Sri Lankan Journal of Health Sciences

Mini Review

Exploring the Awareness of Mammographic Screening for Breast Cancer and Identifying Barriers to Refrain from Screening: Mini Review of the Literature

Thishuli Walpola [1]*, Bimali Weerakoon[1]

[1] Department of Radiography/ Radiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka.

* Correspondence: thishuli@ahs.pdn.ac.lk

Abstract

One of the most important factors to be addressed regarding breast cancer (BC) mortality and morbidity is the identification of BC at a late stage due to a lack of awareness of early detection methods of BC. Mammography can be emphasized as a foremost vital facet in the early detection of breast cancer as a screening tool. A mini review of the literature was performed to explore the concepts of awareness of screening mammography for breast cancer under three main aspects. There, the knowledge, attitude, and practice of women in mammographic screening were focused meanwhile identifying the common barriers for women to refrain from undergoing mammographic screening for breast cancer. The studies included various categories of participants especially subcategorized under their personal history or demographic characteristics. Therefore, the correlation of these factors with their awareness level has also been focused. Further, the barriers to screening mammography encountered by women were included. Therefore, this mini-review highlights the different levels of awareness of mammographic screening among females and the common reasons for avoiding screening. It concludes the benefit of bringing the knowledge of females to a considerably positive juncture by utilizing escalating awareness programs, hence minimizing the common causes of refraining from screening mammography.

Keywords: Screening Mammography, Breast Cancer, Mammograph awareness, Early Detection Method, Breast Evaluation

Introduction

Breast cancer (BC) is a malignant tumor that usually begins in the cells of the lobules, which produce milk, or the ducts, which drain milk from the lobules to the nipple. It is the most frequent type of cancer in women globally, which accounts for 25% of all cancers in women. Every year, more than a million women in the world are diagnosed with breast cancer, and more than half of them die as a result of it (1). Over the past two decades, BC has become a major public health problem due to its high mortality rates in developing countries in Asia, the Middle East, and Africa. Currently, it is the second leading cause of cancer-related deaths in more developed countries, following lung cancer (2). Early detection is critical for improving prognosis, which meantime highlights the need of timely and enhanced screening methods (3).

Citation: Walpola T, Weerakoon B. Exploring the Awareness of Mammographic Screening for Breast Cancer and Identifying Barriers to Refrain from Screening: Mini Review of the Literature. Sri Lankan J. Health. Sci. 2023, 2 (1), 12-18. https://doi.org/10.4038/sljhs.v2i1.38
Received: 29.10.2022; Accepted: 10.11.2023; Published: 30.12.2023

The South Asian countries are currently grappling with the issue of breast cancer, as there is a significant number of over 558 females aged above 15 who are affected by this widespread disease (4). The reduction of mortality rate in asymptomatic women between 50-69 years has been reported as 20%-35%. According to registry data in Sri Lanka, its incidence is rising, and approximately 3,000 new cases are diagnosed each year (5). A vital component in breast cancer control programs is awareness of knowledge, attitude, and practice of mammographic screening among women (6). A mammogram is a radiological imaging method for breast cancer screening, which is also a component of the triple assessment methods of BC, namely, clinical assessment, radiological assessment, and pathological assessment (7). The significance of mammographic examination for early detection of breast cancer has been identified. Further, the reduction of mortality rate due to early categorization of risky groups via screening of breasts has been noticed in many studies (8). Since the risk of developing contralateral BC is higher, the follow-up mammography screening aids in compromising the disease growing up to a large scale (9). Especially in asymptomatic women, the intention of mammography is much more important in the early detection of diagnosis of different BC conditions (10). Additionally, it facilitates early detection that helps to avoid aggressive and invasive treatment (11).

There are numerous benefits as well as fewer limitations in mammography screening for breast cancer. However, the advantages still surpass the harmful aspects of mammographic screening (12). The impact of mammographic screening on mortality and morbidity has been taken into attention by several researchers (13).

According to the recommendations suggested by the American College of Radiology (ACR) in 1997, the new guidelines for screening mammography have been reviewed (14). It emphasizes screening intervals, age at the point of analysis, benefits, drawbacks, and risks of screening mammography. Since the younger generation has more tendency to develop BC conditions, the new guidelines suggest annual screening for all asymptomatic women beginning from age 40. The guidelines are valid only for women without signs or symptoms of BC. If a woman under the age of 40 presents with risk factors for breast cancer, she is recommended for screening. The frequency and the type of breast examination depend on the symptoms and it should be referred by a physician (14).

When focusing on significant screening guidelines implemented in Sri Lanka, the National Cancer Control Programme (NCCP) has implemented guidelines, indicating that patients suspected of breast cancer should undergo bilateral mammography and ultrasonography before pathological evaluation. Further, the National Comprehensive Cancer Network (NCCN) has released new guidelines which state that women should undergo a breast cancer risk assessment starting at age 25 years, and annual mammography screening beginning at age 40 years for those with average risk (14). The main aim of the study is to gain a thorough understanding of women's awareness of mammographic screening for BC in aspects of knowledge, attitude, and practice. Further, to identify the significance of early detection of BC and to evaluate the common barriers to refraining from performing screening.

Methods

The primary databases utilized to retrieve the literature presented in this review were PubMed, Google Scholar, and Cochrane database. The search terms were used separately and in combination, including the key terms; “breast cancer,” “screening mammography,” “awareness of screening mammography,” “review,” “barrier,” and “early detection method.” Only articles in English were included. We mainly focused on original articles on questionnaire-based cohort studies, the meta-analyses and the reviews were excluded. Limited focus was driven towards the literature on BC awareness. Therefore, more attention was paid to awareness of screening mammography for BC. Finally, applying these criteria we obtained 20 articles and later restricted the reference list to identify the most influential articles and included the findings of 10 journal articles in this mini review.

Results

Results are interpreted under two main themes: 1) awareness of mammographic screening and 2) barriers towards the screening.

Awareness of Mammographic Screening

The studies were reviewed based on three main aspects under awareness. They were the knowledge, attitude, and practice of participants towards the screening mammographic examinations. Many studies assessed the knowledge, attitude, and practice separately, while some studies combined their results to assess the awareness in common. It was found that the participants' demographic characteristics, such as personal history, education, finances, occupation, and marital status, had a significant impact on their awareness of breast cancer screening (4, 15).

A study from Brazil, including 663 participants, analyzed the relationship between knowledge, attitude, and practice (KAP) of the women and their socioeconomic status. Only 7.4% of participants were identified with adequate knowledge of mammography, while 94.1% had a positive attitude toward screening mammography, and 35.7% had adequate practice on mammography. The practice as a percentage has been decreased, due to only 38% of the recommended women being subjected to undergo a mammogram. When interviewees gave accurate information related to the KAP of the exam, it was determined that they had sufficient awareness of mammography. Their knowledge was assessed by questioning them regarding awareness of an exam called 'Mammography' and the age and methods that they get to know about it. Patient's attitude was determined by their positive impression of the screening-related questions throughout the questionnaire. The adequacy of the practice of mammography among females was assessed by the methods that they were directed to undergo a mammogram (by their own will or doctor's prescription) and the duration between two consecutive mammograms. There was no correlation identified between socioeconomic factors and mammographic knowledge. However, education level and family income showed an impact on attitude (10).

A descriptive cross-sectional study was conducted among 100 Ugandan women to evaluate their knowledge, attitude, and practice concerning BC and mammography. It was evaluated that only 4% had sufficient knowledge of mammography, while 71% had no idea. None of the participants (0%) were aware of the energy type used in mammography. There were only 2% aware that mammography aids in detecting early BC, 15% were aware that performing control mammography in certain intervals is required, only 10% were aware that there is an age limit for mammography, and none of them knew about the eligible age range (35-45) for screening mammography. The overall women's attitude towards breast screening using mammography was negative. Considering the intention of the practice, none of the participants had ever undergone a mammogram. Some who knew about mammography avoided it due to its high cost. The results showed that women with education levels above the elementary level were around four times more likely to undergo a mammogram than women with education levels below that level (OR 3.79, 95% CI 1.51-9.43). Women who were employed were seven times more likely to get a mammogram than those who were not (OR 6.9, 95% CI 1.46-333.21). Therefore, this study further emphasized that there was an association between the KAP on mammography with the participants' socio-demographic characteristics (15).

A study was conducted in Jordan to assess breast screening knowledge, attitudes, and practices among 1353 women and their correlation with socio-demographic characteristics, particularly mammographic screening. Of the participants, 95% were aware that early detection methods would help in minimizing the mortality rate from BC. The results elucidate that 72.7% of the participants were at an excellent level of awareness of BC early detection methods, while only 3.9% were poorly aware of it. When compared to individuals with secondary education, around 78.0% of those with higher educational levels were substantially more knowledgeable about BC early detection and curability ($p = 0.015$). Additionally, 77.6% of participants who were being employed had greater awareness of BC early detection and curability compared to the unemployed. Out of 809 participants who have heard of

mammography, only 17.2% have undergone the examination. It depicts a considerably low impact on the practice of mammography. The knowledge about mammography was assessed based on factors such as whether they identify mammography as the most effective screening tool for breast cancer, whether they accept the safety performance of mammography, awareness of pain during the procedure, and identifying mammography as the best method of minimizing breast cancer mortality rates. However, few of the socio-demographic factors showed significant associations. Married women had more awareness than unmarried ($p = 0.011$). Students or young-age participants had poorer knowledge than adults ($p = 0.022$) (15).

A study of a sample of 519 Turkish women showed that only a small proportion of 23.1% ever had a mammogram, and all were within 2 years from their first mammographic study. In this study, inadequate literacy among women especially depending on their employment status had been identified as a foremost factor in lacking knowledge of mammography (OR 6.53; 95% CI 1.46–9.13). Age, education, occupation, income, health, and smoking status were also associated with mammographic awareness and screening practices (15). A hospital-based cross-sectional study conducted in Bangladesh evaluated the awareness of participants about different BC screening methods, including breast self-examination (BSE), clinical breast examination (CBE), and mammography. The awareness levels of the three methods were 19.7%, 12.1%, and 5.9%, respectively. Among those who heard of 'mammography,' 91.5% had never undergone a mammographic examination. Therefore, it shows that the intention towards the mammographic practice was not at a satisfactory level in this study (6).

BC screening by Mammography and its associated factors have also been investigated in the study by Alam et al 2021. Out of the 1184 women who responded to the survey, 55% said they ever had at least one mammogram. Among the rest of the participants, 10% had never heard of an examination called mammography. The majority of women (82%) underwent a mammogram as a screening examination. Meanwhile, their income showed a direct and indirect impact on undergoing a mammogram. Having a family member with a history of breast pathology has been shown to increase knowledge and engagement in mammographic examinations among women (6).

Barriers towards the Breast Cancer Screening

The evaluation of the most common types of reasons for individuals to refrain from undergoing a mammographic examination is more vital. Therefore, identifying the reasons can lead to further analysis. Medical professionals and researchers can work together to overcome these barriers. Table 1 and Table 2 below show the commonly identified barriers in previously conducted studies.

Table 1. The Barriers for Refraining from Mammographic Screening (4)

Barrier	Yes	No	Don't know
Acceptable to touch my body	217 (43.4%)	283 (56.6%)	
Embarrassing to tell people about	323 (64.6%)	177 (35.4%)	
No idea about what other people think	311 (62.2%)	189 (37.8%)	
Stigma following the diagnosis of cancer	265 (53.0%)	235 (47.0%)	
Feeling shy to uncover my breasts	268 (53.6%)	232 (46.4%)	
Fear of hospitals and health facilities	209 (41.8%)	291 (58.2%)	
Feeling worried about what a doctor might find	283 (56.6%)	191 (38.2%)	26 (5.2%)
Difficulty talking to doctor	261 (52.2%)	218 (43.6%)	21 (4.2%)
Lack of knowledge	293 (58.6%)	155 (31.0%)	52 (10.4%)
Fear of physicians and examiners gender	171 (34.2%)	329 (65.8%)	
Afraid of having mammography due to pain	304 (60.8%)	149 (29.8%)	47 (9.4%)
Busy, no time to do it	193 (38.6%)	307 (61.4%)	
Awareness program is deficient	267 (53.4%)	163 (32.6%)	70 (14.0%)

Table 2. Barriers to Breast Cancer Screening and selected example quotes (17)

Barrier	Selected quotes
Fear and Anxiety	Fear of the pain during the procedure. Fear of finding something and stigma on losing a breast. Concern about the risk of radiation. Uncertainty of the gender of the technologist.
Misinformation	Physicians never suggested to have a mammogram. Very expensive test.
Beliefs	Breast is a sexual part of the body, and it should be private. No trust on doctors and western medical systems.
Accessibility	Difficulties in transportation to scanning centers. Feeling that it is not necessarily due to limited information. Language barrier.
Personal and social factors	Anxiety disorders or low-self-esteem. Busy schedules. Lack of assistance for participation.

Discussion

BC can be identified as a pervasive health problem existing among the worldwide female population. Considering that prevention is always better than cure, this review aimed at assessing females' knowledge of breast cancer screening in three main aspects (knowledge, attitude, and practice). The screening mammographic examinations are explicitly aimed at reducing the severity and mortality rates of BC. Facilitation of early BC detection is identified as the foremost advantage of performing screening mammography. This review will be utilized to gain a thorough understanding of women's awareness of mammographic screening for breast cancer, along with the barriers to refraining from screening. Further, this review will be used to identify research gaps and limitations to develop future studies with advancing objectives to increase women's participation in breast screening practices with favorable attitudes. Furthermore, applying the findings of this review to a Sri Lankan female cohort will help in developing an outstanding prognosis on BC among Sri Lankan women.

When considering previous studies conducted on women's awareness of mammographic screening, Alberto et al (2008) study conducted in Brazil explored that women users of local health services had no adequate knowledge and practice related to mammography despite having an adequate attitude. In 2016, a study conducted in Korea found that in order to improve the detection rate of breast cancer through screening with mammography, it is important to increase the participation rate. This can be achieved by creating an environment that allows for accurate mammography, and by reinforcing quality control measures (12). In 2020, a study in Bangladesh found that educational interventions, appropriate awareness programs, and addressing screening barriers improve breast cancer knowledge and awareness (4).

The literature suggests that women who possess adequate knowledge and a positive attitude towards mammograms are more likely to undergo the procedure.The previous study showed a 60% breast cancer mortality rate without early detection. Refraining from undergoing screening mammograms can be due to fear, anxiety, embarrassment, fear of incorrect interpretation, and lack of awareness of screening tests. The literature supports to categorization of women based on their awareness levels, helping underprivileged populations to spread positive attitudes and screening practices. The review findings indicate that inadequate knowledge about recommended screening intervals and sociocultural barriers are the main factors contributing to low mammographic awareness levels. Further, this review has broadly focused on the barriers to refraining from mammography. Therefore, appropriate steps could be taken to minimize the obstacles to screening and widen the opportunities for women to engage in breast screening. Even if the prevalence of BC is rising, more awareness campaigns and effective information dissemination could improve this situation. As a foremost big step, medical professionals and the

government together can develop a workable strategy that can diagnose and raise awareness while overcoming the barriers to screening among women and in society as a whole.

Conclusions

The conclusion from the findings implies that the awareness of women on mammographic breast cancer screening is not at a satisfactory level. It highlights that, though women have a positive attitude toward screening, a considerable number of factors may lead to a lack of knowledge and practice toward screening. Most of the female respondents believed that there were difficulties in treating breast cancer and were typically clueless, ignorant, and unaware. Socio-demographic characteristics, including personal history, occupation, educational status, and marital status, could be identified as factors having a stronger correlation with breast cancer awareness levels. The common barriers identified for performing screening were fear about diagnosis, lack of awareness, high cost, problems with accessibility, and other socio-demographic factors. Therefore, the study findings explore that the regular inspection and recommendation of physicians for women in the eligible age ranges would maximize the attention and awareness of women toward breast screening. Further, relevant, appropriate, and socially acceptable awareness initiatives will aid in enhancing knowledge and awareness of breast cancer among females meanwhile addressing barriers to it.

Author Contributions: Conceptualization, BW and TW; methodology, TW; formal analysis, TW; investigation, BW; writing—original draft preparation, TW; writing-review and editing, BW and TW; supervision, BW. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest

References

1. Tazhibi M, Feizi A. Awareness Levels about Breast Cancer Risk Factors, Early Warning Signs, and Screening and Therapeutic Approaches among Iranian Adult Women: A large Population Based Study Using Latent Class Analysis. Biomed Res Int. 2014.
2. Jemal A, Bray F, Ferlay J. Global Cancer Statistics, A Cancer Journal for Clinicians. 2011;49(2): 33-64.
3. Ahmad A. Breast Cancer Metastasis and Drug Resistance: Challenges and Progress. Springer. 2019. 1–413.
4. Nurul M, Uddin G, Uddin N, et al. A hospital-based survey to evaluate knowledge, awareness and perceived barriers regarding breast cancer screening among females in Bangladesh. Heliyon. 2020, 1(6)4.
5. Balawardena J, Skandarajah T, Rathnayake W, et al. Breast Cancer Survival in Sri Lanka. JCO Glob Oncol. 2020, (6): 589–99.
6. Alam NE, Islam MS, Ullah H, et al. Evaluation of knowledge, awareness and attitudes towards breast cancer risk factors and early detection among females in Bangladesh: A hospital based cross-sectional study. PLoS One. 2021, 16:1–13.
7. Okaro AO, Eze CU, Ohagwu CC. Awareness about mammography and breast self-examination: a survey. African Journal of Midwifery and Women's Health. 2009, 17; 3(3): 129-32.
8. Strax P, Venet L, Shapiro S. Value of Mammography in Reduction of Mortality from Breast Cancer in Mass Screening. Am J Roentgenol. 1973, 117(3).
9. Alberto L, Marinho B, Salete M, et al. Knowledge, attitude and practice of mammography among women users of public health services. Revista de Saúde Pública. 2008, 42(2): 200–7.
10. Mann RM, Hooley R, Barr RG, et al. Novel approaches to screening for breast cancer. Radiology. 2020, 297(2): 266–85.
11. Lee K, Kim H, Lee JH, et al. Retrospective observation on contribution and limitations of screening for breast cancer with mammography in Korea: Detection rate of breast cancer and incidence rate of interval cancer of the breast. BMC Womens Health. 2016, 16(1).
12. Gøtzsche PC, Jørgensen KJ. Screening for breast cancer with mammography. Cochrane Database Syst Rev. 2013, 2013(6).

13. Feig SA, D'Orsi CJ, Hendrick RE, et al. American College of Radiology guidelines for breast cancer screening. Am J Roentgenol. 1998, 171(1): 29–33.
14. Elsie KM, Gonzaga MA, Francis B, et al. Current knowledge, attitudes and practices of women on breast cancer and mammography at Mulago hospital. Pan Afr Med J. 2010, 5(9):1–19.
15. Nadalin V, Maher J, Lessels C, et al. Breast screening knowledge and barriers among under/never screened women. Public Health. 2016, 133: 63–6.