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REVIEW ARTICLE

Knowledge, Attitude and Practice of Public on Breast Cancer Screening: A Systematic Review

Mohd Shaiful Ehsan Shalihin[1*], Nor Aishah Ramlee[2], Amirah Azhar[2], Anis Arisha Fatiha Mohd Zaki[2], Azmi Md Nor[3], Mohd Aznan Md Aris[1]

[1] Department of Family Medicine, Kulliyyah of Medicine, International Islamic University of Malaysia, Kuantan, Pahang, Malaysia
[2] Kulliyyah of Medicine, International Islamic University of Malaysia, Kuantan, Malaysia
[3] Department of Surgery, Kulliyyah of Medicine, International Islamic University of Malaysia, Kuantan, Pahang, Malaysia

*Corresponding author's email: shaifulehsan@iium.edu.my

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ABSTRACT

Breast cancer is among the commonest cancers that affect women worldwide. Nevertheless, many patients were diagnosed with breast cancer in the terminal stage due to their late presentation to healthcare centres despite the advanced development of screening modalities. Therefore, a systematic review was conducted to summarize the trend of knowledge, attitude, and practice level of breast cancer screening among the public globally. Review identification was performed in database search using PubMed, Scopus and CINAHL. Based on the criteria consisting of full papers in English published from January 2010 to September 2020, 27 articles were eligible for review. The systematic review revealed that the public had inadequate knowledge, negative attitudes, and poor practice on breast cancer screening. Educational programmes should be implemented among communities. Communication skills training must be instilled among healthcare workers to raise knowledge of breast cancer that can influence the attitude and practice of the public on breast cancer screening positively.

INTRODUCTION

Breast cancer is among the commonest cancers that affect women (Ghoncheh et al., 2016) The prevalence is increasing in trend due to the advancement in the screening strategies and availability of treatment centres worldwide. Even though its incidence is higher in developed countries, the mortality rate is still greater in developing

countries compared to the developed ones (Aidalina et al., 2018; Ghoncheh et al., 2016; Sancho-Garnier et al., 2019). Most patients still presented late to the tertiary centres despite various screening modalities available and enthusiastic promotion efforts by the primary care providers. Most of the time, they wait for the symptoms to occur before seeking treatment for confirmation. Screening can be defined as the identification of unrecognized diseases or risk factors through adequate history taking, appropriate physical examination, justifiable laboratory test or other appropriate procedures (Ghoncheh et al., 2016; Sancho-Garnier et al., 2019). However, the action of seeking attention only when the signs arise is not fulfilling the screening purposes and reflects the inadequacy of preventive medicine empowerment. This could be due to the low level of knowledge and awareness of the community towards breast cancer screening. Types of breast cancer screening include clinical breast examination and mammogram. These services are widely available throughout the world, either in developed or developing countries. Therefore, service barriers or location factors should not be the main issue. Nevertheless, the screening uptake is still low and poor. In Malaysia, the uptake is only between 3.6% to 30.9% despite the higher mortality rate secondary to cancer (Ghoncheh et al., 2016). Thus, the gaps between patients and healthcare need to be identified and explored to improve the early detection of breast cancer among the communities. Thus, this article generally aimed to identify associated reasons for poor uptake of screening and late diagnosis of public breast cancer.

MATERIALS AND METHODS

This review article objectively aims to identify the level of knowledge, attitude, and practice among the public, based on local and global studies on breast cancer and its screening. The associated factors contributing to the score were also identified. Four electronic databases (PubMed, Web of Science, CINAHL and Scopus) were searched from the database inception January 2010 till September 2020. Three independent authors were responsible for searching and stratifying the articles by scanning the titles and abstracts identified from the search strategy for all databases. Another independent author with expertise in the subject matter verified the finalized articles and solved any discrepancies between the authors. The search strategy used the following sets of descriptors: Knowledge; Understanding; Attitude; Response; Practice; Behaviour; Action; Screening; Breast Cancer; Cancer of Breast; Community; Patients and Public. Research questions to be answered were the level of knowledge, attitude and practice of the public on breast cancer screening, and the associated factors for the identified level. Other inclusion criteria included articles must be in English language and the paper format was either cross-sectional, case-control or cohort in the study. Further data extractions were carried out by the initial three authors using a standardized data extraction table to collect relevant data from each eligible trial. The data comprised publication details, study characteristics, study setting, study design, sample size, patient characteristics, diagnostic criteria, eligibility criteria and outcome measurements. Any divergences regarding data extraction between the three authors were also solved by the fourth author via discussion. Any articles with insufficient or missing information were also excluded. Out of the 191 articles identified, 71 articles meeting the inclusion criteria were included. The other articles were excluded because of their structure and format which consisted of case reports, case series, commentary, randomized control trials, review articles, systematic reviews or meta-analyses. Articles that discussed breast cancer only without covering the screening components were excluded. After reviewing data extraction and finalized by all authors, only 27 articles were included which fulfilled the objective (Figure 1).

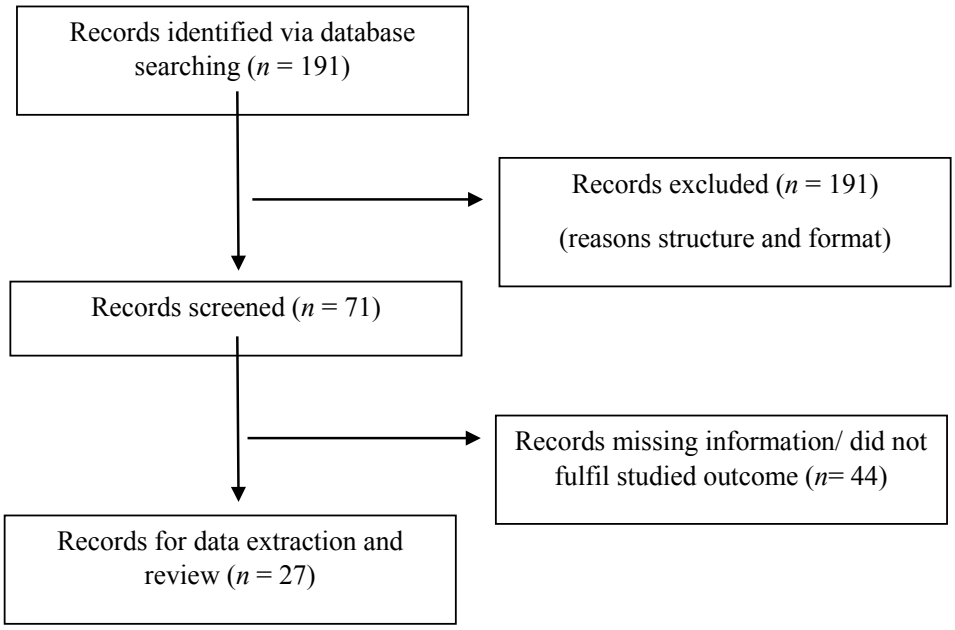

Figure 1 Schematic flow for articles identification and extraction

RESULTS

This review article covered 27 articles that fulfil the research questions and inclusion criteria as shown in Table 1. The studies mainly were conducted among the public, healthcare professionals and students. The prevalence of good knowledge, attitude and practice among the participants regarding breast cancer screening was generally low. For knowledge, the range of score was from 1.5% to 73.3%, for attitude the score range was from 1.4% to 32.9% meanwhile for practice, the prevalence of good practice ranged from 11.8% to 74.7%. Nevertheless, most of the studies revealed a prevalence of lower than 50% for overall knowledge, attitude and practice on breast cancer screening. The main contributing factors towards the score were education level, socioeconomic status, family history of breast cancer and health belief.

Table 1 List of articles with their details including the prevalence of knowledge, attitude and practice of breast screening among the studied population

Authors (Study)	Domain	Demographic data	Prevalence/ level of knowledge/ attitude/ practice	Positive-associated factors
Abeje et al. (2019)	Knowledge, practice	633 women came for maternal and child health follow up	35.5% of women are aware of screening, 24.3% practised breast examination	Education level
Akhtari-Zavare et al. (2013)	Practice	262 female undergraduate students in University Putra Malaysia	36.7% had a good practice	Confidence level and motivation
Akhtari-Zavare et al. (2014)	Knowledge, practice	384 females living in the city of Hamadan, Iran	Inadequate knowledge, 26% practised BSE	Nil
Al-Dubai et al. (2011)	Knowledge	250 Malaysian women living in Shah Alam city	Inadequate awareness on screening	Age, education

Al-Musa et al. (2019)	Knowledge, attitude	832 husbands aged 20 years or older from the outpatient clinics in the Urban Primary Health Care Centers in Abha City	20.2% has heard about screening, a majority (61.4%) mentioned that wives were willing to be trained more in screening	Health knowledge
Al-Naggar et al. (2011)	Practice	251 female students at the Management and Science University, Shah Alam	55.4% practised screening	Age, exercise and family history of cancer
Bello et al. (2011)	Knowledge, practice	Two groups; nurses in a university teaching hospital, and women in non-health professionals in south-western Nigeria	Knowledge score: 10.9% (nurses), 3.5% (non-health professionals) Practice score: 22.9% (nurses), 15% (non-health professionals)	Job status
Chaka et al. (2018)	Knowledge, attitude	799 women in 4 zones of Ethiopia	21.3% had good knowledge, 1.4% good attitude	Higher level of education
Dahiya et al. (2018)	Knowledge, practice	222 adult women in Delhi, India	41.4% had practised some screening. 59.5% know about breast cancer	Age and marital status
de Oliveira et al. (2018)	Knowledge, attitude, and practice	243 rural women	Appropriate knowledge and attitude (97%), appropriate practice (70.1%)	Level of education and economic status
Dewi et al. (2019)	Practice	1967 women aged 20–60 years	44.4% had a good practice	Health belief incorporation
El Mhamdi et al. (2013)	Knowledge, attitude and practice	900 women in the region of Monastir	92% of participants had poor knowledge,14.3% had practised proper screening	Good knowledge of risk factors and screening methods, higher level of education and positive family history
Elsie et al. (2010)	Knowledge, attitude	100 Ugandan women	71% had no idea about mammography, 50% did not know about risk factors with negative attitudes	Level of literacy, occupation and marital status
Gadgil et al. (2015)	Knowledge	389 women in the 30–69-year-old age group	57% had appropriate knowledge	High income
Gan et al. (2018)	Knowledge, attitude	471 middle-aged women in Macau, China	68.1% had negative attitudes, 41.7% were found to have insufficient knowledge	Education, family history/ encounter of people with breast cancer, breastfeeding practice,

Heena et al. (2019)	Knowledge, attitude and practice	395 female health professionals of King Fahad Medical City	1.5% had a good level of knowledge, 5.1% had good attitudes, 74.7% practised breast self-examination	
Kim et al. (2011)	Practice	770 women living in four cities (Beijing, Shanghai, Guangzhou, and Xi'an) in China	60% did practise screening	Age, higher education, being employed, perceived benefits, health behaviours
Koc et al. (2019)	Knowledge, practice	161 female university students	73.3% had heard of screening and 33.3% practice	
Marzo et al. (2018)	Practice	383 respondents aged from 18-80	Practise in the range 20 – 50%	Income and education level
Nwaneri et al. (2017)	Knowledge	349 Women in Umuoawa, Orlu Local Government Area (LGA) of Imo State	29.8% had good knowledge	Education
Opoku et al. (2012)	Knowledge, attitude and practice	474 women in Ghana	32% perform breast examination, deficit in knowledge and attitude towards screening	Education level
Ramathuba et al. (2015)	Knowledge, attitude and practice	150 rural South African women	Low level of knowledge, attitude and practice	Health education
Solikhah et al. (2019)	Knowledge, attitude	856 Indonesian women (urban & rural)	Urban women had 1.39 times the odds of higher levels of attitudes 1.40 times the odds of higher levels knowledge	Place of living, higher level of education
Suh et al. (2012)	Knowledge, practice	120 women in Buea, Cameroon.	74.1% know about breast cancer, 60% had practice screening	
Tarı Selçuk et al. (2020)	Practice	416 women aged $\geq$ 40	11.8% perform breast self-examination	Perceived susceptibility, seriousness, benefits, health motivation, and perceived barriers
Toan et al. (2019) .	Knowledge, attitude and practice	306 women aged 20 to 49 years in a mountainous commune in Thanh Hoa Province, Vietnam	> 50% had a low level of knowledge, weak in attitude and practice	Knowledge about breast cancer early detection (BCED), ethnicity, income, the BCED information approach, and the BCED screening programmes approach
Yurt et al. (2018)	Knowledge	17.4% had good knowledge	Low level	Peer education programme

DISCUSSION

Knowledge on Breast Cancer Screening

Knowledge is one of the important domains influencing awareness of the public towards breast cancer and its screening. The study conducted in Istanbul attempted to evaluate the effect of peer education about breast cancer screening on the health beliefs among female university students. It involved a population sample of 1,255 female first-year university students with a median age of 19 years old. The findings demonstrated the level of knowledge of the students about breast cancer and breast self-examination (BSE) significantly increased after the peer education program was conducted. The average of correct answers on the pre-test was 65.13% and significantly increased to 87.23% on the post-test. This study suggested that knowledge plays an important role in peer education on breast cancer screening (Yurt et al., 2019). Similarly, Koc et al. (2019) conducted a study among 656 female students at a public university regarding the knowledge and practice of BSE in Turkey. The findings indicated that more than half (73.3%) had heard about BSE. However, not all the respondents knew the purpose of BSE in which 55.1% of them mentioned that all menstruating women should practice BSE. Meanwhile, most students claimed the purpose of BSE was for the early detection of breast cancer. This study suggests that young women should have adequate knowledge of BSE and how to perform it correctly. Furthermore, it is crucial to develop consciousness of breast health and awareness of breast cancer at this young age.

A Nigerian study conducted in a rural place with a sample population of 349 women aged between 20 to 60 years of age aimed to assess the level of knowledge and awareness of BSE among women in Umuowa. Based on the findings, 48.7% of respondents noted that breast cancer is an abnormal growth of tissue in the breast, followed by 32.7% understood that breast cancer is a lump in the breast, 29.8% understood that breast cancer is an illness due to ancestors; 25.5% believed that breast cancer is a disease which runs in the family. The lowest vote was on the statement "breast cancer is a discharge in the breast". This study concluded that there was a low level of knowledge and awareness of breast cancer among rural women in Umuowa especially among the less educated participants (Nwaneri et al., 2017). Another study in rural areas of Brazil, which involved 235 women aged between 35 to 69 years of age was conducted to assess the knowledge, attitude and practice of rural women about early detection of breast cancer in the Primary Health Care Centre. The findings indicated that 82% of them did not know about BSE and clinical breast examination (CBE) even though they received information regarding breast cancer. Furthermore, 75.8% of them did not know the risk of breast cancer. This shows that rural women even having a follow up by primary care practitioners still do not know satisfactorily about the exact breast cancer risk factor, its clinical manifestation, and appropriate frequency of screening tests for breast cancer (de Oliveira et al., 2018). In South-East Asia, specifically Thailand, a study had also been done among rural women regarding factors that affected their breast cancer awareness. Significant associated factors included level of education, behaviour, occupation, religion, family income, family history of breast cancer and family history of other cancer. It was observed that those with better knowledge on breast cancer awareness were government servants and those with higher levels of education. Despite their inadequate knowledge of breast cancer and its risk factors, the study found that rural Thai women had considerably better behaviour and attitude towards breast cancer awareness. This was possible due to the availability of breast cancer screening services that were close to them without significant barriers (Hurst et al., 2019).

In contrast, a study in India depicted the population among urban people regarding breast cancer awareness and self-seeking practice. Based on the findings, it showed a satisfying result in which the majority of the urban women had an adequate awareness of breast cancer. 83% of female respondents were aware that breast cancer is curable if detected at an early stage. Interestingly, women older than the mean age of 48 years were significantly more aware of breast cancer than younger women. Overall, there was a difference between rural and urban women regarding the issue of breast cancer. Women from urban communities had good awareness about cancer and its curable nature. However, about high-income women, despite being more aware, it did not differ in health-seeking behaviour from the middle-income group (Gadgil et al., 2015).

In Malaysia, a study conducted among 820 undergraduate female students regarding their knowledge of breast cancer had turned out to be below average. The highest percentage of knowledge was the related risk factors of breast cancer, which accounted for up to 30.9%. Meanwhile, 11.4% was the lowest score for the symptoms of breast cancer. Nearly half of the students knew about the appropriate age for doing BSE. Moreover, young Malaysian females were shown to have a lack of awareness of BSE protocol and basic information (Akhtari-Zavare et al., 2013). Another cross-sectional study was conducted on 250 women living in Shah Alam, Malaysia aged between 18 to 45 years old regarding awareness and knowledge of screening breast cancer. This study showed that 81.2% of the respondents knew about breast cancer through reading sources such as books, magazines, and brochures, whereas 21.7% of them received information from electronic media such as television and radio, followed by information received from persons who were knowledgeable such as professors, friends and neighbours. Most respondents also recognized the following features of breast cancer; bloody nipple discharge (71.2%), breast lump (90.8%), and enlargement of neighbouring lymph nodes (75.2%). This study concluded that primary health care practitioners should be involved in various education and health promotion programs that provide information on breast cancer to their patients. The role of mass media, particularly television, should be stressed as it was found to play a key role in imparting health education and belief changes (Al-Dubai et al., 2012).

Attitude on Breast Cancer Screening

Attitude domain is indeed very important in driving the patient to seek information and comes for health screening. This review revealed the following articles that fulfilled the inclusion criteria and focused on the attitude of the public on breast cancer. Previous studies have shown that having a positive attitude on breast cancer was significantly associated with having good breast cancer screening behaviours.

In Ethiopia, a study investigated 799 women aged 18 years old and above to determine their knowledge and attitude regarding breast and cervical cancer. The findings revealed that 67.4% of participants had a negative attitude towards breast cancer. Less than 40% argued that having breast cancer could influence their relationship with partners. Despite two-third of participants having an idea about breast cancer, only a few of them (13.4%) were aware of the concept of breast cancer screening. Thus, this study suggested campaigns for knowledge and awareness of breast cancer among Ethiopian females should be conducted through multi-intervention measures (Chaka et al., 2018). Meanwhile, another study was conducted among 417 middle-aged Chinese women to assess breast cancer screening behaviour and attitude among them. Findings showed that 68.1% had poor attitudes toward health screening as they were more inclined to consult with physicians only when they had health

issues. This attitude influenced behaviour in performing breast cancer screening significantly ($p < 0.001$). Furthermore, nulliparity and low level of education were also identified as causes of negative attitudes on health check-ups. About 42.2% perceived barriers to mammogram screening due to nearly over one third believed that it was a shameful event. Moreover, the cause of barriers to mammography was attributed to low levels of education and not knowing anyone with breast cancer. Hence, educational campaigns should be commended to increase awareness of breast cancer screening in the community (Gan et al., 2018).

Another similar study was done in 2010 which attempted to observe women's knowledge, attitude and practice regarding breast cancer and mammography among 100 participants in Uganda. This study observed that there was a negative attitude on mammography as the participants were unable to differentiate between breast ultrasound and mammography. For example, 80% of them responded that breast ultrasound could cause cancer. Hence, this study urged the public to implement an awareness campaign of mammography on the public (Elsie et al., 2010). In Saudi Arabia, Musa, Awadalla, and Mahfouz (2019) recently pointed out that having good knowledge among husbands was shown to be linked with a positive attitude toward breast cancer in their wives. About 61.4% of husbands agreed that their wives were willing to be trained in BSE (95 % CI 1.361-2.438). Therefore, campaigns of breast cancer awareness were recommended to be done among husbands as well as they have a significant role in promoting it (Al-Musa et al., 2019).

Furthermore, a study among 900 Tunisian women aged 25 years old and above found that 85% of respondents exhibited a positive response in screening for breast cancer but only 14.3% respondents performed proper practice of breast cancer screening. Thus, there was no association between attitude and breast cancer screening practice ($p = 0.10$). Therefore, the study suggested an improvement of health education to ensure the consistent practice of breast cancer screening (El Mhamdi et al., 2013). Another study was conducted to investigate 395 female healthcare workers in Saudi Arabia. Overall, 5.1% argued that any woman could possess the risk of breast cancer. Meanwhile, 9.4% believed that breast cancer could be prevented. However, over 53% agreed that breast self-examination could not help in detecting any abnormalities in their breasts. Surprisingly, most participants (84.8%) responded to the disagreement that early diagnosis of breast cancer was unable to prolong the lives of patients. Hence, the study recommended an educational campaign for breast cancer among healthcare providers as they showed a poor attitude towards it due to a lack of knowledge (Heena et al., 2019). Ramathuba et al. in 2015 described that over 46.7% of females believed the cure of breast cancer was dependent on early detection while 20% conversely. Besides, 4.7% strongly argued that breast cancer treatment could worsen the disease. Nonetheless, there was a negative attitude in seeking treatment because several participants chose to seek treatment from traditional (14%) and spiritual healers (3.3%) when they perceived any changes in their breasts. It could be demonstrated that cultural and religious influence of people in health-seeking behaviour (Ramathuba et al., 2015).

With regards to the scenario in Southeast Asia, a study was conducted among 856 Indonesian women to determine the level of knowledge regarding risk factors, barriers and attitudes on breast cancer and breast cancer screening. Results explained that level of education was associated with attitude on breast cancer prevention. For example, those who had a degree (70%) depicted a better attitude in the prevention of breast cancer compared to those who only had primary education ($p < 0.001$). Similarly, those who attended high school (62%) exhibited a positive attitude toward breast cancer

prevention compared to those who only had primary education ($p < 0.01$) (Solikhah et al., 2019). Recently, Toan and colleagues in 2019 conducted a cross-sectional study among 306 women in Vietnam to determine knowledge, attitude, and practice of breast cancer screening among them. Results revealed that nearly 62% of respondents possessed a good attitude towards breast cancer early detection (BCED). However, the weak practice of BCED was found, where 77.7% of them did not perform it (Toan et al., 2019).

Practice on Breast Cancer Screening

Practice domain is an important aspect in determining the outcome of breast cancer screening awareness to the underlying knowledge and attitude. There are three known practices of breast cancer screening among the community, including breast self-examination (BSE), clinical breast examination (CBE) and mammogram. Most of the papers generally studied the practice, but some papers only focused on BSE.

Even though breast cancer is the most common cancer among women, the awareness on practice of breast cancer screening among them varies in different countries. In Cameroon, nearly three-quarters of respondents knew about BSE but 40% of them had never done BSE (Suh et al., 2012). This may be due to the uncertainty of the importance of BSE to them. In Iran and Indonesia, only 26% and 45% of the population respectively claimed that they had performed BSE (Akhtari-Zavare et al., 2014; Dewi et al., 2019). Locally, two studies that were conducted on undergraduate students showed almost similar findings that breast cancer screening practices were low among Malaysians. Most students believed that when they are in good health, BSE practice is not needed despite they are also worried about being diagnosed with cancer (Akhtari-Zavare et al., 2013). However, another local study showed that BSE practice was greatly influenced by the family history of cancer similar to a study done in Indonesia (Al-Naggar et al., 2011; Dewi et al., 2019).

Most of the searched studies found that the practices of BSE, CBE and mammograms in the community were weak. A cross-sectional study done in Turkey showed that only 12% performed BSE, 9% having CBE and 12% undergoing a mammogram (Tarı Selçuk et al., 2020). Women with high levels of motivation will undergo both CBE and mammogram more frequently despite perceiving that BSE and mammogram are difficult to be accessed. In Nigeria, only 37% had ever performed breast cancer screening. These were mainly contributed by a lack of basic knowledge of the practice of breast cancer screening, lack of screening services and lack of mammogram facilities (Bello et al., 2011). Interestingly, levels of education significantly influence the behaviour of participants. A study by Abeje et al (2019) in Ethiopia showed that more than half of the nurses examined their breasts monthly compared to 35% of non-health practitioners (Abeje et al., 2019). Likewise, in Ghana, although the rate of BSE practice was low, half of those who were practising BSE had significantly high levels of education (Opoku et al., 2012). This is also supported by a local study by Marzo et al (2018) which proved that there was an association between levels of education and breast screening practice (Marzo et al., 2018). Furthermore, the lack of skills and knowledge to practice breast cancer screening also led to a low practice rate of BSE. A cross-sectional study in India by Dahiya et al. (2018) indicated that only women who had practical skills on BSE would be able to perform it (Dahiya et al., 2018). Thus, breast cancer awareness and BSE skills should be promoted among the public to enhance women's health-seeking actions leading to early symptom detection and improved chances of survival.

Furthermore, a study done by Kim et al. (2011) in China revealed that 60% of participants performed some type of breast cancer screening practices and this was the

highest percentage among the searched studies. The main reason for the good behaviour was due to the feeling of necessity for screening. Furthermore, those who had breast cancer screening regularly reported they had better health promotion services in their living area in comparison to those who did not (Kim et al., 2011).

CONCLUSION

This review concluded that both knowledge and attitude of the public play an important role in their practice in terms of breast cancer screening. Overall, all studies, both done locally and globally demonstrated poor levels of knowledge, attitude and practice of the community towards breast cancer despite the importance of the malignancy. One of the main significant associated factors is the low level of education and lack of information on the disease. Despite the availability of the services, improper communication between health care providers and the community would be an important barrier to the success of breast screening programs. Therefore, more in-house training to improve the communication skills of health care personnel and local health promotion by the Ministry of Health should be conducted.

CONFLICT OF INTEREST

There is no conflict of interest related to this review article.

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