Original Article :

Screening Strategies for the Detection of Breast Cancer: Correlating Knowledge and Practice of Women in Eastern Saudi Arabia

Sahbanathul Missiriya Jalal

Department of Nursing, College of Applied Medical Sciences, King Faisal University, Al-Ahsa 31982, Saudi Arabia

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Corresponding Author:

Sahbanathul Missiriya Jalal

Department of Nursing, College of Applied Medical Sciences, King Faisal University, Al-Ahsa 31982, Saudi Arabia. Phone Number +966564070973, Email sjalal@kfu.edu.sa

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Abstract

Background and Aims:

Breast cancer is the most common cancer worldwide. It represents 30.1% of other diagnosed female cancers as per the cancer incidence report of Saudi Arabia (2015). The highest incidence of breast cancer was observed in the eastern province region. Breast self-examination (BSE) and mammograms are helpful to detect breast cancer at the earliest. This study aimed to determine the knowledge and practices of women about breast cancer screening.

Methods:

A cross-sectional study was conducted to assess the knowledge and practices of women attending primary healthcare centers (PHC) in eastern Saudi Arabia regarding breast cancer screening. Data was collected from women who were aged 20 years and above through direct interviews using a validated questionnaire and it was analyzed using SPSS. Frequency distributions and chi-square tests were used to describe the demographic data and associate the variables respectively, with ($p<0.05$) normality.

Results:

Out of 428 women, 62% were 41-60 years old, and most of them (84%) were married. Around 29% were unaware of breast cancer screening, 72% of women never did BSE, and 86% reported that they never had a mammogram. There was a significant association found between knowledge and age and education ($p < 0.05$). A positive correlation was found between knowledge of BSE and mammogram ($p < 0.05$).

Conclusions:

Even with the provision of free health services in Saudi, the practice of breast cancer screening was unsatisfactory. This alarm the focus to make awareness campaigns. The importance of early detection of breast cancer must be emphasized in every PHC centers continually.

Keywords:

Screening; breast cancer; knowledge; practice; mammogram; breast self-examination; awareness.

Introduction

Breast cancer is the most common cancer among women in developed and developing countries globally[1]. Approximately 50% of cancers are breast cancers in developed countries and there is evidence for 38% of breast cancer deaths[2-4]. Early detection[5] and differing risk factors may account for the variations in incidence internationally. According to the study reports, the International Agency for Research on Cancer (IARC) and partner institutions researchers provide a global overview about the burden of breast cancer in 2020 and they estimated that, the impact of this disease will be more in 2040. It was predicted that the breast cancer burden would increase to more than 3 million new cases per year (an increase of 40%) and more than one million deaths annually (an increase of 50%) by the year 20406.

World Health Organization (WHO) reported that, cancer is a predominant cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths. Breast cancer is the commonest cancer compared with other types of cancers such as lung, colon and rectum and prostate cancers. The cancer occurrence is due to various factors such as tobacco use, high body mass index (BMI), smoking, junk food consumption, low fruit and vegetable intake, and lack of exercise or physical activity[7,8].

The Cancer Incidence Report (2015) of the Kingdom of Saudi Arabia[9] stated that breast cancer was the most common among women, representing 30.1% of all diagnosed female cancers. Breast cancer is the leading cancer in Saudi Arabia, which was proven with a mortality rate of 14.8%[10]. The eastern province has the highest incidence of breast cancer (15.4 per 100,000 women) in Saudi Arabia[11].

By identifying and avoiding the risk factors, approximately 50% of cancers can be prevented[12]. Many people with breast cancer have a high chance of being cured if diagnosed early and treated appropriately. Therefore, the burden of breast cancer can be reduced by implementing screening strategies through early detection of cancer and appropriate treatment and care of patients. Breast self-examination (BSE) and Mammograms are essential for detection of breast cancer at the earliest after the attainment of puberty. About 60% of breast cancer can be detected with a simple breast examination. However, people should be aware of doing BSE regularly and notify any abnormal symptoms or signs to the consultants at the earliest. The current study was planned to study the awareness of women and their practices regarding early detection of breast cancer through

BSE and mammograms. The study aimed to determine the knowledge and practices of breast cancer screening among women in eastern Saudi Arabia.

Methods

Study population

A cross-sectional study was conducted between September 2022 and November 2022 to assess the knowledge and practices of women attending primary healthcare centers (PHC) regarding breast cancer screening through BSE and mammograms. Data was collected from women aged 20 years onwards who resided in the eastern province of Saudi Arabia. The study protocol was approved by the Human Ethical Clearance Committee of the Deanship of Scientific Research, King Faisal University. The study information was explained to each participant involved in the study before data collection and ensured confidentiality, no risk, anonymity, and voluntary participation. This study was conducted following the Declaration of Helsinki, and it followed all ethical principles. We excluded the participants with medical backgrounds and participants who did not give informed consent. According to the 2017 census for the eastern region of Saudi Arabia, and the population was 4.9 million. The sample size needed for this study was 666 based on the previous study conducted in Saudi Arabia, in which about 50% of women had low knowledge[13]. This number was calculated, with 5% margin of error and a 99% confidence level. However, considering the inclusion criteria, 442 women were selected using the convenient sampling method in this study. The survey response rate was 96.8%. Totally, 428 women responded in this study.

Data collection

Data was collected from women aged 20 years onwards through direct interviews using a validated questionnaire[14]. The tool included three parts, such as demographic variables, a knowledge questionnaire and a practice checklist. The first part was demographic information including age, level of education, occupation, marital status, family type and source of health information, family history and BMI. The second part of the tool was a knowledge questionnaire included 24 multiple choice questions related to screening strategies for breast cancer, especially BSE and mammogram. The score interpretation was counted from 75% to 100% (18 to 24) as excellent knowledge, from 50% to 74% (12 to 17) as good knowledge; and below 50% (less than 12) as poor knowledge. The third part of the tool was a practice checklist that included total 10 'yes' or 'no' questions about the performance of

screening strategies for breast cancer. The reliability of the questionnaire was tested (r = 0.926) using Cronbach's alpha. The time to interview a woman and to fill in the questionnaire ranged from 15 to 20 minutes. Information was included in the tool with an introduction, explaining the objectives of the study and ensuring privacy and confidentiality before distribution. Participants were informed that their participation in the study was voluntary without any financial support. Informed consent was obtained from all the participants before the data collection.

Data analysis

After the collection of data, they were analyzed using Statistical Package for Social Sciences (SPSS) for Windows (version 21.0; International Business Machines (IBM) Corporation, Armonk, NY, USA). The statistical significance level was set at $p < 0.05$. Descriptive statistics, such as frequency and percentages, were used for categorical variables, and the mean and standard deviation (SD) were used for continuous variables. Chi-square test was used to associate the selected demographic variables with the level of knowledge. Pearson correlation test was used to correlate the level of knowledge with the practice.

Results

Sociodemographic characteristics of women

A total of 428 women fulfilling the inclusion criteria completed the study questionnaire. Participant's age ranged from 20 years onwards with a mean age of 49.17 ± 11.5 years Table (1). Among them, most women (61.7%) were in the age group of 41-60 years and 48.1% were studied up to high school. Around 83.9% were unemployed and 86.9% were married. Regarding the family type, 49.8% were belonging to extended families and 46% of women were in a joint family. Regarding the source of health information, 49.8% of women received information from health professionals. Only 7.5% had a family history of breast cancer. Considering BMI, nearly half of the women (55.8%) were overweight.

Table 1: Demographic variables of the women (n=428).

Variables	Category	N (%)
Age (years)	20-40 years	116 (27.1)
	41-60 years	264 (61.7)
	More than 60 years	48 (11.2)
Level of education	Primary	79 (18.5)
	High school	206 (48.1)
	Higher Secondary	91 (21.3)

Variables	Category	N (%)
Level of education	Graduate & Others	52 (12.1)
Occupation	Employed	69 (16.1)
	Unemployed	359 (83.9)
Marital status	Married	372 (86.9)
	Unmarried	56 (13.1)
Family type	Nuclear	18 (4.2)
	Extended	213 (49.8)
	Joint	197 (46)
Source of health information.	Mass media	156 (36.4)
	Family	44 (10.3)
	Friends	15 (3.5)
	Health professionals	213 (49.8)
Family History of breast cancer	Yes	32 (7.5)
	No	396 (92.5)
	Normal (18.5-24.9)	76 (17.8)
BMI (Kg/m2)	Overweight (25-29.9)	239 (55.8)
	Obese (>30)	113 (26.4)

N: Number; %: Percentage

Knowledge level of women about breast cancer

The percentage of knowledge level of women about the breast cancer was depicted in Figure 1. Among the 428 women participated in the study, 17% had excellent knowledge, 54% had good knowledge and 29% had poor knowledge.

Practice of women about breast cancer screening

Around 72.2% of women reported that they never did BSE in the past year, and 85.9% reported that they never did mammogram in their lifetime. This is shown in Table 2.

Chi-square tests were used to associate the awareness level of women with the demographic variables. There was a high significant association found between level of knowledge with age ($p < 0.0001$) and educational level of women ($p < 0.0001$), which is given in Table 3.

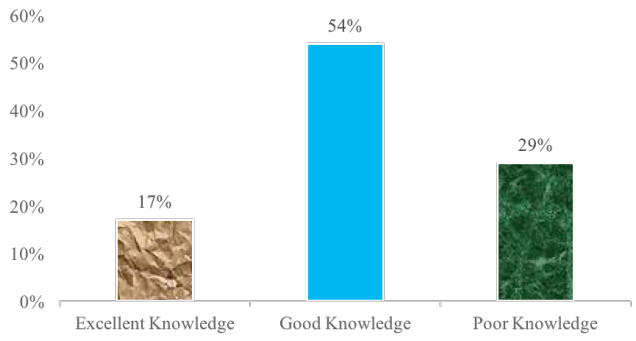


Figure 1. Knowledge level of women about breast cancer (n=428)

Table 2. Practice of women about breast cancer screening (n=428)

Breast Screening		Frequency	Percentage
BSE	Yes	119	27.8
	No	309	72.2
Mammogram	Yes	60	14.1
	No	368	85.9

BSE – Breast Self-Examination

Table 3. Association between Knowledge and selected demographic variables (n=428)

Demography		Excellent knowledge	Good knowledge	Poor knowledge	Chi square
Age	20-40 years	12	75	29	X^2=31.5012 p-value 0.0001*
	41 - 60 years	46	81	37	
	> 60 years	14	76	58	
Educational Level	Primary	7	38	34	X^2=52.9014 p-value 0.0001*
	High school	19	115	72	
	Higher secondary	29	48	14	
	College & Others	17	31	4	

* Significance ($p < 0.05$); NS – Non-Significance

Table 4. Correlation between Knowledge and practice of women (n=428)

Variables	Correlation Coefficient	p Value
Knowledge and practice of BSE	0.237	0.0023*
Knowledge and practice of mammograms	0.269	0.0056*

* Significance ($p < 0.05$); NS – Non-Significance

There was positive correlation found between level of knowledge and practice of BSE among women at $p < 0.0023$. Also, another positive correlation found between level of knowledge and practice of mammogram among women at $p < 0.0056$, which is clearly proved (Table 4).

Discussion

Early detection of breast cancer is one of the best approaches to reduce the occurrences and prevent this disease. If breast cancer is diagnosed at the earlier stage of metastasis, the tumor of the breast can be removed by surgical procedures or treated

with chemotherapy. Approximately one in eight women have the risk of developing breast cancer. However, it can be treated effectively in the primary stage itself[15]. Hence, this study conducted to determine the awareness level of women and their practices about BSE and mammograms as screening tool to detect breast cancer in the early stage to prevent complications and metastasis.

The importance of BSE had been reported in much research as useful means for the early detection of breast cancer[16,17]. In this present study, only 27.8% of women reported that they used to BSE monthly once and 72.2% of women never did in the past year. This was compared with another cross-sectional study conducted on awareness about breast cancer and BSE among female students at the University of Sharjah, in which overall, 68.5% of participants had heard of BSE, but only few participants were performed BSE[18]. Similarly, a cross-sectional study on breast cancer risk factor awareness and utilization of screening programs conducted among women in the northern Emirates, proved that they had poor knowledge regarding the practice of BSE, and 34.2% of the participants had correct practice[19].

In the current study, among the 428 women, only 17% of them had full awareness, and 29% had poor awareness about breast cancer screening strategies. A study from Pakistan showed that most (84%) patients had heard of breast cancer, in which 35% of patients were known about either one or two major etiological factors, while some patients (65%) were known at least one major symptom or sign of breast cancer. Even though, only 36.9% of them were practiced BSE and very few (6.9%) were done clinical breast examination and only 4.9% had undergone a mammogram at some point of their life[20].

Mammogram is an X-ray picture of the breast. It is an effective screening method to use low energy X-rays to obtain high-resolution images of the breast. This is used to find out early signs of breast cancer. Regular mammograms are the best early screening for breast cancer, sometimes up to three years before it can be detected[21,22]. In this study, 85.9% of women reported that they never did mammogram in their lifetime. Even though, 86.9% were married among the participants, their practice level was unsatisfactory. Breast cancer screening[23] is routinely performed with mammography in the United States[24]. A comparative study between Norway and Denmark showed that there was reduction of breast cancer mortality rate due to mammography screening[25]. In this present study, the women with high knowledge and full awareness had good practice of mammo-

gram and BSE. It was proved by positive correlation observed between practice and knowledge ($p < 0.05$). There was significant association found between awareness level with both age and educational level of women ($p < 0.0001$). If there was lack of women's education, poor awareness was evident. The health education[26] pro viders in the various sectors must take part in the education of Saudi women about how and when to perform BSE for the early detection of any lump and to report to the doctor as early as possible. Regular mammogram to be insisted to women also. This action will lead to treatment of the disease in the early stage with favourable results and prognosis. Hence, there is very essential to create awareness among women about the breast screening and its importance. There is a need to organize awareness campaign properly through social media and in educational institutions, which can be effective to raise the knowledge level. Providing free BSE training courses may also be an effective way to raise awareness among students at higher secondary and university level.

Though there were many strengths in this study such as an adequate sample, and properly validated tool using the direct interview method, however, some limitations were there in this study. The study was conducted only in the eastern region and convenient sampling was used. Further analytical epidemiological research is needed to identify the potential risk factors that have contributed to the increase in the occurrence of BC among Saudi women.

Conclusion

Early identification of breast cancer is the cornerstone of its prevention. The study concluded that, although there are accessible free health services in Saudi, most women's practice on breast cancer screening was unsatisfactory. This alarms the need for awareness campaigns. The conservative nature of society and the shyness of the women, prevent them to go for regular breast cancer screening and medical consultation. This may lead to breast cancer in advanced stages. Hence, it is recommended that sooner an intensive awareness program should be conducted. Proper education and training should be launched involving, the utilization of different media, and social networks, as well as one-to-one meet and women's wellness clinics. Further to this, the importance of early detection of breast cancer is continually emphasized in every PHC.

Conflict of interest

None.

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References

1. Katsura C, Ogunmwonyi I, Kankam HK, Saha S. Breast cancer: presentation, investigation, and management. British Journal of Hospital Medicine (London). 2022;83(2):1-7.
2. Azubuike SO, Muirhead C, Hayes L, McNally R. Rising global burden of breast cancer: the case of sub-Saharan Africa (with emphasis on Nigeria) and implications for regional development: a review. World J Surg Oncol. 2018;16(1):63.
3. Siu AL; U.S. Preventive Services Task Force. Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement. Annal Internal Medicine. 2016;164(4):279-296.
4. Torre LA, Siegel RL, Ward EM, Jemal A. Global Cancer Incidence and Mortality Rates and Trends--An Update. Cancer Epidemiol Biomarkers Prevention. 2016;25(1):16-27.
5. Schiffman JD, Fisher PG, Gibbs P. Early detection of cancer: past, present, and future. Am Soc Clin Oncol Educ Book. 2015:57-65.
6. Arnold M, Morgan E, Rumgay H, Mafra A, Singh D, Laversanne M, Vignat J, Gralow JR, Cardoso F, Siesling S, Soerjomataram I. Current and future burden of breast cancer: Global statistics for 2020 and 2040. Breast. 2022;66:15-23.
7. de Martel C, Georges D, Bray F, Ferlay J, Clifford GM. Global burden of cancer attributable to infections in 2018: A worldwide incidence analysis. Lancet Glob Health. 2020;8(2):e180-e190.
8. Agide FD, Sadeghi R, Garmaroudi G, et al. A systematic review of health promotion interventions to increase breast cancer screening uptake: from the last 12 years. European Journal of Public Health. 2018;28:1149–1155.
9. Saggu S, Rehman H, Abbas ZK, Ansari AA. Recent incidence and descriptive epidemiological survey of breast cancer in Saudi Arabia. Saudi Med J. 2015 Oct;36(10):1176-80.
10. Alqahtani WS, Almufareh NA, Domiaty DM, Albasher G, Alduwish MA, Alkhalaf H, Almuzzaini B, Al-Marshidy SS, Alfraihi R, Elasbali AM, Ahmed HG, Almutlaq BA. Epidemiology of cancer in Saudi Arabia thru 2010-2019: a systematic review with constrained meta-analysis. AIMS Public Health. 2020 Sep 11;7(3):679-696.
11. Alghamdi IG, Hussain II, Alghamdi MS, El-Sheemy MA. The incidence rate of female breast cancer in Saudi

Arabia: an observational descriptive epidemiological analysis of data from Saudi Cancer Registry 2001-2008. Breast Cancer (Dove Med Press). 2013 Oct 17;5:103-9.

12. Ng DY, Tudor Car L, Ng MJM, Lu J, Leung J, Goo TT, Chia CLK. Identifying barriers to early presentation in patients with locally advanced breast cancer (LABC) in Northern Singapore: Qualitative study. PLoS One. 2021;16(5):e0252008.

13. Alshahrani M, Alhammam SYM, Al Munyif HAS, Alwadei AMA, Alwadei AMA, Alzamanan SSM, Aljohani NSM. Knowledge, Attitudes, and Practices of Breast Cancer Screening Methods Among Female Patients in Primary Healthcare Centers in Najran, Saudi Arabia. J Cancer Educ. 2019 Dec;34(6):1167-1172.

14. Chandrasekhar P, Dkhar W, Panakkal NC. Development and Validation of a Tool to Assess the Knowledge, Attitude and Perception of Women Towards Screening Mammography. Ethiop J Health Sci. 2022 Nov;32(6):1141-1146.

15. Sun YS, Zhao Z, Yang ZN, Xu F, Lu HJ, Zhu ZY, Shi W, Jiang J, Yao PP, Zhu HP. Risk Factors and Preventions of Breast Cancer. International Journal of Biological Sciences. 2017;13(11):1387-1397.

16. Abo Al-Shiekh SS, Ibrahim MA, Alajerami YS. Breast Cancer Knowledge and Practice of Breast Self-Examination among Female University Students, Gaza. The Scientific World Journal. 2021;2021:6640324.

17. Elobaid YE, Aw TC, Grivna M, Nagelkerke N. Breast cancer screening awareness, knowledge, and practice among arab women in the United Arab Emirates: a cross-sectional survey. PLoS One. 2014;9(9):e105783.

18. Rahman SA, Al-Marzouki A, Otim M, Khalil Khayat NEH, Yousuf R, Rahman P. Awareness about Breast Cancer and Breast Self-Examination among Female Students at the University of Sharjah: A Cross-Sectional Study. Asian Pacific Journal of Cancer Prevention. 2019;20(6):1901-1908.

19. Hegde P, Pande J, Adly HH, Shetty P, Jayakumari A. Breast Cancer Risk factor awareness and utilization of screening program: A cross-sectional study among women in the Northern Emirates. Gulf Journal of Oncology. 2018;1(27):24-30.

20. Maqsood B, Zeeshan MM, Rehman F, Aslam F, Zafar A, Syed B, Qadeer

K, Ajmal S, Imam SZ. Breast cancer screening practices and awareness in women admitted to a tertiary care hospital of Lahore, Pakistan. Journal of Pakistan Medical Association. 2009;59(6):418-421.

21. Maitra IK, Nag S, Bandyopadhyay SK. Technique for preprocessing of digital mammogram. Computer Methods and Programs in Biomedicine. 2012;107(2):175-88.

22. Osmun WE, Copeland J, Boisvert L. Mammography screening: how far is too far? Rural and Remote Health. 2013;13(1):2149.

23. Coleman C. Early Detection and Screening for Breast Cancer. Seminars in Oncology Nursing. 2017;33(2):141-155.

24. Niell BL, Freer PE, Weinfurtner RJ, Arleo EK, Drukteinis JS. Screening for Breast Cancer. Radiologic Clinics of North America. 2017;55(6):1145-1162.

25. Desreux JAC. Breast cancer screening in young women. European Journal of Obstetrics Gynecology and Reproductive Biology. 2018;230:208-211.

26. Al-Hashem A. Health Education in Saudi Arabia: Historical overview. Sultan Qaboos Univ Med J. 2016;16(3):e286-92.