doi: 10.31674/mjn.2023.v15isupp1.012

MJN

Knowledge and Practice of Breast-Self Examination Among Nurses in Teaching Hospital

Noor Azreena Anwar, Siti Nor Azwani Junaidi, Norazlina Md Jazli*
Centre for Nursing Studies, Faculty of Health Sciences, Universiti Teknologi MARA (UiTM) Selangor, Puncak Alam Campus, 42300, Bandar Puncak Alam, Puncak Alam, Selangor, Malaysia

**Corresponding Author's Email: azlinajazli@uitm.edu.my*

ABSTRACT

Background: Breast cancer is the most frequent invasive cancer and the leading cause of death and disability in women. Early screenings and other preventive actions recommended by the health ministry are able to detect breast cancer early. Everyone has a chance of developing breast cancer, including medical professionals who significantly have a positive attitude toward breast self-examination (BSE). However, previous studies showed that knowledge of breast cancer and self-examination is excellent, but practice is generally low. **Objective:** This study examined the nurses' knowledge and practice of BSE. **Methods:** A cross-sectional study with convenience sampling was conducted on 122 nurses at the UiTM Clinical Training Centre, Sungai Buloh. A self-administered questionnaire consisting of 41 questions was used to assess the understanding and use of BSE. Findings were analyzed using SPSS version 25 with a chi-square test to determine the association between sociodemographic characteristics and knowledge and practice of BSE. **Result:** Findings show that 72.1% had adequate knowledge of BSE and 50.8% had moderate practice. Furthermore, age, marital status, and level of study were statistically significant with knowledge and practice of BSE, where the *p*-value was less than 0.05. **Conclusion:** Breast self-examination remains an important investigation tool for the early diagnosis of breast cancer, despite other screening methods. The study's findings suggest further exploration of knowledge and practice of BSE by nurses because the knowledge they have will be beneficial to the community in increasing awareness of BSE, thus preventing breast cancer.

Keywords: Breast cancer; Breast Self-Examination; Knowledge; Practice

INTRODUCTION

Breast cancer is the most common invasive cancer and the leading cause of death and disability among women worldwide, and men are also not excluded from this disease. Breast cancer occurs not only in women but in men as well. According to the American Cancer Society Annual Report (2021-2022), breast cancer is rare among men, less than 1% of all breast cancer occurs in men, and breast cancer is about 100 times more common in women. This statement was supported by the Lee *et al*., (2019), which stated that breast cancer in females in Malaysia, is a modern epidemic with wide recognition of its increasing incidence and high prevalence; male breast cancer represents only about one percent of all breast cancers and is less known. Abdullah & Mohamed (2021) stated that the most frequent cancer among Malaysian women of all three ethnic groups is breast cancer.

Breast cancer is a non-infectious disease since no known viruses or bacteria have been linked to the emergence of the disease (World Health Organization, 2022). Breast cancer can have several symptoms, but the first noticeable symptom is usually a lump or area of thickened breast tissue. One of the best ways to prevent this disease, improve the prognosis, and potentially control the disease and lower mortality is through early screenings or breast cancer diagnosis as a preventative measure. Early detection might increase a person's chance of survival (Ştefănuţ, & Vintilă, 2023). Past research has also demonstrated that early detection and prompt breast cancer treatment significantly increase the likelihood of survival (Ginsburg *et al.,* 2020).

Breast self-examination (BSE) is a screening technique that is strongly advised, and according to Abo Al-Shiekh, Ibrahim, and Alajerami (2021), BSE is a helpful screening method to educate women about their breast tissues and aid in the early detection of any abnormalities. This is due to the fact that it can be done independently, is easy to do, is inexpensive, and is easily accessible to all women. Women presently possess limited knowledge

Received: May 29, 2023; Received in revised form: August 07, 2023; Accepted: September 30, 2023

and adherence to breast self-examination. A study shows that more needs to be done in terms of education and awareness, particularly when using the media, which was the most popular source of information in our study (Ghazi, 2017). Nonetheless, raising awareness through digital media can be helpful in enhancing and encouraging this important practice (Tahira, Nazar, & Parveen, 2023). Healthcare professionals, particularly nurses, must train women to do BSE. Therefore, BSE should be practiced by nurses in order to inform the public. Therefore, this study aims to ascertain the nurses' understanding of and use of BSE.

METHODOLOGY

Study Design, Study Location, and Sample

A cross-sectional study was conducted at the UiTM Clinical Training Centre in Sungai Buloh from May to July 2022. Nurses working in a teaching hospital were the respondents of this study, but nurses on long medical leave, confinement leave, and going for post-basic courses were the exclusion criteria for this study. Before data collection, consent from the respondents was also obtained, and only researchers were allowed access to the data to protect respondents' privacy. The respondents' privacy was strictly protected, and this study strictly complied with all ethical requirements for research.

Sample Size Calculation and Sampling Method

G Power version 3.1.9.4 was used to calculate this study's sample size. Keeping the population size of 250, the sample size was calculated as 159. The convenience sampling method was used to select the respondents according to the inclusion and exclusion criteria of the study.

Instruments

Self-administered questionnaires from Ali *et al.* (2019) served as the basis for the instrument. The questionnaire was divided into three sections: sociodemographic, breast self-examination knowledge, and breast self-examination practice. As the pandemic was still active during the study period, respondents were asked to complete an online Google form.

Data Collection Procedure and Analysis

Prior to conducting the main study, a pilot study with 30 participants was undertaken, and Cronbach's alpha result was 0.78, indicating that the questionnaire was reliable. In response to the COVID-19 issue, a self-administered questionnaire using Google Forms was used as a research tool in this study. A brief explanation was given through the WhatsApp group and sent to the participants who met the inclusive criteria. The willing participant was given an information sheet and asked to consent before beginning the questionnaire. The online questionnaires took about 20 to 30 minutes to complete.

The data was analyzed using SPSS version 25. The descriptive statistics of frequencies, percentages, means, and standard deviation were used for objective one, while inferential statistics, specifically the Chi-Square test, were used to answer objectives two and three. Bloom's initial cut-off grades were used to identify levels of knowledge and practice where below 60% was inadequate, between 60 and 79% was moderate, and between 80 and 100% was adequate knowledge and practice.

Ethical Consideration

This study received approval from Hospital Research Ethical Committee and Faculty of Health Science of Universiti Teknologi MARA (UiTM), Malaysia on 31st January 2022 with reference number PJI (18/4/20).

RESULTS

Sociodemographic of Respondents

The response rate for this study was only 76.7%. Most of the respondents involved in this research were female nurses, with 95.1%, while 4.9% were male nurses. The majority of the respondents were between 20 and 29 years old, or 50.8%. More than half were married, which represents 53.3%. More than half of the respondents had an educational diploma, which represents 58.2%, while more than a quarter (41.8%) of the respondents had a degree level of education. Furthermore, most respondents (64.8%) had a family income of less than 5000. In addition, in terms of family history, 86.1% had no family history of breast cancer. The sociodemographic data of the respondents who participated in this study (n=122) is shown in Table 1.

Table 1: Description of Sociodemographic Characteristics Data among Nurses (N=122)

Sociodemographic Characteristics	Variables	Frequency (N)	(%)	Mean ± SD
Age Group	20 - 29 years	62	50.8	(30.28, 5.44)
	30 - 39 years	55	45.1	
	40 - 49 years	5	4.1	
Gender	Male	6	4.9	
	Female	116	95.1	
Level of Study	Diploma	71	58.2	
	Degree	51	41.8	
Marital Status	Single	54	44.3	
	Married	65	53.3	
	Widow	3	2.5	
Family Income	<5000	73	64.8	
	>5000	43	35.2	
Family History of Breast Cancer	Yes	17	13.9	
	No	105	86.1	

Knowledge of Breast Self-Examination

Figure 1 shows respondents' level of knowledge on BSE, with 72.1% having adequate knowledge, 12.3% having moderate knowledge, and 15.6% having inadequate knowledge of breast self-examination. This shows a positive response and that nurses are aware of breast cancer. The level of knowledge was divided into three categories: insufficient, moderate, and adequate, with 60–79 percent representing inadequate, 80–100 percent representing moderate, and so on (Ali *et al.,* 2019). The majority of the respondents had a good level of knowledge, which indicates a positive response. Additionally, the frequency and percentage of BSE performed in accordance with the menstrual cycle, as well as correct palpation and the body's position, were evaluated. Only a few respondents chose yearly, daily, or did not know when to perform BSE with a shared frequency, while the majority (88.1%) thought it should be done on a monthly basis. Others (21.5%) thought it should be done on a weekly basis (2.5%). The majority of the respondents were aware of what should be looked at and the areas involved to examine when performing. Apart from that, the majority of respondents gave a good response, saying that if an abnormality is detected, they will consult a doctor, and only a few do not consult with the doctor. This negative response might indicate a fear of being diagnosed with breast cancer. In order to become more breast-aware and to catch any changes in her breast early, a woman can use the Breast Self-Examination technique, which can help her make an informed treatment decision and improve her prognosis in the event of breast cancer. BSE practice reflects how BSE knowledge has been put into action (Sani & Yau, 2018).

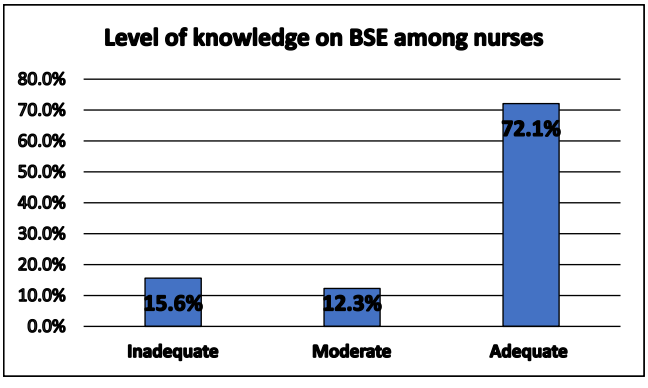

Figure 1: Frequency of Nurses Towards the Level of Knowledge of Breast Self-Examination Practice of Breast-Self Examination

Practice of Breast Self-Examination

More than half of the respondents had a moderate level of practice towards BSE, which represents 50.8%. On the other hand, only 7(5.7) respondents practice it inadequately. However, only 53(43.4%) out of a total of 122 respondents have an adequate level of practice. Approximately 112 (91.8%) of the respondents practiced BSE, while 10(8.2%) did not practice BSE. Among 112(91.8%) of the respondents who practiced BSE, only more than a quarter 55(45.1%) practiced BSE monthly as recommended by the Ministry of Health.

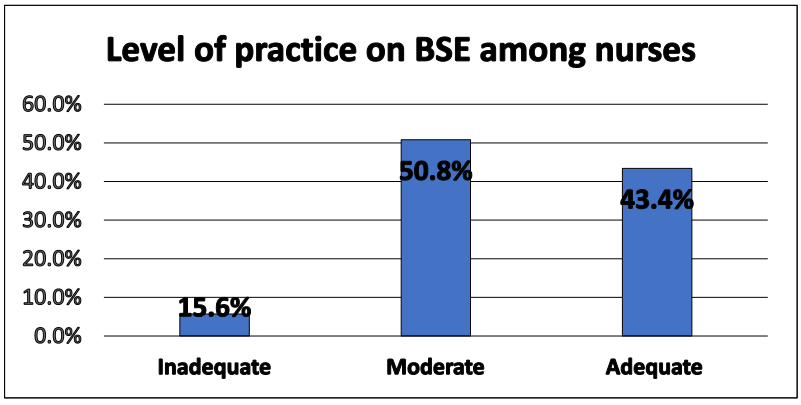

Figure 2: Frequency of Nurses Towards the Level of Practice of Breast Self-Examination

All respondents were aware and agreed that breast self-examination is a useful tool for early detection of breast cancer, and the majority agreed that BSE is a good practice. Moreover, most of the respondents were aware of breast self-examination as a tool that is the most commonly used method for breast cancer detection. Of many respondents, 95.7% knew that BSE should be performed monthly, and most of the respondents had an idea of the best time to carry out Breast Self-Examination (BSE) and what age BSE should be started. The majority of the respondents acknowledge that the individual performs BSE. Regarding the postures for performing BSE, among those who practice BSE, 93.4% of the respondents agreed on standing posture to perform BSE, while 47.5% agreed on lying down position to perform BSE, and 26.1% performed in sitting position. Furthermore, 83.6% of respondents chose clockwise as the direction of hand movement during the BSE procedure, which was a proper technique among others. Apart from this, the hand used to perform BSE has also been asked by respondents, and 41.8% used the middle of the fingers, 56.6% used the fingertips part of the hand during the examination, and only 1.6% chose the palm of the hand.

Association between Sociodemographic Characteristics and Knowledge of Breast Self- Examination Among Nurses.

Findings from this study show that age, marital status, and level of education all have *p*-values less than 0.05, indicating a connection between the respondent's level of knowledge and the factors listed above. Thus, the null hypothesis failed to be accepted. It was necessary to conduct the Fisher's exact test because the Chi-square test indicated that more than one cell had an expected count of less than 5.

Table 2: Association between Sociodemographic Characteristics and Knowledge of Breast Self-Examination among Nurses

Variables	Level of Knowledge on Breast Self-Examination			Total	*p* value
	Inadequate knowledge n(%)	Moderate knowledge n(%)	Adequate knowledge n(%)	n(%)	
Age					
20-29	4(6.5)	9(14.5)	49(79)	62(100)	
30-39	13(23.6)	5(9.1)	37(67.3)	55(100)	**0.020***
40-49	2(40)	1(20)	2(40)	5(100)	

Gender					
Male	0(0)	3(25)	9(75)	12(100)	**0.158**
Female	19(17.3)	12(10.9)	79(71.8)	110(100)	
Marital Status					
Single	1(1.7)	9(15.5)	48(82.8)	58(100)	
Married	16(26.2)	6(9.80	39(63.9)	61(100)	**0.003***
Widow	2(66.7)	0(0)	1(33.3)	3(100)	
Level of Study					
Diploma	16(23.5)	6(8.8)	46(67.6)	68(100)	**0.016***
Degree	3(5.6)	9(16.7)	42(77.8)	54(100)	
Family Income					
<5000	14(14.9)	12(12.8)	68(72.3)	94(100)	**0.941**
>5000	5(17.9)	3(10.7)	20(71.4)	28(100)	
Family History of Breast Cancer					
Yes	6(18.8)	2(6.2)	24(75)	32(100)	**0.461**
No	13(14.4)	13(14.4)	64(71.1)	90(100)	

**Fisher Exact Test significant at p-value <0.05*

Association between Sociodemographic Characteristics and Practice of Breast Self-Examination among Nurses

Demographic characteristics were found to be associated with respondents' level of breast self-examination practice, as shown in Table 2. The results show that age, marital status, and level of education are all significant factors in the level of breast self-examination practice of respondents, with p-values less than 0.05. As a result, the null hypothesis was disproved. Other variables include gender, family income, and the presence or absence of a breast cancer history in the respondents' family. It was necessary to conduct the Fisher's exact test because the Chi-square test indicated that more than one cell had an expected count of less than 5.

Table 3: Association between Sociodemographic Characteristics and Practice of Breast Self- Examination among Nurses

Variables	**Level Practice of Breast Self-Examination**			**Total**	***P* value**
	Inadequate Practice n(%)	**Moderate Practice n(%)**	**Adequate Practice n(%)**	**n(%)**	
Age					
20 - 29	4(6.8)	18(30.5)	37(62.7)	59(100)	0.000*
30 - 39	3(5.2)	41(70.7)	14(24.1)	58(100)	
40 - 49	0(0)	3(60)	2(40)	5(100)	
Gender					
Male	0(0)	3(50)	3(50)	6(100)	1.000
Female	7(6.0)	59(50.9)	50(43.1)	116(100)	
Marital Status					
Single	1(1.7)	22(37.9)	35(60.3)	58(100)	0.001*
Married	6(9.8)	37(60.7)	18(29.5)	61(100)	
Widow	0(0)	3(100)	0(0)	3(100)	

Level of Study					
Diploma	7(9.7)	45(62.5)	20(27.8)	72(100)	0.000*
Degree	0(0.0)	17(34.0)	33(66.0)	50(100)	
Family Income					
<5000	5(5.3)	48(51.1)	41(43.6)	94(100)	0.884
>5000	2(7.1)	14(50)	12(42.9)	28(100)	
Family History of Breast Cancer					
Yes	4(12.5)	18(56.2)	10(31.2)	32(100)	0.068
No	3(3.3)	44(48.9)	43(47.8)	90(100)	

**Fisher Exact Test significant at p-value <0.05*

DISCUSSION

Knowledge of Breast Self-Examination

In this study, more than half of the respondents (72.1%) had adequate knowledge of BSE and this finding is the same as a study by Khalip *et al.* (2021) where most respondents said they'd heard of BSE when asked about their knowledge of BSE as a whole. This finding is similar to the current findings that were consistent with a study conducted in Ethiopia, which found that the overall knowledge of female undergraduate students about BSE was adequate knowledge (Mekonnen & Asefa, 2019). In an earlier study, researchers found that most of those polled had heard of breast self-examination (Mohamed, 2021). According to most respondents in this study, breast self-examination is a helpful tool in the early detection of breast cancer. This is similar to a previous study in which more than half of respondents were aware that breast self-examination is a helpful tool in the early detection of breast cancer (Mohamed, 2021).

According to the current study, approximately more than half of respondents believe that a week after a period is the best time to perform breast self-examination. Similar to the previous study, BSE is the regular, repetitive inspection of a woman's breasts to detect any abnormal lumps or swelling in the breast, preferably between the 7 and 10 days of each menstrual cycle (Dadzi & Adam, 2019). Another eight respondents prefer to perform BSE during menstrual flow, while ten respondents are unsure of the best time to perform BSE. Furthermore, according to this study, half of the respondents believe BSE should begin at puberty, another thirty- two respondent believe after marriage, seven respondents believe after delivery, two respondents believe BSE should be done at menopause, and eight respondents have no idea when BSE should begin. Most respondents believe that BSE should begin at puberty, which is consistent with the previous study, which found that the majority of respondents believe that breast self-examination should begin at puberty (Mihret *et al.,* 2021).

Practice of Breast Self-Examination

In this study, 50.8% of respondents had a moderate practice of BSE, but all respondents recognized the significance of performing BSE for early breast cancer detection. BSE is now part of their supplementary curriculum, and its practical application is called BSE practice. It is essential to assess respondents' knowledge levels (Sani & Yau, 2018). Women who become breast aware and detect changes through BSE can significantly impact treatment and prognosis for those diagnosed with breast cancer. This study findings are similar to a study by BK & Kaphle (2023), which found that 27.1% of women practiced BSE. Findings by Gyawali & Gautam (2021) also found that only 19.6% of respondents have examined their breasts and reasons for not doing BSE, 50.8% of respondents cited a lack of expertise, while 36.7% cited a lack of confidence. It is important to note that practical implementation can often pose significant challenges, making it difficult to put ideas into practice.

The issue of not practicing breast self-examination might be due to some of the reasons. In a previous study the main reasons for not practicing BSE as explained by respondents, were not having breast problems, having a statement "I do not know how to do it", don`t knowing the importance, and not knowing the importance of BSE

(Dagne *et al.,*2019). A study done by Asmare, Birhanu & Waku (2022) to 541 study participants, 45.8% had performed breast self-examination, but only 31% (95% CI: 25-37%) had good practices. This study also found that more than half (54.2%) (n = 293) of the total respondents did not practice BSE. Not having breast issues and not knowing how to conduct a breast self-examination were the primary reasons for not engaging in BSE 175 (57.4% and 31.7%, respectively; n = 93).

Association between Sociodemographic Characteristics with Knowledge of Breast Self-Examination

There is a significant association between sociodemographic characteristics and the level of knowledge regarding breast self-examination. According to the findings, sociodemographic factors like age (p= 0.020), marital status (p=0.003), and level of education (p=0.016) are all significantly lower than 0.05. As a result, the hypothesis of no effect was found to be false. The knowledge of breast self-examination was not significantly affected by the other variables, which included gender, family income, and a history of breast cancer in the family. The p-value for these variables was greater than 0.05 in another study by Khalip *et al*. (2021). Researchers found that the level of education had a significant relationship with overall knowledge of BSE (the p-value for this relationship was 0.001). In addition, researchers discovered a significant correlation between BSE and level of education. The BSE knowledge of women according to their marital status (single or ever married) was almost the same in the study that was conducted by Omotoso *et al.* (2021), The BSE knowledge of young women in the age range of 26-40 years has a good understanding of the disease. The results of the studyare significant and in line with the findings of Dadzi and Adam (2019), who discovered a strong correlation between the respondents' occupation and educational level and their level of knowledge (p-values of 0.002 and 0.000, respectively). The study provides valuable insights into the importance of education and occupation in determining an individual's knowledge of breast self-examination. Though nursing students had good knowledge of breast cancer, but they have no experience in BSE and have a negative attitude in practising BSE (Khalip *et al*., 2021). Therefore, it is necessary to understand the factors affecting an individual's knowledge level, healthcare professionals can develop more targeted and effective educational programs to promote breast cancer awareness and early detection. The findings of this study, along with previous research, highlight the need for ongoing education and awareness campaigns to improve breast self-examination practices and ultimately reduce the impact of breast cancer on individuals and society as a whole. New and different education methods are needed to gain skills in nurse education (Simsek-Cetinkaya, & Cakir, 2023).

Association between Sociodemographic Characteristics with the Practice of Breast Self- Examination

The results of the current study are presented in Table 3, indicating that there is a significant association between sociodemographic characteristics and the level of practice of breast self-examination. According to the findings shown in Table 3, sociodemographic factors such as age with (p=0.000), marital status with (p=0.001), and level of study with (p=0.000) are all significantly lower than 0.05. As a result, the null hypothesis was rejected. Other variables, such as gender, family income, and a history of breast cancer in the family, are not significantly associated with the level of practice of breast self-examination.

The study by Dadzi and Adam (2019) found that most respondents (72.5%) did not practice BSE, with more than half citing a lack of knowledge of the proper techniques. 50.1% said they did not know the techniques for breast self-examination, while 17.4% said they did not practice BSE because they did not have breast cancer problems. Lack of privacy at home was also mentioned by 7.3% of the respondents as a reason for not practicing BSE. 3.4% of respondents believed they did not need to self-examine their breasts, while another 3.4% did not feel comfortable doing so. About 5.7% of the respondents gave other reasons for not practicing BSE. Among those who practiced BSE, most of them reported performing BSE every month (58.5%), while others examined their breasts once every month (25.5%) or once every year (16%).

This is a concerning trend, as BSE is a simple and effective way to detect any changes in the breast, which can lead to early diagnosis and treatment. It is crucial for women to understand the importance of BSE and to learn the proper techniques for performing it. By practicing BSE every month, women can become more familiar with the appearance and feel of their breasts and can quickly detect any abnormalities. The study found that most of those who practiced BSE did so every month, which aligns with the recommended guidelines.

CONCLUSION

Breast cancer is the leading cause of cancer death among women worldwide, but it can be prevented through early diagnosis and treatment with the help of breast self-examination, in which a woman examines her own breasts by looking and feeling for breast lumps that may indicate breast cancer symptoms. Self-examination of the breast aims to increase familiarity with the breast, detect the presence of a lump in the breast at an early stage, and detect any abnormality. Furthermore, the findings of the study suggest further research into nurses' knowledge and practice of breast self-examination, as well as periodic updates to changes in the breast. The highest priority lies in either preventing or early detection of breast cancer. This will significantly boost survival rates and improves the overall quality of life. Early diagnosis and treatment of breast cancer led to exceptionally high survival rates.

However, current study findings indicate that although nurses had adequate knowledge and performed breast self-examination, the level of practice showed moderate practice. This is a critical issue, and all nurses should take this as a serious matter to learn breast self-examination and encourage themselves to practice breast self-examination regularly. Apart from that, the findings further suggest there should be sessions conducted for the nurses to increase awareness in the hospital and at the community level. Adequate knowledge of BSE should be essential among nurses to ensure better and perfect health care. Ongoing structured sessions for nurses should be arranged on the importance and correct practices of breast self-examination and evaluation sessions to ensure the practice complies with MOH recommendations. Further investigation may help to determine the reason behind lack of implementation of the prevention techniques, thereby aiding in identifying the common factors.

Conflict of Interest

The authors declare that they have no conflict of interest.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude towards all individuals and organizations contributing to this research. Their facilities and assistance were indispensable in conducting this research. The authors would also like to express their gratitude to the participants of this study, whose contribution and cooperation made this research possible. Lastly, the authors express their gratitude to friends, families, and colleagues for their continuous support and encouragement throughout the research and publication process. Their belief has been a constant source of motivation.

REFERENCES

Abdullah, N., & Mohamed, N. (2021). Influence of cultural practices on breast cancer risks, stage at presentation and outcome in a multi ethnic developing country. *Oncology Letters, 22*(5), 1-9. https://doi.org/10.3892/ol.2021.13067

Abo Al-Shiekh, S. S., Ibrahim, M. A., & Alajerami, Y. S. (2021). Breast cancer knowledge and practice of breast self-examination among female university students, Gaza. *The Scientific World Journal*, 2021. https://doi.org/10.1155/2021/6640324

Ali, A. N., Yuan, F. J., Ying, C. H., & Ahmed, N. Z. (2019). Awareness, knowledge and attitude towards breast self-examination: A cross-sectional Study Among Female Pharmacy Students in Malaysia. International Research Journal of Oncology, 2(4), 1-10. https://www.journalirjo.com/index.php/IRJO/article/view/30114

American Cancer Society Annual Report. (2021-2022). American Cancer Society. https://www.cancer.org/about-us/financial-governance-information/stewardship-report.html. Accessed on 20th March, 2022

Asmare, K., Birhanu, Y., & Wako, Z. (2022). Knowledge, attitude, practice towards breast self-examination and associated factors among women in Gondar town, Northwest Ethiopia, 2021: a community-based study. *BMC Women's Health, 22*(1), 174. https://doi.org/10.1186/s12905-022-01764-4

BK, M., & Kaphle, H. P. (2023). Breast self-examination: Knowledge, practice and associated factors among 20 to 49 years aged women in Butwal sub-metropolitan, Rupandehi, Nepal. *Plos one, 18*(6), e0286676. https://doi.org/10.1371/journal.pone.0286676

Dadzi, R., & Adam, A. (2019). Assessment of knowledge and practice of breast self-examination among reproductive age women in Akatsi South district of Volta region of Ghana. *PLoS One, 14*(12), e0226925. https://doi.org/10.1371/journal.pone.0226925

Dagne, I., Tesfaye, F., Abdurashid, N., & Mekonnen, R. (2019). Breast self-examination practice and associated factors among female healthcare professionals at Dire Dawa administration, Eastern Ethiopia. *European Journal of Biomedical, 6*(1), 161-9. https://doi.org/10.1371/journal.pone.0241961

Ghazi, H. F., Elnajeh, M., Azri, A., AbdalQader, M. A., & Faez, M. (2017). Knowledge and beliefs on female breast cancer among male students in a private university, Malaysia. Malay, 288, 62-6.

Ginsburg, O., Yip, C. H., Brooks, A., Cabanes, A., Caleffi, M., Dunstan Yataco, J. A., ... & Anderson, B. O. (2020). Breast cancer early detection: A phased approach to implementation. *Cancer, 126*, 2379-2393. https://doi.org/10.1002/cncr.32887

Gyawali, P., & Gautam, S. (2021). Breast Self-Examination Practice and Its Associated Factor among the Women of Reproductive Age of Rapti Sonari Rural Municipality, Banke District. *International Journal of Health Sciences and Research, 11*(4), 75-82. https://doi.org/10.52403/ijhsr.20210410

Khalip, N., Isa, K. A. M., Masri, N., Rahman, H. A., Jalil, N., Hussein, S. Z., & Bakar, S. H. A. (2021). Knowledge and Attitude Toward Breast Self-Examination Among Young Adult Nursing Students in a Public University in Malaysia. *The Malaysian Journal of Nursing (MJN), 13*(2), 16-21. https://doi.org/10.31674/mjn.2021.v13i02.004

Lee, M. S., Ma'ruf, C. A. A., Izhar, D. P. N., Ishak, S. N., Jamaluddin, W. S. W., Ya'acob, S. N. M., & Kamaluddin, M. N. (2019). Awareness on breast cancer screening in Malaysia: a cross sectional study. *BioMedicine, 9*(3). https://doi.org/10.1051/bmdcn/2019090318

Mekonnen, M., & Asefa, T. (2019). Knowledge, attitude and practice of breast self examination among female undergraduate nursing students at university of gondar, college of medicine and health sciences. *Hosp Palliat Med Int J, 3*(5), 167-173. https://doi.org/10.15406/hpmij.2019.03.00173

Mihret, M. S., Gudayu, T. W., Abebe, A. S., Tarekegn, E. G., Abebe, S. K., Abduselam, M. A., ... & Kebede, G. W. (2021). Knowledge and practice on breast self-examination and associated factors among summer class social science undergraduate female students in the University of Gondar, Northwest Ethiopia. *Journal of Cancer Epidemiology, 2021*, 1-9. https://doi.org/10.1155/2021/8162047

Mohamed, S. K. (2021). Awareness and knowledge toward breast cancer and breast self-examination: A cross-sectional descriptive study among undergraduate female students at Cairo University, Egypt. *The Malaysian Journal of Nursing (MJN), 12*(3), 111-119. https://doi.org/10.31674/mjn.2021.v12i03.013

Omotoso, O. E., Matariek, G., Omotoso, E. F., Matareek, A., Abdul-Rafee, G. M., Malakar, S., & Chutia, N. (2021). Practice of breast self-examination and knowledge of breast and cervical cancer screening. *SciMedicine Journal, 3*(3), 219-229. https://doi.org/10.14293/111.000/000013.v1

Sani, A. M., & Yau, S. L. (2018). Relationship between knowledge and practice of breast self-examination among female workers in Sokoto, Nigeria. *Obstet Gynecol Int J, 9*(3), 157-62. https://doi.org/10.15406/ogij.2018.09.00323

Simsek-Cetinkaya, S., & Cakir, S. K. (2023). Evaluation of the effectiveness of artificial intelligence assisted interactive screen-based simulation in breast self-examination: An innovative approach in nursing students. *Nurse Education Today*, *127*, 105857. https://doi.org/10.1007/s12144-022-02871-z

Ştefănuţ, A. M., & Vintilă, M. (2023). Psychotherapeutic intervention on breast self-examination based on health belief

model. *Current Psychology, 42*(18), 15616-15624. https://doi.org/10.1007/s12144-022-02871-z

Tahira, Y., Nazar, K., & Parveen, T. (2023). Awareness and Attitude of Adolescent Girls About Self-Examination of the Breast. *Biological and Clinical Sciences Research Journal, 2023*(1), 351-351. https://doi.org/10.54112/bcsrj.v2023i1.351

World Health Organization (WHO) (2022). Cancer. www.who.int. https://www.who.int/news-room/fact-sheets/detail/cancer. Accessed on 26th March, 2022.