and offer an approach for comprehensive health change incorporating these variables [39]. Religiously tailored interventions are unique in that they correspond to all levels of social ecological approaches, due to the influence of religion on individual, social, organizational and environmental aspects of people's lives [40]. Specifically, we have engaged social cognitive theory (SCT), where reciprocal interactions among cognition, behavior, and the environment influence health behaviors or outcomes [41, 42]. A key emphasis in SCT in relation to health promotion has been the role of self-efficacy, although there has been less research done on the application of self-efficacy for ethnic and racial minorities [43]. For example, beliefs held at a group level, such as those held by a family or a religious community, can also influence health behaviors and may be even more influential than self-efficacy [44]. This study used religiously tailored messages to engage individuals with the goal of increasing self-efficacy. This study included imams because they represent an important part of the social environment, and their views may demonstrate the importance of the collective religious community in which Somali Muslim women are making screening decisions. It was anticipated that some of the women's religiously attributed barrier beliefs may, at times, be conflated with other cultural influences. Therefore, our model recognized imams as having an opportunity to further clarify the Islamic understandings of relevant issues, and in turn, could alter religiously attributed beliefs that were acting as a barrier to breast or cervical cancer screening.

In this study, imam participants reflected similar positive attitudes and beliefs, although they did show some increase in disagreement with the statement that 'having breast or cervical cancer screening would be an immodest thing to do' following the faith-message-based workshops. The workshop led to some changes in attitudes toward breast and cervical cancer screening, with more of the imams being likely to value early screening, and fewer feeling that screening may cause harm, as measured by the post-workshop surveys. The imam participants were also less likely to see screening as immodest following the workshop. The imam participants indicated their intention to incorporate the messages discussed into their future communication in their own faith communities, which highlights their engagement on this topic and potential willingness to become more involved in highlighting this issue in their own mosques and communities.

Limitations

This study was a feasibility study, with a focus on acceptability. A major limitation was that it did not assess whether participants engaged in clinically verified screening events following the workshops. It was also a self-selecting sample who appeared to have higher rates of self-reported screening and more positive attitudes about screening and beliefs than noted in the literature. Additionally, there may be a social desirability bias when providing feedback on a workshop facilitated by a religious leader, and this further reinforces the need to collect clinically verified screening events to assess the impact of such approaches. Future research could also benefit by testing a broader range of religiously attributed barrier beliefs, assessing the extent of participant religiosity and testing the role of both self and collective efficacy on screening behavior.

Conclusion

Religiously tailored messages can be an important community asset that can be used to support efforts to engage Somali American Muslim women in the value of breast and cervical cancer screening. Group-level community leaders, such as imams, can also be positively engaged in those efforts. Drawing on religiously tailored approaches in cancer screening efforts could offer more culturally relevant and meaningful content for Somali American Muslim patients and help address the cancer disparities facing the community. Future work is needed to test the impact of these messages in a more representative cohort of women and a broader range of contexts, such as in mosque sermons and clinics.

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Compliance with Ethical Standards

Conflict of interest No potential conflict of interest was reported by the authors.

References

1. Omar YS. Social integration and the sense of hope among Somali youth in Austrailia and the United States. Bildhaan: Int J. 2013;12:34
2. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. CA Cancer J Clin. 2011;61(2):69–90.
3. Minnesota Community Measures. Cedar Riverside People's Center|Minnesota HealthScores. http://www.mnhealthscores.org/medical-group/cedar-riverside-peoples-center. Accessed 3 Nov 2017.
4. CDC. CDC—cancer screening in the United States. https://www.cdc.gov/cancer/dcpc/research/articles/screening_us.htm. Accessed 8 Oct 2017.
5. Goldie SJ, Gaffikin L, Goldhaber-Fiebert JD, Gordillo-Tobar A, Levin C, Mahé C, et al. Cost-effectiveness of cervical-cancer screening in five developing countries. N Engl J Med. 2005;353(20):2158–68.
6. Peirson L, Fitzpatrick-Lewis D, Ciliska D, Warren R. Screening for cervical cancer: a systematic review and meta-analysis. Syst Rev. 2013;2(1):35.
7. US Preventive Services Task Force. Screening for breast cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2009;151(10):716.
8. Morrison TB, Wieland ML, Cha SS, Rahman AS, Chaudhry R. Disparities in preventive health services among Somali immigrants and refugees. J Immigr Minor Health. 2012;14(6):968–74.
9. Gele AA, Torheim LE, Pettersen KS, Kumar B. Beyond culture and language: access to diabetes preventive health services among Somali women in Norway. J Diabetes Res. 2015;2015:549795.
10. Raymond NC, Osman W, O'Brien JM, Ali N, Kia F, Mohamed F, et al. Culturally informed views on cancer screening: a qualitative research study of the differences between older and younger Somali immigrant women. BMC Public Health. 2014;14(1):1188.
11. Sewali B, Pratt R, Abdiwahab E, Fahia S, Call KT, Okuyemi KS. Understanding cancer screening service utilization by Somali men in Minnesota. J Immigr Minor Health. 2014;17(3):773–80.
12. Ghebre RGR, Sewali B, Osman S, Adawe A, Nguyen HT, Okuyemi KS, et al. Cervical cancer: barriers to screening in the Somali community in Minnesota. J Immigr Minor Health. 2014;17(3):722–8.
13. Hasnain M, Connell KJK, Menon U, Tranmer PA. Patient-centered care for Muslim women: provider and patient perspectives. J Womens Health. 2011;20(1):73–83.
14. Swan J, Breen N, Coates RJ, Rimer BK, Lee NC. Progress in cancer screening practices in the United States: results from the 2000 National Health Interview Survey. Cancer. 2003;97(6):1528–40.
15. Szczepura A, Price C, Gumber A. Breast and bowel cancer screening uptake patterns over 15 years for UK south Asian ethnic minority populations, corrected for differences in socio-demographic characteristics. BMC Public Health. 2008;8(1):346.
16. DeSantis CE, Siegel RL, Sauer AG, Miller KD, Fedewa SA, Alcaraz KI, et al. Cancer statistics for African Americans, 2016: progress and opportunities in reducing racial disparities. CA Cancer J Clin. 2016;66(4):290–308.
17. Ahmed AT, Welch BT, Brinjikji W, Farah WH, Henrichsen TL, Murad MH, et al. Racial disparities in screening mammography in the United States: a systematic review and meta-analysis. J Am Coll Radiol. 2017;14(2):157–65.
18. Dalton HJ, Farley JH. Racial disparities in cervical cancer: worse than we thought. Cancer. 2017;123(6):915–6.
19. Pavlish CL, Noor S, Brandt J. Somali immigrant women and the American health care system: discordant beliefs, divergent expectations, and silent worries. Soc Sci Med. 2010;71(2):353–61.
20. Carroll J, Epstein R, Fiscella K, Volpe E, Diaz K, Omar S. Knowledge and beliefs about health promotion and preventive health care among Somali women in the United States. Health Care Women Int. 2007;28(4):360–80.
21. Al-Amoudi S, Cañas J, Hohl SD, Distelhorst SR, Thompson B. Breaking the silence: breast cancer knowledge and beliefs among Somali muslim women in Seattle. Wash Health Care Women Int. 2015;36(5):608–16.
22. Downs LS, Scarinci I, Einstein MH, Collins Y, Flowers L. Overcoming the barriers to HPV vaccination in high-risk populations in the US. Gynecol Oncol. 2010;117(3):486–90.
23. Bigby J, Ko LK, Johnson N, David MMA, Ferrer B. A community approach to addressing excess breast and cervical cancer mortality among women of African descent in Boston. Public Health Rep. 2003;118(4):338–47.
24. Khaja K, Lay K, Boys S. Female circumcision: toward an inclusive practice of care. Health Care Women Int. 2010;31(8):686–99.
25. Degni F, Suominen S, Essén B, El Ansari W, Vehviläinen-Julkunen K. Communication and cultural issues in providing reproductive health care to immigrant women: health care providers' experiences in meeting the needs of Somali women living in Finland. J Immigr Minor Health. 2012;14(2):330–43.
26. Johnson CE, Ali SA, Shipp MP-L. Building community-based participatory research partnerships with a Somali refugee community. Am J Prev Med. 2009;37(6 Suppl 1):230-6.
27. Pratt R, Mohamed S, Dirie W, Ahmed N, VanKeulen M, Ahmed H, et al. Views of Somali women and men on the use of faith-based messages promoting breast and cervical cancer screening for Somali women: a focus-group study. BMC Public Health. 2017;17(1):270.
28. Morrison TB, Flynn PM, Weaver AL, Wieland ML. Cervical cancer screening adherence among Somali immigrants and refugees to the United States. Health Care Women Int. 2013;34(11):980–8.
29. Paisley J, Haines J. An examination of cancer risk beliefs among adults from Toronto's Somali, Chinese, Russian and Spanish-speaking communities. Can J Public Health. 2002;93(2):138–41.
30. Shirazi M, Shirazi A, Bloom J. Developing a culturally competent faith-based framework to promote breast cancer screening among Afghan immigrant women. J Relig Health. 2015;54(1):153–9.
31. Padela AI, Vu M, Muhammad H, Marfani F, Mallick S, Peek M, et al. Religious beliefs and mammography intention: findings from a qualitative study of a diverse group of American Muslim women. Psychooncology. 2016;25(10):1175–82.
32. Abdullahi A, Copping J, Kessel A, Luck M, Bonell C. Cervical screening: perceptions and barriers to uptake among Somali women in Camden. Public Health. 2009;123(10):680–5.
33. Escribà-Agüir V, Rodríguez-Gómez M, Ruiz-Pérez I. Effectiveness of patient-targeted interventions to promote cancer screening among ethnic minorities: a systematic review. Cancer Epidemiol. 2016;44:22–39.
34. Padela AI, Killawi A, Forman J, DeMonner S, Heisler M. American Muslim perceptions of healing key agents in healing, and their roles. Qual Health Res. 2012;22(6):846–58.
35. Padela AI, Killawi A, DeMonner S, Heisler M. The role of imams in American Muslim health: perspectives of Muslim community leaders in Southeast Michigan. J Relig Health 2011;50(2):359–73.
36. Padela A, Shanawani H, Greenlaw J. The perceived role of Islam in immigrant Muslim medical practice within the USA: an exploratory qualitative study. J Med Ethics. 2008;34(5):365–9.

37. Harandy TF, Ghofranipour F, Montazeri A, Anoosheh M, Bazargan M, Mohammadi E, et al. Muslim breast cancer survivor spirituality: coping strategy or health seeking behavior hindrance? Health Care Women Int. 2010;31(1):88–98.
38. Levano W, Miller JW, Leonard B, Bellick L, Crane BE, Kennedy SK, et al. Public education and targeted outreach to underserved women through the National Breast and Cervical Cancer Early Detection Program. Cancer. 2014;120:2591–6.
39. Richard L, Gauvin L, Raine K. Ecological models revisited: their uses and evolution in health promotion over two decades. Annu Rev Public Health. 2011;32:307–26.
40. Campbell MK, Hudson MA, Resnicow K, Blakeney N, Paxton A, Baskin M. Church-based health promotion interventions: evidence and lessons learned. Annu Rev Public Health. 2007;28(1):213–34.
41. Bandura A. Self-efficacy. New York: Wiley Online Library; 1994.
42. Bandura A. Social cognitive theory: an agentic perspective 1. Asian J Soc Psychol. 1999;2:21–41.
43. Sarkar U, Fisher L, Schillinger D. Is self-efficacy associated with diabetes self-management across race/ethnicity and health literacy? Diabetes Care. 2006;29(4):823–9.
44. Schaubroeck J, Lam SSK, Xie JL. Collective efficacy versus self-efficacy in coping responses to stressors and control: a cross-cultural study. J Appl Psychol. 2000;85(4):512–25.