

# Non-attendance to Mammography Screening: A Qualitative Study among Non-attendees in Malta

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## Research Article

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## Abstract

### Background

There is limited qualitative research exploring reasons for underutilisation of breast screening and the broader contexts that affect health-seeking behaviour among women who do not respond to breast screening invitations. This study aims to advance understanding of factors that influence breast screening non-attendance among lifetime non-attendees in Malta.

### Methods

Twenty face-to-face qualitative interviews were conducted with women in Malta. These explored women's illness perceptions regarding breast cancer, knowledge on screening, mammography beliefs, past health-related experiences, medical help seeking behaviour, health and social interactions, and effective interventions that would facilitate mammography attendance. Data were analysed using thematic analysis.

### Results

Four themes emerged: 1) attitudes, feelings, beliefs and perceptions; 2) knowledge; 3) social network experiences and 4) perceived effective interventions. Fear of breast cancer and screening emerged as barriers to mammography. The majority of participants had not received physician advice. Previous familial cancer diagnosis prompted lifestyle changes in women, but it was not the primary motivator to attendance. Participants talked about fear of death and traumatic histories from experiences of relatives with cancer or personal traumas. Practical and emotional support are important to non-attendees.

### Conclusions

The impact of physical and psychosocial variables on personal resilience and self-confidence should inform the planning of screening interventions. Professionals must refer to patients' wider support networks and make the necessary referrals, while policy makers should ensure services providing psychological, social and emotional support are accessible.

### Background

Despite the availability of breast screening (BS), many women struggle to access or respond to screening invitations [1–3]. Our previous work suggests non-attendees are more likely to be women with a lower family income, widowers, non-drivers, without a breast condition, without relatives or friends with cancer, less encouraged by a physician, unsure of the screening frequency, and more anxious and fearful [4–8]. However, there is limited qualitative research exploring reasons for underutilisation of BS and the broader contexts, such as psychosocial, economic and structural issues, that affect health-seeking behaviour among lifetime non-attendees. Gaining a more detailed understanding of women's beliefs and perceptions may help explain why mammography uptake does not appear to be sustained at a population level. In addition, determining women's sources of information may help explain gaps in knowledge or misconceptions about breast cancer (BC) and BS. Hence, the recognition of these facilitating factors and barriers is the first step in persuading lifetime non-attendees to make better decisions about preventive self-care [9]. This study aims to: 1) Gain a better understanding of beliefs, perceptions, attitudes, barriers and knowledge regarding BS among lifetime non-attendees in Malta and 2) Determine which interventions and channels are appropriate for communicating with women about BC and BS.

### Methods

#### Design

This qualitative study is reported according to Standards for Reporting Qualitative Research (SRQR) [10]. A qualitative methodology was chosen as it was well-suited to capture individual stories. Face-to-face semi-structured interviews were used to

explore in-depth issues [11] and understand women's behaviour [12].

## **Sampling strategy**

Purposeful sampling was adopted by selecting a small number of cases that maximize the diversity of women (heterogeneous sample). Participants were recruited from a larger quantitative study [6] of 404 women, where 13.9% of women (n = 56) had never attended for mammography ('lifetime non-attendees'). These participants had responded in the population-based survey that they were willing to be contacted further for research purposes. The eligibility criteria were: women aged 50–60 at the time of their first screening invitation, residents in Malta or Gozo with a valid identity card number, able to communicate in English or Maltese, and with no severe co-morbidities. Women were excluded if they had been diagnosed with BC (n = 200), if they were invited to the second screening cycle (n = 12,210), if registered as deceased at the time of the sample selection (n = 71) and if incorrect information existed at the Malta Breast Screening Programme (MBSP) (n = 209). From 56 lifetime non-attendees, at least three women were selected per sociodemographic/health status group as these factors are associated with lifetime mammography practices [6]. Women were selected from, but not limited to, the following groups: 'low family income', 'widowers', 'non-drivers', 'no breast condition/disease', and 'no relatives or close friends with cancer'. Figure 1 shows the flow of participants through the study.

## **Context and data collection**

A research assistant (RA) i.e. a senior nurse and researcher in Malta, contacted potential participants by telephone to confirm they meet eligibility criteria, give them study information and invite them to participate. Those, interested in taking part were invited for a face-to-face interview at a time that suits them, and were given a choice of locations. The RA mailed the information sheet to the participant at least 48 hours before the interview and before signing the consent form.

Interviews were conducted between December 2017 and February 2018. They were carried out in Maltese by a Maltese, bilingual female researcher, with over 10 years' experience of conducting qualitative research in cancer care. All interviews were conducted privately with only the researcher and the participant present.

Sociodemographic data were collected to describe the sample characteristics. A semi-structured topic guide (Table 1) was developed after consultation with existing literature [9, 12–18]. This guide explored illness perceptions regarding BC, BC prevention and knowledge of screening, mammography beliefs, past health-related experiences, medical help seeking behaviour, interactions with healthcare providers, friends and relatives, BS facilitators and barriers, and effective interventions to facilitate mammography attendance. The guide was piloted with two women of eligible screening age. These pilot data were not included in the main analysis. Interviews continued until data saturation was reached.

Table 1  
Interview topic guide

Interview guide with Maltese women (English version)
<ul style="list-style-type: none"><li>• How do you take care of your health in general?</li><li>• How do you remember to schedule your health appointments?</li><li>• What is the meaning of 'cancer' in your view?</li><li>• And the words 'breast cancer'?</li><li>• Have you ever thought about the possibility of developing breast cancer? What are your related fears?</li><li>• Do you think breast cancer can be prevented? What effective ways do you think about preventing breast cancer?</li><li>• Do you have any intentions to prevent breast cancer? What do you usually do?</li><li>• What do you know about breast health practices?</li><li>• What can you tell me about breast screening in Malta?</li><li>• What is your perception about a Breast Screening mammogram at the National Breast Screening Programme as opposed to a private mammogram? <i>Do you think that the quality of the mammogram differs?</i></li><li>• Why did you not attend to a mammogram in your life? <i>Are there any environmental barrier, social barriers or intrapersonal barriers you would like to mention that really discourage you from having a mammogram?</i></li><li>• Did any earlier experience in your life influence your decision to reject the screening invitation? <i>Explain some of your experiences in which you have made decisions which you think were risky.</i></li><li>• In your opinion, what set of circumstances would encourage you to go for a mammogram?</li><li>• Where and how do you get health-related information? What sources of advice or information do you look to?</li><li>• Which kind of educational modality would you prefer to get information about breast health?</li><li>• We are trying to figure out how we can encourage women like you to get checked for breast cancer. What things would encourage you to screen regularly? What can we do from our end to help you attend?</li><li>• Is there anything else you would like to share?</li></ul>

Following completion of the interview, participants were given a debrief providing a summary of the study and information on the MBSP.

## Data Analyses

Interviews were transcribed verbatim by the primary author and codes were assigned to each participant to protect their identity. Interviews were translated from Maltese to English by a qualified translator and checked for accuracy by the primary author.

The analysis followed a six phase guide to thematic analysis [19]: (i) familiarisation, (ii) generation of codes, (iii) searching for themes, (iv) reviewing themes, (v) defining the themes and (vi) writing the report. This qualitative method was chosen due to its flexibility and potential to provide a detailed, and complex data [19].

Familiarisation and initial coding were done by the primary author and discussed with the RA. A selection of transcripts (n = 5) was also coded by RA to verify their consistency. Discrepancies were resolved through discussion. Broad themes were pre-set based on our previous work [20]. These included: (i) attitudes, feelings, beliefs and perceptions, (ii) knowledge, (iii) social network experiences and (iv) perceived effective interventions. Sub-themes emerged from this qualitative study and were strongly influenced by the interview topic guide and pre-set study objectives. Once the coding was completed, the coded transcripts were reviewed independently by two researchers to search for common sub-themes that reflected the pre-set themes. The final list of sub-themes was developed through discussion and checked against the transcripts.

## Trustworthiness

Credibility and conformability of data were established in three ways [9]. First, the researcher summarised the interview before ending it and gave participants the opportunity for comments. Participants were also invited to comment on a summary of emergent sub-themes. As a further validity check, the RA interpreted the raw data of these transcripts independently by searching for emerging sub-themes, which ultimately were congruent with that of the researcher. The results were also checked by two women (the same two women who participated in pilot-testing the topic guide) to confirm the aptness of the sub-themes.

## **Results**

### **Participants**

Twenty women took part in the interviews, which lasted between 55 and 77 minutes. Their characteristics are shown in Table 2.

Table 2  
Participants characteristics

Code	Age (years)	Marital status	Education	Occupation	Income	Do you drive?	Do you have a family physician (GP) who provides medical care and advice to you?	Do you have a family history or close friends with cancer?	Have you ever had any type of breast condition or disease?
NA1	58	Married	Secondary	Housewife	Between €10,737 – €16,113	No	Yes	No	No
NA2	64	Widowed	Primary	Pensioner	Less than €10,737	No	Yes	No	No
NA3	61	Married	Primary	Housewife	Less than €10,737	No	Yes	Yes	No
NA4	60	Married	Secondary	Housewife	Between €10,737 – €16,113	No	Yes	Yes	No
NA5	58	Married	Secondary	Housewife	Less than €10,737	No	Yes	Yes	No
NA6	62	Separated/Divorced	Secondary	Housewife	Less than €10,737	No	Yes	No	No
NA7	56	Married	Primary	Housewife	Between €10,737 – €16,113	Yes	Yes	No	No
NA8	58	Widowed	Secondary	Pensioner	Less than €10,737	No	Yes	Yes	No
NA9	61	Married	Secondary	Housewife	Between €10,737 – €16,113	No	Yes	Yes	No
NA10	59	Married	Secondary	Housewife	Less than €10,737	No	Yes	Yes	No
NA11	60	Married	Secondary	Housewife	Between €10,737 – €16,113	Yes	Yes	No	Yes
NA12	59	Married	Secondary	Housewife	Between €10,737 – €16,113	No	No	Yes	No
NA13	61	Married	Primary	Housewife	Less than €10,737	No	Yes	No	No

Code	Age (years)	Marital status	Education	Occupation	Income	Do you drive?	Do you have a family physician (GP) who provides medical care and advice to you?	Do you have a family history or close friends with cancer?	Have you ever had any type of breast condition or disease?
NA14	64	Married	Primary	Housewife	Less than €10,737	No	Yes	Yes	No
NA15	59	Married	Secondary	Private employee	Between €10,737 – €16,113	No	Yes	Yes	No
NA16	57	Married	Secondary	Housewife	Between €10,737 – €16,113	No	Yes	Yes	No
NA17	59	Married	Secondary	Housewife	Between €10,737 – €16,113	No	No	Yes	No
NA18	62	Married	Secondary	Housewife	Less than €10,737	No	Yes	Yes	Yes
NA19	62	Married	Secondary	Housewife	Between €10,737 – €16,113	No	Yes	Yes	No
NA20	58	Married	Secondary	Housewife	Between €10,737 – €16,113	Yes	Yes	Yes	No

## Findings

The findings are presented according to four themes, which include 8 sub-themes. These are illustrated in Table 3.

Table 3  
Classification of subthemes expressed by non-attendees

Themes	Subthemes	Detected Elements	Categories	
Personal beliefs, perceptions, attitudes and feelings	Perceived severity	Feeling well	Perception of good health	
	Fear	Lack of perceived severity	Absence of symptoms	
	Competing health priorities	Optimism	Fear of death	
	Emotional distress	Spiritual beliefs	Physical pain	
	Negative health experiences		Fear of cancer diagnosis and its related treatment side effects	Altered body image
			Fatalism	Shame
			Mammography pain	Not being there for the family
			Radiation	Postponement
			Mastectomy	Low self-confidence
			Embarrassment	History of trauma
			Experiences of relatives with cancer	Lack of trust in the health care system
			Not seeing children and grandchildren grow	
			Other personal health problems	
			Cancer in a family member	
			Depression and Anxiety	
Low self-esteem				
Physical accidents				
Other surgical operations				
Late diagnoses				
Death of relatives/friends				
Knowledge and awareness	Insufficient BC/BS information	Misinformation	Lack of knowledge	
Social network experiences	Cultural factors Rejection	Lack of physician-patient relationship	Ineffective health communication	
		Lack of family/partner support	Rejection	
		Loneliness and isolation		
Perceived effective interventions	Able to attend through effective cues to action	Lack of support	One-to-one counselling	
		Lack of cues to action	GP and partner recommendations	
			Sharing personal experiences	

## Theme 1: Personal beliefs, perceptions, attitudes and feelings

### Perceived severity

Perceptions of good health and absence of symptoms were reported as reasons for not attending mammography:

"There is no need to go and search for it (BC) because I am sure that I am healthy." (NA15, 59 years)

"I might do mammography only if I see BC, and if I see it, it means I can feel it. Only then will I go to my doctor." (NA10, 59 years)

Some women described the word 'cancer' as a disease that 'brings negativity' and wanted to view life in an optimistic manner:

"I am a person that tries not to think negatively and I feel good about myself and positive. This disease (BC) brings sadness, so I just don't think about it." (NA10, 59 years)

While participants discussed how their faith in God helped alleviate fears about uncertainties in life, disease and death, four women abdicated their personal responsibilities in preventing BC by resorting to prayer:

"I am determined that when I get to know I have cancer, I will live that remaining year of my life in peace. I will be leaving it in God's hands. He will take me when he wants to. I could die tomorrow, we all have to die some day or other. We weren't created to be here." (NA8, 58 years)

## Fear

Perceptions of fear were common in women's narratives. Women were worried about physical pain and potential radiation exposure during mammography:

"...the fact that I know that I am going to feel pain, I can't take it. That is what I was told by other women. They press the breasts between two plates and squash them. It isn't for me." (NA14, 64 years)

"My husband was fine but after being treated for brain cancer he got worse. It's about those X-rays they gave him. The cancer spread even more." (NA9, 61 years)

Worries about exposing themselves in front of health professionals, especially male ones, were also reported:

"I already feel embarrassed about the thought of having to expose my breasts in front of them (radiographers) because they might find it awkward. I actually feel ashamed." (NA11, 60 years)

"I wouldn't accept having a male professional checking me. It's a woman thing." (NA20, 58 years)

Fear of a cancer diagnosis was another barrier to non-attendance, particularly among women whose relatives had died from the disease:

"I don't want to have to face the possibility of having a positive result. I have seen my family suffer too much due to BC. My mother had intestinal cancer and died." (NA5, 58 years)

The majority of participants perceived cancer as an unchangeable fate that cannot be changed:

"If cancer forms in the breasts, you cannot do anything about it. It is nature and no one can control it. There's no reason to stay beating around the bush. You die anyway. That's your fate." (NA7, 56 years)

Women also spoke of how their relatives had suffered from physical pain during chemotherapy:

"My mother (with intestinal cancer) died of intense pain. Chemotherapy kills you literally." (NA5, 58 years)

Some women spoke of fear of a mastectomy, associating it with a distorted body image:

"I fear having a mammogram because I cannot imagine losing my breasts and passing through that physical pain with drain pipes all over and long-term physiotherapy. This would mean not being a woman anymore, losing my role as a mother. Breasts are part of a woman's beauty; it inflicts harm on something that symbolizes femininity and motherhood." (NA11, 60 years)

Finally, women talked about fear of not seeing their children/grandchildren grow up and how this fear led them to refuse BS attendance to spare the family from suffering:

"I want to see my children grow. It scares me not to see them get married and have their own children, because life is beautiful that way. But the fear is too big an obstacle for me. I don't want my children to pass through suffering because of me." (NA6, 62 years)

#### Competing health priorities

Competing health priorities and caretaking roles were reported as reasons for non-attendance:

"I have other health problems which are more important than having screening tests for something that may develop one day." (NA1, 58 years)

"My husband has been suffering from brain cancer for nine years. (...) Since we have a family, I need to take care of him and all at the moment." (NA13, 61 years)

#### Emotional distress

Emotional distress, including low self-esteem and symptoms of depression and anxiety, featured in women's narratives:

"Depression messes with your memory. I am on medication and feel very sluggish and nauseated every morning. Leaving the house is difficult and distressing. I've been very low to the point where I don't even want to go out and I'm regularly missing health appointments. I worry that my legs will be amputated due to diabetes and no one will be there for me. It's very depressing and it actually destroys my self-esteem." (NA20, 58 years)

Losing one's sense of control and fearing disease progression were also common concerns:

"I am always worrying about what's coming next. Will I get cancer myself now after my husband? What will be my next limitations? Will I be disabled? I'm losing my focused frame of mind." (NA9, 61 years)

Additionally, anxiety around anticipation of results was a barrier to BS screening:

"After experiencing a personal physical accident and passing through a lot, it is daunting for me to wait for a result. I get very anxious and so I don't go for it (mammography)." (NA1, 58 years)

#### Negative health experiences

Prior negative health care experiences were mentioned by non-attendees:

"I passed through a very bad car accident and spent 14 days in ITU with a torn liver and an internal haemorrhage, and had to undergo many surgical operations, a nightmare, and also ended up diabetic. I don't want to experience all those tests again. Going to hospital again gives me the shivers. You don't experience trauma then, the trauma comes out afterwards and you carry it for life." (NA1, 58 years)

Other dimensions of lifetime traumas arose from the experience of relatives who died of cancer. These experiences reflected issues of lack of trust in the health care system, due to concerns of 'wrongful' health care, physician incompetence, medical errors (unintentional harm) or unethical experimentation (intentional harm):

"That doctor killed my mum. It's better if she hadn't taken that treatment because she would still be alive. I blame it on them, on the hospital." (NA20, 58 years)

Women also described negative associations between prevention and disease, relaying experiences of friends who were diagnosed with cancer despite attending mammography:

"Many do mammography, but the doctors do not always find it (BC). My friend did her mammogram and had the all-clear result but in reality, she had it. Eventually, she lost her breast and then her existence." (NA13, 61 years)

## Theme 2: Knowledge and awareness

### Insufficient information

All women identified the importance of receiving information about BC and BS. However, some women had incorrect knowledge about BC prevention:

“I do not need the test. I did a CT (computed-tomography) scan and my breasts were checked during that scan.” (NA6, 62 years)

“I’ve never thought about the possibility of having BC as I breast-fed my children.” (NA19, 62 years)

Women were aware of familial history as a risk factor for BC and also considered lifestyle as important:

“Any woman can get BC, but people with a history of BC in their family, like myself, can get it even more, and those having unhealthy lifestyles too.” (NA2, 64 years)

None of the women gave correct information about screening time frequency. Breast screening examination (BSE) knowledge and practice varied. Some women were worried that BSE may not detect breast lesions:

“I do worry when I check my breasts ... that I do not detect what is really in there.” (NA2, 64 years)

## Theme 3: Social network experiences

### Cultural factors

Thirteen women reported that their GP did not provide adequate recommendations about screening benefits:

“My doctor used to tell me that if I wasn’t up for it (mammography), I would be doing well not to go because he used to tell me... ‘I showed you how to check your breasts, so that’s enough’. And when I received the letter, he told me that I don’t need to go.” (NA8, 58 years)

Some women recognised the powerful role physicians play in encouraging screening compliance and that an ineffective physician–patient relationship may lead to women’s non-attendance to BS:

“I don’t speak to my doctor about breast tests. I don’t have that close relationship with him. And since I don’t ask, he hasn’t ever mentioned it (mammography). I would need to be really pushed to go for one. I would prefer if my GP spoke to me about it.” (NA2, 64 years)

### Rejection

Women’s major concern was that having a mastectomy or further treatment would precipitate rejection by their partner. Lack of family support was also a common concern:

“I had a friend whose husband rejected her when she had her breast removed. If I had to have (a breast) removed, I’d think that he’d seek another woman and that I’m no longer attractive to him.” (NA10, 59 years)

“I’ve got four children, all married but none of them take me to health appointments or anywhere really. I feel rejected and alone. Let alone how much I will be able to cope if I found out that something was wrong.” (NA20, 58 years)

## Theme 4: Perceived effective interventions

### Cues to action

Several women reported that a recommendation from a health professional or a close relative (e.g. partner) would prompt them to consider mammography:

“I would prefer if my doctor spoke to me about mammography. I would consider his recommendations seriously.” (NA2, 64 years)

“My husband is my closest link to health care. If he says so, I would consider his advice.” (NA5, 58 years)

Listening to others (e.g. friends, relatives, television) who shared their personal experiences of cancer was also mentioned as a cue to action:

“Women who experience cancer often speak their hearts out. That’s very encouraging.” (NA18, 62 years)

Non-attendees were reluctant to receive brochures, pamphlets and listen to educational talks as these did not seem to increase knowledge and awareness of BC and BS or motivate them to attend:

“Once I receive them (brochures, pamphlets, booklets), they’re immediately discarded.” (NA7, 56 years)

## Discussion

This is the first study to explore women’s reasons for non-attending BS in Malta, and their beliefs, perceptions, attitudes and knowledge of BC and BS. The study found women experience several barriers to BS attendance, with fear being the most common barrier. This included fear of cancer diagnosis, pain, death, radiation, embarrassment and of the medical establishment. This is in line with previous research [21–23]. The belief that “it is better not to know” has been reported as a barrier to screening among Hispanic [24] and Turkish women [25]. Women in our study described using neglect and postponement as coping strategies for tackling their fears. Similarly, in another study, around 25% of patients with breast symptoms delayed seeking medical help for more than 3 months [26]. Absence of symptoms as a reason for not attending BS screening has also been reported before [9]. This suggests that the benefits of screening are either poorly understood or that screening is rejected as a premature intervention.

This study found that women were not motivated to perform BS due to competing priorities, such as family responsibilities, and fear of not seeing their (grand)children grow up. This resonates with previous research, showing women prioritise family obligations over own health [27, 28], and supports the notion that women’s fear of not being present within the family supersedes women’s consideration of screening benefits.

Our findings are also consistent with previous studies, whereby social and emotional support from women’s immediate networks, specifically husband/partner and siblings, could motivate women to improve their BS practices [29–32]. Alternatively, lack of support may lead to perceptions of rejection, isolation and loneliness. Loneliness has been described extensively in relation to death [33] but not in relation to BS. Additionally, women’s low self-confidence in this study was similar to the effect of women’s low self-efficacy in cancer prevention practices in other studies [34, 35]. Social networks may be important for building self-confidence because they serve as a source of advocacy to increase the effectiveness of health information and aid understanding of cultural factors.

Women also spoke about embarrassment about exposing their breasts in front of others. This is related to privacy matters of sexual organs [31] and literature suggesting women tend to cover their breasts [36, 37] and only allow female professionals to touch them [31]. This is consistent with previous qualitative studies, which reported that physicians’ gender can affect whether women decide to attend screening tests, such as Pap smears and mammography [38, 39, 40]. This implies that the concept of ‘shame’ for women can be avoided through tailored cultural information [41].

Screening non-attendance can also be attributed to underlying spiritual beliefs (e.g. faith in God; [42]). Cancer-related fatalism (i.e. the perception that individuals have limited influence over a disease, [9]) may lead to BS non-attendance as some Maltese women equated mammography with an impending BC diagnosis. The impact of spirituality on health behaviours can be found in a significant body of literature within the African-American community [43, 44]. However, religious, cultural and spiritual beliefs can also be facilitating factors for screening [45], and can be used to tailor empowering messages for Maltese women to take responsibility for their health.

Women’s negative health care experiences and poor patient-provider communication were also reported as barriers to BS screening. Similarly, Partin and Slater [46] found that barriers to non-attendance include prior traumatic experiences in relation of relatives with cancer, and resulting lack of trust in clinicians and mammography. It is known that fear of the health care system and subsequent denial/repression is one mechanism (of many) by which negative health care experiences may facilitate delays in

seeking health care [9], resulting in worse health outcomes such as late-stage diagnoses and higher mortality rates. Trauma exposure has also been associated with decreased routine or preventive health care [47, 48] and is tied to substantial health care system costs [49] due to negative mental [50] and physical health effects [51], and disability [52].

Effective health communication is an important motivating factor for BS behaviour [9, 42]. This study found that women would consider a recommendation by the GP to attend screening and improve their knowledge of BC and BS. However, most participants had not received advice from their physician while some had received negative advice towards screening. Insufficient information about screening may partly explain the discordance between women's beliefs and scientific evidence, and could result in women absorbing incorrect information.

Participants in this study reported following information on the media, including social media, television and radio. Information obtained from these platforms may be unreliable, incomplete and not supported by sufficient evidence [53–56]. There is a need for women to be directed to appropriate and accurate information about cancer screening, possibly by health professionals. Non-attendees suggested various communication channels as facilitators to BS, such as one-to-one counselling, GP/partner recommendations and support, and listening to other women's personal health experiences. Hence, effective interventions should focus on supporting personal strategies that build upon individual coping styles and preferences, for example counselling women to develop personalised care plans.

## Strengths and limitations

This study produced new knowledge on key factors to be addressed in interventions aiming to increase BS uptake in Malta. While previous research has relied on questionnaires to explore such factors [57–59], this study allowed for any misconceptions to be identified, which strengthens the case for providing BS education to non-attendees. A qualitative approach allowed the researcher to understand how non-attendees processed information about BC and BS. The thematic framework enabled the data to be explored in depth while maintaining a transparent audit trail, which enhances the rigour of the analytical processes and the credibility of findings [60].

This study has some limitations. First, the risk perceptions for non-attendees were not objectively measured, and women may have underestimated or overestimated their actual BC risk [61, 62]. Second, women's health literacy and actual knowledge of BC and BS were not measured. Inadequate health literacy is strongly associated with lower mammography performance [63, 64]. Third, variation in relation to cancer-related health education [65], beliefs, attitudes and behaviours [66] is likely to exist between countries and regions, limiting generalizability of findings.

## Conclusions

This is the first study to provide in-depth insights into women's beliefs, perceptions, knowledge and attitudes for lack of BS use in Malta. The study provides health care providers and policy makers in Malta with evidence specific to their local population for the future development of effective interventions to increasing BS uptake.

## Abbreviations

BS – breast screening

BC – breast cancer

SRQR - Standards for Reporting Qualitative Research

MBSP - Malta Breast Screening Programme

RA – Research Assistant

## Declarations

**Ethics approval and consent to participate:** This study was approved by the School Research Ethics Committee at the University of Stirling (SREC14/15-Paper No. 18v4) and from the Maltese Health Ethics Committee (HEC 02/2015). The authors confirm that all methods were performed in accordance with the relevant guidelines and regulations. Written informed consent was obtained from all participants.

**Consent for publication:** No individual data that can identify participants are presented in this manuscript.

**Availability of data and materials:** The datasets generated and analysed during the current study are not publicly available due to client confidentiality but are available from the corresponding author on reasonable request.

**Competing interests:** The authors declare that they have no competing interests.

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## Figures

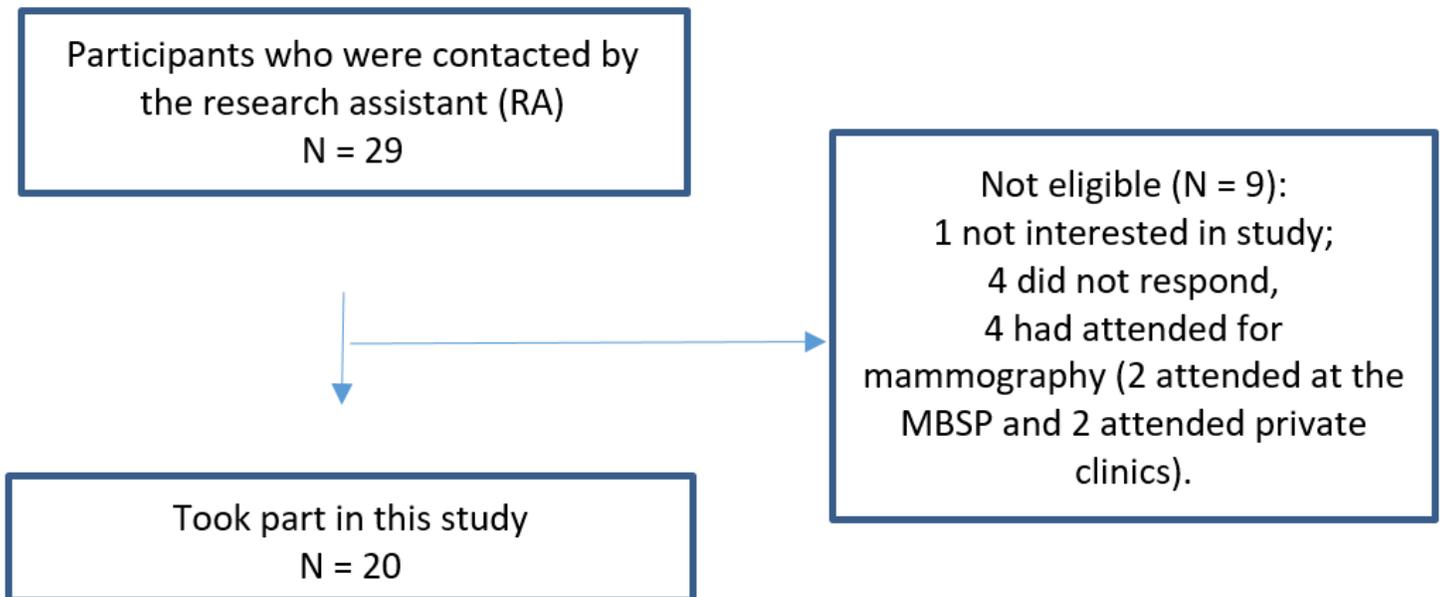


Figure 1

Flow of participants through the study

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