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Qualitative evaluation of a codesigned faith-based intervention for Muslim women in Scotland to encourage uptake of breast, colorectal and cervical cancer screening

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ABSTRACT

Objectives This pilot study aimed to evaluate the acceptability of a codesigned, culturally tailored, faith-based online intervention to increase uptake of breast, colorectal and cervical screening in Scottish Muslim women. The intervention was codesigned with Scottish Muslim women (n=10) and underpinned by the reframe, reprioritise and reform model and the behaviour change wheel.

Setting The study was conducted online, using Zoom, due to the COVID-19 pandemic.

Participants Participants (n=18) taking part in the intervention and subsequently in its evaluation, were Muslim women residing in Scotland, recruited through purposive and snowball sampling from a mosque and community organisations. Participants were aged between 25 years and 54 years and of Asian and Arab ethnicity.

Design The study's codesigned intervention included (1) a peer-led discussion of barriers to screening, (2) a health education session led by a healthcare provider, (3) videos of Muslim women's experiences of cancer or screening, and (4) a religious perspective on cancer screening delivered by a female religious scholar (alimah). The intervention was delivered twice online in March 2021, followed 1 week later by two focus groups, consisting of the same participants, respectively, to discuss participants' experiences of the intervention. Focus group transcripts were analysed thematically.

Results Participants accepted the content and delivery of the intervention and were positive about their experience of the intervention. Participants reported their knowledge of screening had increased and shared positive views towards cancer screening. They valued the multidimensional delivery of the intervention, appreciated the faith-based perspective, and in particular liked the personal stories and input from a healthcare provider.

Conclusion Participatory and community-centred approaches can play an important role in tackling health inequalities in cancer and its screening. Despite limitations, the intervention showed potential and was positively received by participants. Feasibility testing is needed to investigate effectiveness on a larger scale in a full trial.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study's main strength is the novel use of a culturally appropriate, codesigned, faith-based intervention to tackle breast, colorectal and cervical cancer inequalities in an under-represented population.
⇒ The study used a community-centred and participatory approach and the intervention was designed and conducted in partnership with Muslim women.
⇒ The study was a pilot study with a qualitative evaluation and therefore cannot establish the effectiveness of the intervention.
⇒ Data highlighted positive perspectives on the intervention, although limitations to the sample have to be taken into account.

INTRODUCTION

Regular screening and early detection reduce breast, colorectal and cervical cancer mortality.[1] The UK has programmes for breast, colorectal and cervical screening.[2] However, current approaches to engaging participants lead to persistent socioeconomic and ethnic inequities in uptake . A third of the ethnic minority population of the UK is Muslim, and Islam is the second largest religion in the UK.[3] There are over 3 million Muslims in the UK, and they form an ethnically diverse population whose shared religion impacts their health beliefs and behaviours.[3] Among UK Muslims, 46% live in the most deprived areas based on the Index of Multiple Deprivation.[3 4] The proportion of people who take up screening is much lower in more deprived areas,[5 6] and cancer rates are increasing among ethnic minorities.[7–10] Moreover, women from ethnic minority backgrounds attend breast, bowel and cervical screening less often than white British women.[11–15] Although there is a dearth of

studies investigating cancer screening by religion in the UK and these data are not routinely collected, evidence indicates British Muslim women use breast and colorectal screening less often than white British women.[13 14 16] Data on 1.7 million individuals in two rounds of the Scottish Bowel Cancer Screening Programme (2007–2013) demonstrated lower uptake of bowel screening among South Asian groups, particularly Pakistani (55.5, 95% CI 52.5 to 58.8) compared with the white Scottish population and other white British (110.9, 95% CI 110.2 to 111.6). Investigating uptake by religion, lowest uptake was recorded across Muslim women (57.8, 95% CI 55.2 to 60.5) compared with the reference population (Church of Scotland).[14] Low uptake puts Muslim women at risk of delayed detection and provision of effective treatment of cancer. Improving screening uptake for Muslim women will ultimately reduce morbidity and mortality for this group through earlier diagnosis. COVID-19 has caused a delay in cancer screening that may exacerbate current health inequalities.[17 18] The pandemic has also disproportionally affected ethnic minorities, increasing anxiety about attending screening.[19] Supporting ethnic minorities to engage with screening has become even more important.

Barriers and facilitators to breast, colorectal and cervical screening are complex and multifactorial, ranging from cognitive factors such as lack of awareness to emotional, practical, cultural and religious factors.[11 20–27] Interventions aimed at improving uptake at a population level seem to work less well than targeted interventions.[28] Cultural tailoring can be an effective method of addressing screening barriers and can assist in developing targeted interventions to promote screening.[29] Culture is often regarded as a barrier to health behaviour, but it can also be used in interventions as a positive health resource.[30] Faith-based health promotion consistent with principles underpinning one's faith, alongside other factors that improve uptake of screening, can offer a culturally acceptable method of addressing barriers to screening.[31 32] Faith-based messages can help tackle known barriers to screening for Muslim women[31–33] to allow informed decision making about screening.

The aim of the research was to evaluate qualitatively the acceptability of a codesigned, faith-based online intervention to increase uptake of breast, colorectal and cervical screening in Scottish Muslim women.

METHODS

The intervention was codesigned with 10 Scottish Muslim women. Two of the women were 25–34 years old; six women were 35–44 years old; one woman was between 45 years and 54 years; and one woman was older than 65 years. Nine women were of Asian origin and one was Arab. This was an educated sample with eight women having a degree. The intervention aimed to address barriers to screening and create faith-based messages that encourage screening for Muslim women was based on work by Padela and colleagues,[32–35] including the reframe, reprioritise and reform model to address myths and barriers to screening and create faith-based messages that encourage screening.[36] Messages used in Padela's work were further developed and adapted in the codesign phase by the Muslim women. For example, women voted on which barriers to screening to include and the language of the messages was decided by them. As Padela's work was focused on breast screening only, specific barriers in relation to colorectal screening were included (table 1). The intervention development was also supported by the behaviour change wheel (BCW), an evidence-based approach developed from 19 different behaviour change frameworks offering a step-by-step guide to intervention development.[37 38] Details of the codesign process and the use of the BCW are reported elsewhere (in preparation). The intervention consisted of four elements: (1) a peer-led discussion of barriers to screening, (2) a health education session led by a healthcare provider, (3) videos of Muslim women's experiences of cancer or screening and (4) a religious perspective on screening delivered by a female religious scholar (alimah) addressing barriers to screening incorporating the faith-based messages.

The intervention was delivered to two groups of 8 and 10 Muslim women, respectively, in March 2021. Five of the 10 codesign participants facilitated intervention delivery. Three of them acted as peer educators, and one woman prepared a short video of her experience with cervical, bowel and breast cancer screening in the UK. The fifth woman was the alimah. These women were aged between 25 years and 65 years and with Asian (Pakistani/Bangladeshi) and Arab ethnicity. Three of the women were highly educated (masters or PhD). One was British born, and the others lived in the UK between 3 years and 20 years. The intervention was also supported by two female, white, non-Muslim, Glasgow-based general practitioners (GPs). The intervention consisted of a 2-hour structured video call and each meeting was supported by two peer educators. Due to the COVID-19 pandemic, the intervention was developed and delivered online. The intervention timetable is presented in table 2.

Sample and sampling approach

To obtain wide-ranging perspectives, we aimed to use purposive sampling to target participants based on age and ethnicity. In addition, we also used snowball sampling, which has been found to be an effective method of recruitment of ethnic minorities.[39] Although each cancer type presents unique barriers to screening, there is also a considerable overlap.[25] Therefore, and in collaboration with the codesign group, it was decided to focus on all three types of screening, which meant we aimed to include women between the ages of 25 and 75. Recruitment took place between November 2020 and January 2021 through advertisement of the study with seven local community groups or mosques. Five women were recruited through the support of the imam from the same mosque as the alimah, and three women were

Table 1 Addressing barriers to screening with faith-based messages developed with Muslim women in the codesign phase

Key barriers to cancer screening	Counteracting faith-based message
I need to have a female doctor or nurse.	If it's a necessity and an important test, I can have a male doctor or nurse.
I pray to God for health before I turn to medical care as a last resort.	God will ask me after death about five main things; one of them is 'How did I care for my body?'
I'm afraid cancer screening might be uncomfortable/painful.	The pain incurred on the path to doing a good deed, like life-saving screening to care for my body, is rewarded by God, and saving one life is saving all of humanity.
I'm afraid of what the screening test might find and of dealing with the aftermath.	Reading the Quran and remembering that God is with me will help me cope with my fear of the test result.
Receiving the letter with my screening result is too stressful.	It's part of my duty to look after my body to find out everything I can about how to keep it healthy and catch cancer early when it is treatable.
Certain actions can prevent me from getting cancer, like eating dates and black seeds.	Allah has not made a disease without appointing a remedy for it, and it is up to mankind to go and find it.
I don't think I will get cancer and I don't need to do screening.	Precaution is really important in Islam: when I am aware of danger, it shows my wisdom.
Cancer might be a way to heaven if I have suffered such a big test in this world.	It is Allah's will that I am sick or cured, but it is up to me to care for my health both physically (through screening) and spiritually.
Cancer screening is embarrassing/challenges modesty.	My duty to look after my health comes first, so I can be fit and strong to practise my faith.
Certain cancers like colorectal, breast and cervical cannot be mentioned in public.	I was given this body to look after it. Therefore, such an illness is a test from God on how well I can look after my body for Him.
Collecting your ablutions for colorectal screening is disgusting and creates impurity.	Keeping myself healthy justifies putting up with disgust.
I have to look after my family's needs before my health.	Islam advises to first take care of my health needs and then others' needs.

recruited through three other mosques. Recruitment was challenging and snowball sampling provided the remaining participants. Participants' (n=18) sociodemographic characteristics are presented in table 3.

Evaluation

One week after the delivery of the intervention, we conducted two 2-hour focus groups online using Zoom to evaluate the acceptability of the intervention. Using a qualitative and interpretative approach was appropriate to gain an understanding of women's experiences of the intervention and to explore attitudinal change towards screening.[40 41] To this aim, MK developed the topic guide in discussion with RA and FC-dJ to explore participants' experiences of the intervention, acceptability of intervention content and delivery (online supplemental file). For

Table 2 Intervention timetable

Activity	Topic	Duration
	Welcome and introductions	20 min
Session 1	How do you feel about cancer screening? ► Short video of older Muslim woman's personal experience of breast, colorectal and cervical cancer screening in the UK (5 min). – Discussion about cancer screening, experiences and views regarding what women may find challenging in small groups (three to four participants) (20 min) led by peer educators.	25 min
Session 2	Cancer screening information ► Short talk from female health professional about what breast, colorectal and cervical cancer screening entails and what to expect (10 min). ► Question and answer session on cancer screening led by the healthcare provider (10 min).	20 min
	Break	10 min
Session 3	Patient experiences of cancer ► Short videos with two Muslim women who had cancer found by screening and treated, sharing their stories (5 min each).	10 min
Session 4	How can your faith help with cancer screening? ► Short talk from female religious scholar offering an Islamic perspective on health and cancer screening (20 min). ► Discussion with the entire group on faith-based messages led by female religious scholar (10 min).	30 min
Finish		5 min

Table 3 Sociodemographic characteristics of intervention/focus group participants (N=18)

		n (%)
Age (years) (n=18)	25–34	5 (28)
	35–44	11 (61)
	45–54	2 (11)
	55–64	0
	65 and over	0
Marital status (n=18)	Single	0
	Married/living with partner	16 (89)
	Widowed	0
	Divorced/separated	1 (5.5)
	I prefer not to say.	1 (5.5)
Education (n=18)	Some high school or less	0
	High school diploma or General Educational Development	1 (5.5)
	Some college, but no degree	1 (5.5)
	Associates or technical degree.	3 (17)
	Bachelor's degree	3 (17)
	Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS)	9 (50)
	I prefer not to say.	1 (5.5)
Employment status (n=18)	Working full-time	0
	Working part-time	1 (5.5)
	Unemployed and looking for work	4 (22)
	A homemaker or stay-at-home parent	7 (39)
	Student	2 (11)
	Retired	0
	Other	0
	I prefer not to say.	4 (22)
Ethnicity (n=18)	Arab	5 (28)
	Asian	10 (55)
	Not reported	3 (17)
Length of time in the UK (years) (n=17)*	1–5	1 (5.5)
	5–10	5 (28)
	10–15	11 (61)
	15–20	0
	20 and more	0
	I prefer not to say.	1 (5.5)

*One participant was born in the UK.

example, women were asked how they felt about the workshop, the different components, like the videos, the GP session and the faith-based component, and if there was anything that should be changed. Women were also asked about their views on cancer screening after the workshop. The focus groups were audio-recorded and transcribed. To enhance confidentiality, individual participants were not identified in the recordings; therefore, quotations presented in the results section do not specify individual participants.

Data analysis

Two female, white, non-British, non-Muslim researchers who are experienced in public health and health psychology qualitative research (FC-dJ and MK), analysed the data by thematic analysis.[42] Each researcher independently coded one transcript in qualitative data analysis software NVivo V.12.[43] The researchers generated themes and subthemes inductively by comparing and combining the two independent sets of codes. The framework of themes and subthemes was then discussed with the wider research team (RA, KR and JL). The team includes a female Muslim researcher.

Patient and public involvement

This study used a participatory approach in the intervention development phase, and the codesign group included members of the public who were involved in the design, conduct and dissemination of the study.

RESULTS

The overarching themes included (1) acceptability of content, (2) acceptability of delivery and (3) improvement of the intervention.

Acceptability of content

All participants were positive about the content of the intervention. Many participants found the meeting 'informative' and said they had received new information about screening, which they found useful, acceptable and interesting.

> Sometimes there are lots of questions in our mind, and it was an answer of those questions, and yes it was very informative.

Participants appreciated the intervention's multiple components. Participants shared this made the meeting holistic, offering different angles to the topic and therefore providing a well-rounded intervention.

> And, of course, having the religious scholar, I think that gave a different dimension, a different viewpoint. And it was quite rounded, I thought […]. So, it [the intervention] gave the personal opinion, a medical opinion, the religious side, so it was informative from different angles.

Participants shared they accepted the faith element as part of the intervention. When asked, some participants reported the role of faith in screening or seeking healthcare to be important to them. They explained that Islam encourages them to take responsibility for and to look after their health. They highlighted that their faith could help them to overcome some screening barriers like embarrassment or shyness. They said that their faith

prioritises their health and so would be supportive of screening. Their faith, participants explained, allowed them to consult a male doctor and even to show their hair to a male healthcare provider. Participants stated that God had given them their bodies, and it was their responsibility to look after their bodies and not to abuse them, for example, by smoking or by drinking alcohol. One woman stated that 'anything that hurts our bodies is forbidden'. Screening, in the context of Islam, was seen as good as it was beneficial to their health.

> It was explained that we should go for the treatments in the light of the Quran, with the Islamic point of view as well. There are lots of customs in the minds of the – especially Muslim ladies - that we couldn't go with a male doctor, we shouldn't go.

Participants were concerned that non-Muslims saw their faith as the source of screening barriers. They repeatedly highlighted that Islam is an open religion and that Muslims are encouraged to look after themselves, and that there are no restrictions on healthcare behaviour. Participants were eager to explain that cultural barriers to screening or lack of awareness impeded screening uptake, rather than religious barriers. Using faith alone to encourage screening was not perceived as a solution to overcoming screening barriers, and they argued that the impact of religious encouragement would vary between different people, possibly depending on how religious they were.

> [I]t's not just about faith. It's about common sense. […] You know, if you tell somebody, "You must have a screening test because your faith tells you", I don't know if that message is going to be as strong as, "Here is somebody who's had issues because they didn't take the screen test, which, of course, we all should do. It's available to us. It's pain-free.

All participants reported feeling engaged by the videos of Muslim women's experiences of cancer and screening. They stated the videos increased their knowledge of screening and explained that the videos highlighted the need for screening and early detection. They shared being encouraged by the personal stories in the videos and valued hearing from women they could relate to. They called the women in the videos 'brave' and 'courageous' and were inspired by their stories, which motivated their intentions to engage in screening. Participants also highlighted the role of faith in the women's screening or cancer stories in the videos and the comforting role faith played in these women's journeys.

> I think the videos had, probably, the biggest impact, I think, emotionally. So, you had the information from the doctor, and you had the emotion from the videos, and you had the real-life experience from the videos, and I think a combination of those two is definitely what will help moving forward.

Participants described that the intervention would encourage screening uptake and expressed positive attitudes towards screening after attending the intervention. Some participants stated that the intervention had increased their intention to engage in screening and inspired them not to 'ignore their health'. One woman described how she had been invited three times to attend screening but had ignored these as she feared the procedure. She explained, however, that with her new knowledge, she now understood these tests were 'good for me'. Other participants had actually made appointments for screening after they attended the intervention in the previous week. Many participants described how they had shared their experiences with women around them and how they had encouraged others to engage in screening.

> I think everyone was encouraged [to get screened]. For example, every one of us encouraged our friends or our sisters to do it. For me, I did mine last Friday and I encouraged my friends here to do it.

Acceptability of delivery

Participants enjoyed being part of the intervention. One woman said, 'it was like a precious time'. Participants explained that the 2-hour meeting went quickly, and they shared feeling engaged and stimulated by the different elements in the intervention and sources of information.

> You don't have to change anything, because it was very interesting. The videos you showed, the doctor invited, and everything was so awesome and nice, and I really loved it.

Participants appreciated the role of the GPs in the intervention enormously; receiving information from a credible person, such as a medical professional, was important to them. Participants shared that the GPs explained the three types of screening clearly and in more depth than they had heard before. Participants enjoyed the practical information they received from the GPs and the opportunity to ask questions.

> Do you know what, the good thing is when the doctor spoke about everything she gave us all the information…. Like she gave us all the information that we need. I think that's the good part that I like.

Participants also enjoyed the delivery of the presentation by the alimah, who they thought explained the religious perspective clearly. They discussed that a religious scholar, as a trusted person in the community, can play an important role in the delivery of healthcare messages. One woman highlighted that Muslims do not always learn from the Quran but 'just recite it', implying that the alimah added meaning and presented an understanding of their faith that allowed women to find a 'solution to each answer', including issues like cancer screening. They shared that the alimah would encourage women who feel anxious about attending screening or reassure women who experience fear of hearing the outcome of

a screening test. They also mentioned that the alimah could signpost women to obtain more information on screening.

> I think she has explained [screening] well and the point of view of the Quran and everything. So I [would] like to join again if she attends a session like this and more information and […on] another topic.

Participants reported that learning about screening through discussion with other women and hearing from a healthcare professional was easier to understand and much more beneficial than researching topics online. They discussed feeling comfortable in the group setting, although some reported initial shyness. A few said that language barriers made them feel somewhat nervous at the start of the meeting. Participants enjoyed being part of the group and shared they benefited from hearing other women's experiences or questions. Participants thought it important that this was a female-only group. Although it would be acceptable to some if the healthcare provider was male, all participants agreed that other men should not be part of a meeting like this, as women would find it uncomfortable to discuss these sensitive topics openly.

> If someone asks some questions and [then] all women get the answers. So sometimes other people don't think about that and don't have any knowledge, so if one person asks, other can acknowledge too, so it's good to have a meeting in a group and hear about other people's thoughts, feelings"

Technology was not raised as an issue, and one woman highlighted that technology allowed them to come together despite physical distancing restrictions, although participants discussed to prefer to meet in person.

Improvement of intervention delivery

Although participants were positive about the intervention, several methods were discussed to improve the process of encouraging screening uptake in this community and the intervention delivery. Participants stated they would like more of these meetings to gain additional understanding of cancer and screening. For example, they had questions about nutrition related to cancer risk or age groups needing to attend screening. They also suggested having monthly 'drop-in' sessions which would allow them to ask any questions about screening, or other health issues. Many participants agreed that they would welcome meetings of a similar format on other health issues. This would help to increase awareness and overcome barriers to openly discussing sensitive issues in their communities by normalising cancer, screening and other women's health issues. The participants emphasised that such meetings should include healthcare providers to provide information and answer questions.

> Also, mostly Muslim families are in the Muslim community, we don't talk about the sexual life. Some ladies have problems and we didn't talk about with the GP and other persons. So I also need more information or any session like that as well.

The participants explained the importance of increasing cancer screening awareness in the community. They believed women who had attended an intervention like this one could become 'ambassadors of awareness for the community' and spread knowledge of screening. They suggested developing materials for the ambassadors to ensure they provided accurate information to the community and help them to signpost other women to appropriate services. Others added that not everyone would accept healthcare messages from peers but that health education had to come from professionals, such as healthcare providers or religious scholars. Participants also reported more materials, such as leaflets, videos or emails, were needed to increase screening knowledge and awareness. They suggested using more personal experiences from cancer survivors as they found these powerful. They also recommended more videos explaining practical elements, like steps in screening procedures. Participants emphasised that using multiple languages, both in the intervention and in health education materials, would be important to ensure accessibility to all women and that information in one's native language is more effective.

> The first language for me is Arabic, so any information given to me in Arabic is easy to understand more than [other languages]. It attracts me […], it's easy to understand what's going on.

The participants also shared the importance of including men in efforts to improve health for Muslim women. Although they discussed feeling uncomfortable about including men in the intervention, they believed it important to include them in separate sessions as men had a role to play in supporting women in looking after their health.

> The men should have the information about the cancer, like breast cancer and cervical cancer, because every woman has a man, husband, partner, whatever, you know, so he should understand her emotions […] So, give them information on how to support his partner, or his wife, or his sister, or whatever.

The participants also said that conducting the intervention in person with the opportunity for informal social aspects, such as food, would be beneficial. They also suggested engaging with other Muslim organisations to reach more women.

DISCUSSION

We believe this is the first UK study to explore a codesigned, faith-based intervention to encourage uptake of colorectal, breast and cervical screening in a Muslim population. Our findings indicate that the intervention was acceptable. The participants reported they found the intervention informative and enjoyable, and they shared

that the intervention had a positive impact on their intention and attitudes towards screening. Some participants even reported immediate action to arrange cervical screening after the intervention.

Implications from the focus groups for the improvement and delivery of faith-based interventions to increase cancer screening uptake for Muslim women in Scotland and further afield are summarised in table 4. First, the

Table 4 Summary of key findings from qualitative evaluation and their implications

Theme	Key finding	Implication
Acceptability of content	► Intervention content was perceived as valuable. ► Comprehensive format of the intervention with multiple components was perceived as useful. ► Intervention increased knowledge of screening through health education by medical professional, as well as personal testimonies. ► Personal testimonies were perceived as impactful. ► Role of faith in intervention was acceptable. ► Faith-based messages resonated with women. ► Women stated that intervention improved knowledge of cancer screening. ► Intervention was perceived as encouraging to engage in cancer screening. ► Increased intention to engage in screening was reported. ► Change in screening behaviour was noted: some women had acted, made an appointment and/or engaged in screening.	► Intervention needs to be complex, tackle multifactorial barriers to screening and work at multiple levels. ► Faith can be used as an enabler as part of cancer screening and health promotion efforts, but not in isolation. ► Incorporating aspects of spirituality and faith in cancer screening could enhance health promotion efforts. ► Incorporating personal experiences of screening and cancer survival, through videos or in person, could enhance health promotion efforts. ► Increasing knowledge by presenting health education offered by a medical professional who can provide an opportunity to answer questions is important. ► Findings support this community-based intervention may increase cancer screening uptake. ► Additional research is required to understand and establish effectiveness and on a larger scale.
Acceptability of delivery	► Intervention was experienced as engaging. ► Opportunity to discuss barriers, facilitated by peers, was important. ► Delivery by medical professional was valuable. ► Delivery by religious scholar was valuable. ► Women reported feeling comfortable in a group with women they were not familiar with. ► Discussion of sensitive topics such as colorectal, breast and cervical cancers was acceptable and important. ► Language barriers were found. ► Technology was useful due to circumstances, although face-to-face meeting was preferred.	► Community health promotion interventions need to be engaging and should incorporate active learning. ► Including credible and trusted people, like religious scholars and medical professionals in cancer screening interventions could enhance health promotion efforts. ► Create a comfortable environment for community interventions, possibly facilitated by peers, although the role of peer educators need further research. ► Interventions like these can stimulate discussion in the community about sensitive women's health issues and may contribute to breaking down social stigma. ► Interventions must address generic barriers that are shared with other women, such as fear of the outcome or fear of the procedure. ► Interventions and health education materials need to address language barriers.
Improving the delivery and process	► More meetings regarding cancer screening were requested. ► Meetings regarding other health issues were requested. ► Women would like more opportunities to engage with healthcare providers. ► Interventions should include a healthcare provider. ► Interventions should include a religious scholar. ► Interventions should use more personal testimonies. ► Materials should be clear, using pictures or videos and should provide practical information. ► Peer educators can facilitate increasing awareness in the community and signpost accordingly. ► Support from men in engaging in cancer screening would be valuable.	► Findings support continuation of community-based interventions, which may play an important role in the promotion of cancer screening and health promotion of other health issues. ► Using religious and community leaders can play an important role in community-centred health promotion. ► Using healthcare providers can play an important role in community-centred health promotion. ► Develop practical and culturally appropriate health promotion materials. ► Interventions should include personal testimonies, and these may increase knowledge of cancer screening and enhance health promotion messages. ► Peer educators may have a role to play in health promotion. ► Including men separately in community-centred approaches may help tackle screening barriers for women. ► More research is needed regarding the role of men in women's cancer screening.

concept of health and illness takes a crucial role in Islam. All participants were eager to share this view with the focus group. For example, taking responsibility for the bodies that God has given them and that they ultimately are accountable for and have to return to God, seemed ingrained in the women. Most participants were fully aware of the importance of this message regarding body stewardship, as also found in existing literature.[31 34] However, not everyone viewed cancer screening through this lens of body stewardship as not all Muslim women might share this understanding of religion.[31] Misconceptions of religion could intertwine with cultural barriers. For example, similar to other studies,[34 44] participants were clear that modesty was important to them and, although their faith allowed them to consult a male healthcare provider if necessary, participants did not feel comfortable doing so. Healthcare messages should emphasise that, on request, a female healthcare provider is available within the NHS.

Focus group participants expressed that they liked the inclusion of a religious perspective, and they appreciated the delivery by the alimah, a respected and trusted person, emphasising key concepts, like trust in God, as part of looking after their health. Participants shared the importance of screening, and other health promotion messages could be communicated by an alimah. Faith-based messages aimed at tackling screening barriers could be used as cues to action in health promotion efforts for Muslim women and allow them to make informed choices. Participants found the inclusion of this element valuable; however, they also indicated that faith-based messages alone are insufficient. Complex public health issues require complex solutions,[14 45] and therefore faith-based efforts alone could never be sufficient in tackling the multifactorial issue of screening. Similarly, health education regarding screening or personal testimonies alone would also be insufficient to ensure informed choice. The combination of multiple components as part of the intervention seemed to make the intervention powerful. Although in the focus groups the faith-based element was mentioned less than the health education by the GP or the videos of personal experiences, interventions that are culturally adapted appear to be more effective.[35] The role of the faith-based element in the intervention requires further investigation. Particular aspects possibly related to religion, like fatalism, were raised in this study but were not chosen as a barrier by participants in the codesign phase. This may be due to participants' high level of education and understanding of faith. The impact of fatalism on cancer screening may be important and does require further investigation.[38]

Another focus group finding was the importance women placed on the personal experiences shared in the videos. Participants were able to relate to these women, which increased the impact of their messages. Using personal testimonies and sharing stories of cancer screening or survival can be a useful tool in health promotion.[46–48] The more relevant the stories are to one's own life and the stronger the feeling of identification with the person sharing the story, the stronger the encouragement to engage in the desired health behaviour.[46] The intervention may be strengthened with more personal stories from Muslim women overcoming screening barriers. Creating a diverse set of videos, for example, of women of various age groups or ethnicities, could be useful. The videos could cover generic barriers, such as fear of the procedure or 'disgust' of colorectal screening. The positive impact of sharing personal testimonies in faith-based approaches to encourage screening has also been linked to spirituality in other religions,[49] which may suggest that elements of this intervention could be transferable to other populations and other health issues.

The focus groups demonstrated the sensitivity of the topic and social stigma surrounding colorectal, breast and cervical cancers, which has also been found in the literature.[34] The stigma was related to these cancers affecting intimate areas of the body perceived as shameful to discuss openly. Focus group participants stressed that comfortable environments to discuss these taboo subjects were much needed in the community but also reported that these types of interventions would help to break down the social stigma of screening. Living in multigenerational households, like some women did, may contribute to this social stigma. Intertwined with this barrier could be the role of the woman and putting the family before herself, reported elsewhere.[34 50] Participants believed that including men in community interventions could be an important part of normalising discussions of colorectal, breast and cervical cancers, although they emphasised that men should receive separate sessions to them. More research is needed regarding the role of men in female cancer screening.

Participants also discussed overcoming language barriers to improve intervention delivery and engaging in screening generally. Language can present structural barriers, particularly for women not growing up in a setting where screening is the norm.[50] Delivering the intervention in multiple languages could help. Alternatively, peer educators could take the role of interpreter, which may further improve intervention delivery. Women also asked for leaflets to be available in different languages with clear, practical information about screening. Public Health Scotland has a range of screening leaflets in multiple languages, which we shared with participants as they were unaware of these.

Community-centred approaches are an important strategy for health promotion and tackling health inequalities.[51 52] Women in the current study shared it was important for the intervention to be delivered by people from the community who are trusted. The role of peer educators in interventions for the promotion of cancer screening has also been found to be important.[32 34 53] We believe it would be beneficial to conduct further work with this community to strengthen the role of the peer educators and investigate its effectiveness. Peer educators, as trusted people in the community, could be trained as champions of cancer screening or community

ambassadors and could play an important in the implementation and sustainability of the intervention and such health promotion efforts in the Muslim community. Further research should include a focus on implementation, which could include a logic model for implementation and a manual for delivery of the intervention to support healthcare providers and community ambassadors to deliver the intervention. Healthcare providers such as GPs do not have the capacity to organise interventions like these; however, partnerships between public health and community organisations, such as mosques, could make these community-centred interventions sustainable.

Limitations

A limitation to the study was that this was a small, self-selected, educated and English-speaking sample, which possibly had fairly positive attitudes to screening already. The sample was young, and most women were not yet eligible to take part in breast or colorectal screening. Preintervention or postintervention cancer screening measures were not collected. Therefore, from this pilot study, conclusions cannot be drawn regarding the impact or effectiveness of the intervention on attitudinal and behaviour change or uptake of screening. Muslim women are a heterogenous group, and although they share their faith, different groups could experience different barriers. Examining other factors, such as ethnicity, will help inform future research. Including women who have different perspectives towards religion and levels of religiosity would be important too. Transferability of data outside of the UK may also be limited due to differences in healthcare systems. Future research could use quantitative methods to assess attitudes and behavioural intent to screening preintervention and post intervention, including longer follow-up to establish behaviour change per cancer screening type. Further research is required with a more representative sample, eligible for all screening programmes. A feasibility trial is the next step on the pathway to investigate effectiveness on a larger scale in a full trial. Including Muslim women who are not up to date with their screening and with diverse levels of health and digital literacy will be essential.

CONCLUSION

The multifactorial intervention was received positively by participants and continued delivery was requested, as well as delivery of similar interventions focused on other health issues. Novel approaches to engaging with targeted populations in tailored ways, such as this intervention, should be considered and could be applied to other communities, faiths and health issues. Working within communities to develop health partnerships has the potential for sustainable implementation of health promotion efforts.

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Contributors FC-dJ developed the concept of the study, FC-dJ, MK, KR, JL and RA designed the study together; FC-dJ, MK and RA collected the data led by MK; FC-dJ and MK conducted the analysis guided by KR and JL. FC-dJ, MK, KR, JL, RA, JM all contributed to the manuscript. FC-dJ was responsible for the overall paper, with input from the entire team. All authors critically reveiwed the final version of the manuscript.

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Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

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