

RESEARCH ARTICLE

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Understanding Barriers and Facilitators of Breast and Cervical Cancer Screening among Singapore Women: A Qualitative Approach

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Abstract

Objective: The uptake of breast and cervical cancer screening services among women in Singapore remains inadequate. Little is known about how gender norms influence women's decision to undergo these screening services in a multi-ethnic Asian context. This research aimed to explore how gender-based qualitative factors influence women's decision to screen. **Methods:** Qualitative data were collected using semi-structured interviews from 40 racially diverse women aged 25 and above who had visited polyclinics for their chronic disease management. Women were recruited using a purposive maximum variation sampling strategy to ensure representation of their views from the three major ethnic groups and based on inclusion criteria. Interviews were conducted either face-to-face or via telephone call. Interviews were audiotaped and lasted 30 minutes on average. Interviews were conducted until data saturation was reached. The data was transcribed and analysed thematically. **Results:** Gender norms and gender non-concordance with the healthcare professionals did not inhibit women from undergoing breast and cervical cancer screening services to a large extent. Women were empowered and had a central role in decision-making for screening services. Healthcare initiatives such as subsidies and mobile health applications facilitated the uptake of breast and cervical cancer screening services but can be improved further. Some of the barriers reported by Malay Muslims were not dissimilar to previous qualitative studies with women in this ethnic and religious group. **Conclusion:** Gender socialisation, empowerment, and healthcare initiatives did not inhibit our study participants' decision to undergo breast and cervical cancer screening services. However, new initiatives and strengthening of the existing healthcare initiatives are needed to overcome any remnants of gender-related nuances and convert non-doers into doers.

Keywords: Asian- breast cancer- cervical cancer- screening- qualitative research

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Introduction

Breast cancer is the number one cancer amongst females in Singapore. From 2015 to 2019, 11,805 new cases were diagnosed. Correspondingly over the same period, 1107 new cases of cervical cancer were diagnosed, contributing to a significant burden as well (Ministry of Health, 2020). The age-standardised incidence rate of breast and cervical cancer in Singapore is 73.8 and 6.7 per 100, 000 population respectively in 2020 (Singapore Cancer Registry Annual Report, 2020). Notably, both these cancers are among the few where early screening has shown to be associated with superior oncological outcomes if detected early. Likewise in Singapore, women aged 40 and above are advised to undergo mammography

at regular intervals, while cervical cancer screening services are advised for women who are aged between 25 and 69 years of age and had ever had sex, at various primary care centres (Health Promotion Board, 2020).

Unfortunately, not all eligible women are compliant to the screening recommendations. The 2020 Singapore National Health Survey reported no improvements in breast and cervical cancer screening rates over the last few years. Less than half of the population were compliant with the screening guidelines. Some of the reasons for poor uptake of mammogram and cervical cancer screening services that have been postulated included socioeconomic (e.g., perceived costs of screening), psychological (e.g., low perceived susceptibility, fear of screening outcomes) and cultural or religious (e.g., taboos regarding nakedness,

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preference for traditional medicine) factors (Malhotra et al., 2016; Shaw et al., 2018). While these factors have been used to inform breast and cervical cancer screening initiatives, the wider influence of gender in women's decision to screen plays a crucial role as well (Lau et al., 2022).

'Gender' is defined as the conceptualisation of roles and responsibilities attributed to an individual's sex which change over time, place, and life stage and commonly involves social constructs such as norms, powerlessness and socialisation related to gender (Cislaghi & Heise, 2020; Heise et al., 2019). According to a recent scoping review (Lau et al., 2022), factors related to the established gender norms (e.g., women's role in the household), factors related to socialisation of gender (e.g., embarrassment, sexual context of female cancer screening), factors related to gender inequality (e.g., effect on marital relationship), and factors leading to lack of empowerment (e.g., poor sexual health knowledge) and financial barriers received emphasis across Southeast Asia. However, only four out of the 72 studies included in the scoping review originated from Southeast Asia. Among the four studies, only two were from Singapore. All the four studies did not specifically investigate the influence of gender dynamics in women's decision to screen.

Singapore is distinct from the rest of the Southeast Asian countries. For example, Singapore is a multi-ethnic, multicultural, multi-religious and multi-lingual nation comprising 74.3% Chinese, 13.5% Malay, 9.0% Asian Indian and 3.2% others (Statistics, 2021). Compared to other Southeast Asian countries, Singapore has achieved a prominent status for offering equal opportunities regardless of one's gender, especially in the realms of education attainment and healthcare access. The cultural sentiment around gender roles in other Southeast Asian countries is an impedance to gender equality. It imposes gender stereotypes, in which women are expected to prioritise family's needs over their health (Wong et al., 2008; Yang et al., 2019) and reduces their prospects of a good education, impeding health literacy (UNICET South Asia, 2018).

Despite knowledge of the barriers to breast and cervical cancer screening and proliferation of screening programmes in Singapore, the uptake of mammogram and cervical cancer screening services has not improved significantly. To our knowledge, the role of gender-based qualitative factors influencing women's screening uptake has not been investigated in Singapore. In order to address that gap in the literature, the research question we intended to answer was: How do the gender-based qualitative factors influence women's screening attendances? In doing so, we want to provide potential directions for future efforts to increase breast and cervical cancer screening uptake among women in Singapore.

Materials and Methods

Participant selection

Participants were recruited from two polyclinics (public primary care centres) in Singapore using a purposive maximum variation sampling strategy to ensure

representation of women's views from the three major ethnic groups. A trained interviewer approached women during their scheduled regular consultations as part of their routine chronic disease management at the respective polyclinics. The inclusion criteria were as follows: (1) English speaking Singaporean/Singapore PR women aged 25 to 69 years, and (2) No previous history of cancer. Women were defined as "doers" if they had ever screened and as "non-doers" if they had not.

Data collection

Written informed consent was obtained from all participants before the interview. Data was collected between January 2020 to December 2021 using a semi-structured interview guide (Table 1). The guide was piloted before using it. The data collection was completed over two years due to interruption by the COVID-19 pandemic. The interviews were conducted either face-to-face in a quiet room in the polyclinics or via telephone call. Interviews were conducted in English, audiotaped and lasted 30 minutes on average. Detailed notes were taken when participants (n=17) declined audio recording. A total of 40 interviews were conducted. The sample size was determined based on data saturation which was decided by the study team members upon reaching thematic saturation, where no new themes were identified from the data. We reached data saturation by the 36th interview, and a few additional interviews were conducted to confirm this.

Data analysis

The audio recordings were transcribed and analysed using a qualitative data analysis software, i.e., QSR NVivo 12 (QSR International Pty Ltd, 2020). We thematically analysed the transcripts using Braun and Clarke's interpretative strategies (Braun & Clarke, 2006). We familiarised ourselves with the data by reading the transcripts multiple times. The transcripts were then coded line-by-line. After that, the common codes were grouped into overarching subthemes and themes. Research team members discussed the meaning of the themes in regular team meetings to enhance reflexivity, challenge interpretations and ensure that the themes accurately represented the participant's experiences (Braun & Clarke, 2006). Thematic saturation was reached when no new codes or themes were revealed (Braun & Clarke, 2006). No repeat interviews were carried out and the transcripts were not returned to the participants for member checking. This study is reported using the consolidated criteria for reporting qualitative studies (see Supplementary file 1).

Results

Of the 40 participants we interviewed, only 18 were Chinese (45%). Participant's median age was 50-59 years, and most (85%) were married. Participants were generally moderately to well-educated, with 42.5% reporting a secondary school degree and 45% reporting a college degree. Table 2 presents the sociodemographic and clinical characteristics of the participants.

Major themes and subthemes are elaborated below alongside with illustrative quotes. Table 3 presents the

Table 1. Interview guide

Topics	Questions
Female cancer screening services	What are the female cancer screening services in Singapore? Where did you get this information from? How useful was this information?
Health-seeking behaviour	Which screening procedure did you undertake? What motivated you to go for it? Did you face any difficulties? What are the reasons for going for these services?
Decision-making	Who is the main decision-maker regarding to your health? Does your family member accompany you when going for these services? Why/Why not?
Healthcare professionals' attributes	What attributes of the healthcare professional will motivate you to go for these services?

operational definition of the subthemes.

Gender socialisation of women

Gender norms

Women bear a significant portion of the household burden, juggling responsibilities such as career, children, and caring for ageing parents. Participants (doers 20/40, 50%) reported that seeing family members undergoing chemotherapy, pain and suffering due to cancer, having unattractive breasts and death from cancer motivated them to prioritise screening despite their busy schedule

so as to not be a burden to their household members and to continue to remain healthy to care for their household.

Participant 010, Chinese: Facilitator: “My parents, in-laws got cancer. They were suffering...I don't want to suffer...I am doing screening”

Participant 039, Malay: Facilitator: “I am the only child, need to stay healthy to take care of my parents”

On the contrary, only a few participants (non-doers 4/40, 10%) reported prioritising family and work commitments before screening for breast and cervical cancer.

Table 2. Sociodemographic and Clinical Characteristics of Participants

Characteristic	Screening for breast and cervical cancer (N = 40)			
	Breast cancer screening n (%)		Cervical cancer screening n (%)	
	Doer	Non-doer	Doer	Non-doer
Age (years)				
25 - 30	0	1	0	1
31 - 39	0	4	3	1
40 - 49	9	3	10	2
50 - 59	12	2	12	2
60 - 69	8	1	8	1
Ethnicity				
Chinese	15	3	15	3
Malay	6	7	10	3
Indian	8	1	8	1
Marital status				
Single	2	2	3	1
Married	25	9	28	6
Divorced	1	0	1	0
Widowed	1	0	1	0
Education				
Primary	5	0	4	1
Secondary	12	5	15	2
College (Tertiary and advanced tertiary)	12	6	14	4
Occupation				
Homemaker	11	3	14	0
Employed	15	8	17	6
Retired	3	0	2	1

Table 3. Subtheme and Operational Definition

Subtheme	Operational definition
Gender norms	Predefined acceptable actions for women and associated gender-based burdens felt by women
Gender (non)concordance	Gender match/mismatch between women and healthcare professional and comfortability in receiving screening services
Religiosity and gender traditionalism	Perceived religious restrictions to procedures taken during screening services and lack of weightage placed on personal health
Capacitated to take action	Presence or absence of bodily ailments, and information and support from other individuals/institutions
Decision parity for women and preconceived notions on screening	Authority in making decisions for one's health and perceptions/ knowledge surrounding screening importance
Subsidies	Financial access (not) available
Digital tools to facilitate screening	Digital tools helping screening

Participant 016, Indian: Barrier: *"I did not do because...busy with family, fetch grandchildren, housework. These are my priorities ...cannot think about screening."*

Participant 003, Chinese: Barrier: *"Busy with work, looking after family ...only person to bring my mother to medical check-ups ...no time for myself."*

Gender (non)concordance

Female counsellors, i.e., nurses or doctors were preferred by a few participants (doers 12/40, 30%) when counselling them for cancer screening services because they believed that female counsellors are more nurturing, caring, and easier to build rapport with than male counsellors. Moreover, women were comfortable with female counsellors due to the topic's sensitive nature. Nevertheless, according to our participants, the gender of the counsellor did not influence their decision-making for screening. They would undergo screening as long as a healthcare professional recommended it. On the other hand, many participants (doers 23/40, 57%) opined having no preference for the gender of the counsellor and the counsellor's medical knowledge was attributed to it.

Participant 020, Chinese: Facilitator: *"Pap smear is fast, not much contact involved. So, a male (healthcare professional) doing is okay"*

The feeling of embarrassment among participants varied between mammogram and cervical cancer screening services. All the participants felt ashamed and were unwilling to undergo mammogram if male healthcare professionals performed them. The reasons attributed were proximity with the healthcare professional and more prolonged physical contact with the breasts to position them between the mammogram plates. However, participants mentioned only having encountered female healthcare professionals during their mammograms.

On the other hand, the majority of the participants (doers 21/40, 52%) were comfortable with male healthcare professionals administering cervical cancer screening services. Less physical contact and the fast nature of the procedure were the reasons highlighted. Due to participants' prior positive experiences with male healthcare professionals during the antenatal period, participants exhibited a great deal of trust in male

healthcare professionals and did not perceive that they were exhibiting inappropriate behaviour. Screening by male healthcare professionals was also not perceived as an invasion of their privacy.

Participant 020, Chinese: Facilitator: *"Pap smear procedure is very fast, not much of contact involved. So, if it is a male doing it, I am okay with it."*

Participant 009, Chinese: Facilitator: *"I gave birth to two children, and the gynaecologist was a male... comfortable and trust them."*

On the contrary, a few participants (doers 16/40, 40%) preferred screening by female healthcare professionals. Although these participants were impartial in terms of the healthcare professionals' competence, they preferred female healthcare professionals based on three factors: rapport building, empathy, and fear of embarrassment. However, they reported that embarrassment would not deter them from undergoing screening by male healthcare professionals if female healthcare professionals were unavailable.

Participant 032, Indian: Barrier: *"Pain and discomfort, a male (healthcare professional) cannot understand... female can understand. So I prefer a female physician."*

Religiosity and gender traditionalism

A common report, especially among Malay Muslim participants (doers and non-doers 10/13, 62%), was a reluctance to undress or allow genital examination in front of male non-family members due to their cultural and religious norms. Although their religious teachings promoted a sense of responsibility to care for their health in general, most Malay Muslim participants mentioned that the Muslim society did not specifically counsel or encourage women to undergo female cancer screening procedures. According to a few participants (non-doers 3/7, 43%), lack of advice from the religious institutions felt as though a lack of weight was placed on cancer screening and thus made it a lower priority than what it ought to be. The Chinese and Indian participants mentioned having no influence of their cultural and religious norms on their screening behaviours.

Participant 007, Malay: Barrier: *"We can do only if female person is doing the procedure ...Islamic guidelines not supposed to expose female areas to male... life after*

death not good.”

Participant 026, Malay: Barrier: “Generally, in Muslim society, don't tell us about science things ...don't say in mosque. Only teach about Islamic teachings. I don't feel a need to do.”

Empowerment and decision-making Capacitated to take action

Empowerment was associated with the availability of comprehensive information and financial independence. All participants reported that receiving comprehensive information regarding breast and cervical cancer and their screening procedures from healthcare professionals, hospital brochures and the internet were essential to empowerment. Due to this, participants reflected adequate knowledge in understanding the aims and benefits of cancer screening and were more inclined to undergo screening.

Participant 007, Malay: Facilitator: “Read about it in polyclinics. Stated how the procedures are done, benefits ...motivated me to go.”

Financial independence was considered important to promote women's health-seeking behaviours. Participants mentioned that because they were employed, either they would or their company insurance would pay for the screening costs. They did not have to ask their family members to pay for their screening costs. Notably, a few others who were either homemakers, retired or did not have insurance coverage believed that a screening service was worth paying for.

Participant 020, Chinese: Facilitator: “My company insurance has screening package ... so I ...doing regularly.”

Additionally, participants (doers 30/40, 75%) reflected being physically and emotionally able to complete the screening services by themselves. Being able to spend time alone during screening visits and lack of bodily impediments were the qualities attributed to an ‘independent woman’. Moreover, participants compared the screening services to routine blood draws, which can be managed by themselves.

Participant 012, Chinese: Facilitator: “I don't think my husband needs to accompany me (for screening) ... no problem that I cannot walk.”

Participant 037, Indian: Facilitator: “This is a normal procedure like blood tests ...don't think need someone...”

Decision-parity for women and preconceived notions on screening

There are mixed responses discussing medical issues with social contacts, such as spouse, children, or other family members. The most common reason was the perception that husbands were unaware of female cancer screening services since they were unrelated to them. All participants reported having the final say regarding their healthcare decisions. According to a few participants (non-doers 6/40, 40%), the decision to forgo screening was associated with simply not wanting to screen due to lack of symptoms, fear of knowing the diagnosis and not being in the recommended age group for a mammogram.

Participant 030, Indian: Facilitator: “I decide which

screening test I need to go. This is my health.”

Participant 012, Chinese: Facilitator: “I don't talk to him (spouse) about this because it's a female thing, he won't understand. I am in charge of my health.”

Participant 026, Malay: Barrier: “I did not do because I have no symptoms ...have symptoms then I will go.”

Participant 004, Malay: Barrier: “I did not do mammogram because it is for senior women”

Healthcare initiatives

Subsidies

In our sample, participants (doers 19/40, 48%) underwent screening at the polyclinics since they offer subsidised cancer screening services. As a result, cost was not a barrier to screening. They also mentioned paying for these services using one's Medisave account. However, they pointed out that some were unaware if Medisave could be used to pay for these services. Medisave is a compulsory medical savings account (Ministry of Health, 2022).

Participant 021, Chinese: Facilitator: “Cost wise it is accessible (heavily subsidised) in polyclinics ...only \$50, and Medisave claimable.”

Participant 021, Chinese: Barrier: “I think many are not aware its Medisave claimable”

Digital tools to facilitate screening

Mobile health applications provided convenience to schedule mammogram and cervical cancer screening appointments, according to a few participants (doers 3/30, 8%). Whereas one participant was unaware if mobile health applications could be used to book appointments. A few participants (doers 6/40, 15%) used phone calls to schedule appointments and were perceived to be troublesome due to long intervals before being attended to.

Participant 012, Chinese: Facilitator: “To make and reschedule appointments is convenient...HealthHub (mobile health application).”

Participant 009, Chinese: Barrier: “Not sure if can use HealthHub (mobile health application) to book appointment. I call ...for appointments.”

Participant 035, Chinese: Barrier: “When I call polyclinic for appointment...20 minutes to speak to customer service hotline...”

Discussion

Singapore has done well in advocating for screening of female cancers. Gender norms did not inhibit women from undergoing breast and cervical cancer screening services to a large extent. Participants were empowered and had a central role in decision-making for these screening services. Appropriate healthcare initiatives and infrastructure facilitated uptake of these services, but they need to be improved further. Some of the barriers reported by Malay Muslims were not dissimilar to previous qualitative studies with women in this ethnic and religious group (Schliemann et al., 2022; Shaw et al., 2018).

The gender nuances pertaining to the burden faced by women due to work and household commitments are well known (Chua et al., 2021). Therefore, at a

national level, there are targeted measures to improve physical accessibility to make mammogram and cervical cancer screening attendance more seamless for women. For example, these screening services are available island-wide at primary care centres in major residential areas. Furthermore, mobile screening units such as the Mammobuses roam around the island to help working women and homemakers undertake screening. Thus, accessibility to these facilities is not a pertinent reason as ironically these women were recruited for this study in the very polyclinic where the screening can be performed. Using gender nuances may simply be an easy excuse to hide the true reasons for non-compliance. That said, more publicity on the whereabouts and availabilities of screening facilities at the national level is needed (Lin et al., 2021).

However, even if the infrastructure is present and nearby, it does not necessarily translate to accessibility. Arranging appointments using traditional methods was perceived by a few participants as burdensome. As part of Singapore's Smart Nation initiative, a mobile health application i.e., HealthHub was developed, which harmonises healthcare attendances to a personalised digital account and enables appointment setting and disease monitoring hassle-free (Willems and Graham, 2019). However, it is clear that the presence of a mobile health application, much like the millions of others, does not necessarily translate to adoption (Surendran et al., 2021). It is often easy for anyone to propose a seemingly straightforward solution such as a mobile application, but the backend logistical, infrastructural setups are often underestimated. On the other hand, users must be taught or keen to learn how to utilise the innumerable functions often touted by the application developers. It is possible in Singapore, given the right nudge. The Tracetgether Application is one good example. Introduced during the COVID-19 pandemic to facilitate contact tracing, it is able to document individuals' vaccination records, travel history and contact history within Singapore. Without activating the Application, individuals are not allowed into shopping malls or even eat in restaurants (Stevens & Haines, 2020). The adoption of Tracetgether Application is one of the success stories of our Smart Nation initiatives, accelerated by the COVID-19 pandemic. Thus, for an application to be successful at a national level, a multi-pronged approach looking at user-training, interface to backend logistics and infrastructural requirements to its eventual efficacy must be adopted.

Our findings, however, to an extent, dispel the fact that gender non-concordance with the healthcare professional is a barrier to cervical cancer screening, except for the Malay community. This is in contrast to other studies that illustrate the distress in women when male healthcare professionals performed cervical cancer screening services (Baskaran et al., 2013; Seng et al., 2018). This difference could be attributed to the education level of a population in a high-income country like Singapore (Chan et al., 2021) and also the trust in our healthcare professionals. Women might view the screening process as a medical necessity and have a greater say over their health decisions, unlike countries in Asia where women are less empowered

(Lau et al., 2022). Furthermore, in Singapore, numerous safeguards ensure respect for all patients and the standard of care is regarded highly worldwide. However, as most of our participants are relatively highly educated, it might also not be representative of the entire population.

Tackling the issue of Malay women not as screen compliant to their Chinese and Indian counterparts require further evaluation. The latest National Health Survey highlighted that the Malays are the least compliant towards breast, colorectal and cervical cancer screening. It is unclear if this is cultural or religious and more likely a combination of such factors. Hence, collaborative efforts between healthcare professionals and religious leaders may be a good start in an attempt to positively influence screening and prevention (Levin, 2016; Villatoro et al., 2016). The preaching of Muslim leaders on COVID-19 vaccine was important to increasing vaccine acceptability among Muslims (Wijesinghe et al., 2022). This demonstrates that congregants are willing to practice preventative health behaviours if religious leaders ask them to do so (Khalid et al., 2022). Our findings point to the lack of emphasis religious groups place on female cancer screening, which necessitates an exploration of community-integrated approaches such as the engagement of religious leaders. Such engagement can take the form of co-creation with various stakeholders to generate more contextually appealing policies for the target population.

There are some limitations to this study. Participants were recruited from two polyclinics, which may limit the generalisability of the study findings. Also, these participants maybe be more health conscious than other women. Yet our study identified barriers to cancer screening. The rich data collected from women from different ethnic backgrounds in Singapore is a strength of this study.

In conclusion, the broad themes of gender socialisation, empowerment, and healthcare initiatives did not inhibit our study participants' decision to undergo breast and cervical cancer screening services. However, new initiatives and strengthening of the existing healthcare initiatives are needed to overcome any remnants of gender-related nuances and convert non-doers into doers.

Author Contribution Statement

Conceptualisation, S.S., and K.K.T.; methodology, S.S., and K.K.T.; formal analysis, S.S., and C.D.F.; investigation, S.S.; data curation, S.S.; writing—original draft preparation, S.S.; writing—review and editing, S.S., C.D.F., D.H.Y.T., W.H.T., J.M., J.L.X.O., and K.K.T.; supervision, K.K.T.; project administration, S.S.; All authors have read and agreed to the published version of the manuscript.

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Approval

National Healthcare Group, Singapore, Domain Specific Review Board approved this study (2020/01091).

Data Availability

All data relevant to the study are included in the article. Anonymised transcripts will be available upon request on a case-by-case basis.

Conflict of Interest

Not applicable.

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