Evaluation of Breast Cancer Screening Program in Al-Warith Hospital

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Abstract:

Introduction: Breast cancer is a significant threat to Iraqi women's health. Early diagnosis of breast cancer increases the chance of recovery and life expectancy. Screening is the primary tool for early diagnosis and timely treatment of breast cancer in the early stages.

Objectives: To evaluate the screening program in detecting breast cancer in the Al-Warith screening center, Karbalaa, Iraq, from 1/8/2023 to 1/5/2024.

Methods: A cross-sectional descriptive study was conducted among 510 Iraqi women who came to the outpatient breast clinic. Their demographic information related to the current research was selected randomly; it was taken from the medical records in the statistics unit in the hospital. The collected data were coded and entered into SPSS 16.0 (Statistical Package for the Social Sciences (SPSS) 22.0 by IBM) (SPSS for Windows, Rel. 22.0., 2016, SPSS Inc., Chicago, IL, USA). The categorical data were analyzed by frequency and percentage.

Results: 167 were screened, representing 32.75% of the total mean age (54.3±13.20) years old. Clinical screening identified normal findings in 87.50% of participants, while 4.17% had benign findings, and 8.33% were clinically screened and advised to review breast clinical recurrently. Ultrasound screening showed normal findings in 32.00% of patients and benign results in 60.00%, with 8.00% having BIRAD [4, 5] results. Mammography screening revealed normal findings in 40.43% of patients and benign results in 53.19%, with 6.38% having BIRAD [4, 5] results. Biopsies were performed on eight patients, resulting in 75.00% undergoing FNA and 25.00% undergoing True Cut Biopsy. Ultimately, breast cancer was detected in 1.20% of the asymptomatic patients screened.

Conclusion: The data highlights the crucial role of regular screening for both asymptomatic and symptomatic women in the early detection of breast conditions. Raising public awareness is a vital strategy for healthcare providers. These efforts can greatly enhance the early detection and treatment of breast cancer and other related conditions. By following these recommendations, we can achieve better patient outcomes and improve overall public health.

Keywords: Breast Cancer, Screening, Program, Detection.

Introduction:

Breast diseases have posed a significant challenge globally. In the quest to overcome this challenge, the importance of medical imaging cannot be overstated. Breast imaging is crucial in uncovering hidden lesions, enabling physicians to make accurate diagnoses and provide effective treatments (1). The most commonly diagnosed cancers worldwide were female breast cancer (2.26 million cases) (2). Global efforts

in breast cancer awareness and education have demonstrably reduced its occurrence and facilitated early detection. Early diagnosis allows for effective treatment and minimizes healthcare costs. Specialized clinics for early detection, a strategy adopted by many healthcare institutions globally, have succeeded in developed countries like the UK and the US. However, Iraqi women face a higher breast cancer mortality rate due to later diagnoses and younger age groups compared to women in high-income countries (3,4). It is knowing that Breast self-examination (BSE) is a widely recognized technique for individuals to examine their breast tissue for any physical (palpable) and visual changes. Developed over 67 years ago, it has become a recommended early detection method for breast cancer by many healthcare professionals (5,6). BSE is a valuable and accessible alternative for those who may not have access to a clinical breast examination (CBE) performed by a clinician due to economic or other reasons (7,8). Limited awareness of breast cancer (BC) facts hinders Iraqi women's attitudes and practices toward early detection. Women express fears of losing family support upon diagnosis, particularly those in rural areas and internally displaced communities. These populations also face significant hurdles in accessing specialized healthcare facilities, further delaying potential diagnoses (3). Breast imaging, a crucial subspecialty of radiology, utilizes various techniques like ultrasonography, mammography, and magnetic resonance imaging (MRI) to examine breast tissue (9,10). To ensure clear communication and consistent follow-up, the American College of Radiology established the Breast Imaging Reporting and Data System (BI-RADS) (11). This system assigns a standardized score (0-5) to mammogram results, facilitating interpretation by healthcare providers and appropriate patient care. Breast cancer screening is crucial for prevention, and health beliefs and behaviors in any society are shaped by its individuals' social and cultural context. This study aims to evaluate the effectiveness of the screening program in detecting breast cancer at the Al Warith Screening Center in Karbala, Iraq.

Aim of the study:
This study evaluates the screening program for breast cancer detection in the Al Warith screening center, Karbalaa, Iraq, from 1/8/2023 to 1/5/2024.

Material &Methods:
A cross-sectional descriptive study was conducted from 1/8/2023 to 1/5/2024 among 510 Iraqi women admitted to Al Warith Hospital. Their demographic information related to the current research was selected randomly; it was taken from the medical records in the statistics unit in the hospital. This data was obtained (age, breast imaging, the BI-RADS scores, and various lesions identified under each BI-RADS score categorization). The collected data were coded and entered into SPSS 16.0 (Statistical Package for the Social Sciences (SPSS) 22.0 by IBM) (SPSS for Windows, Rel. 22.0., 2016, SPSS Inc., Chicago, IL, USA). Arithmetic mean, standard deviation, number, and percentage calculations were used for analysis. The results obtained were presented in appropriate tables. A chi-squared test was employed to examine for any possible association among the categorized variables. Statistical significance for this study was specified at $p \leq 0.05$.

Results:
Table (1) indicated that the average age of the participants was 54 years old. Among the screened women, 19 were 40 years old or younger (11.37%). One hundred forty-eight were over 40 years old (88.62%). Out of 510 participants, 167 were asymptomatic and screened, representing 32.75% of the total clinical

screening identified normal findings in 87.50% of patients, while 4.17% had breast diseases, and 8.33% required follow-up. Ultrasound screening showed normal findings in 32.00% of patients and benign results in 60.00%, with 8.00% having BIRAD [4, 5] results. Mammography screening revealed normal findings in 40.43% of patients and benign results in 53.19%, with 6.38% having BIRAD [4, 5] results. Biopsies were performed on eight patients, resulting in 75.00% undergoing FNA and 25.00% undergoing True Cut Biopsy. Ultimately, breast cancer was detected in 1.20% of the asymptomatic patients screened.

Table (1) Category of Total patients who were screening in asymptomatic women, n= (167) of total participants n= (510).		
Parameters	**n**	**(%)**
Mean Age = (54) years **≤40** **>40**	**19 (11.37)** **148 (88.62)**	
Total No. of Pt's who screened (Asymptomatic)	**167 (32.75)**	
Clinically Screened		
no. of Pts who were clinically screened with normal finding	42 (87.50)	
no. of Pts who were clinically screened for breast diseases	2 (4.17)	
no. of Pts who were clinically screened and advised to recurrent review of breast clinical	4 (8.33)	
Total no. of Pts who were clinically screened	**48 (28.74)**	
Ultrasound Screening		
no. of Pts who screened with U/S and they were normal finding	8 (32.00)	
no. of Pts who screened with U/S and they were benign results	15 (60.00)	
No. of Pts who screened with results of U/S, BIRAD [4, 5]	2 (8.00)	
Total no. of Pts who screened with U/S	**25 (14.97)**	
Mammography Screening		
no. of Pts who screened with Mammo and they were normal findings	38 (40.43)	
no. of Pts who screened with Mammo and they were benign results	50 (53.19)	
No. of Pts who screened with results of Mammography, BIRAD [4,5]	6 (6.38)	
Total no. of Pts who screened with Mammo	**94 (56.29)**	
Biopsy		
No. of Pts who done FNA of 6 pts suspected	6 (75.00)	
No. of Pts who did True cut of 2 pts suspected	2 (25.00)	
Breast Cancer Detection		

No. of asymptomatic PTs who detected breast cancer of 167 pts screened	2 (1.20)
BIRAD = [Breast Imaging Reporting and Data System], n number of samples. Pts= patients, U/S= ultrasound, Mammo= mammography, FNA= fine needle aspiration.	

In Table (2), The average age of the symptomatic participants was 49 years old; among the symptomatic women, 54 were 40 years old or younger (15.74%).289 were over 40 years old (84.26%), out of 510 total participants, 343 were symptomatic, making up 67.26% of the total participants. Among the 139 symptomatic patients who underwent ultrasound screening, 34.98% had normal findings, 89.00% had benign tumors, and 6.00% had suspected malignancy. Of these 204 symptomatic patients who underwent mammography, 3.60% had normal findings, 91.25% had benign tumors, and 5.15% had suspected malignancy. Also, 343 symptomatic patients underwent both ultrasound and mammography, making up 85.42% of symptomatic patients, and related to biopsy. Of these 52 patients who underwent biopsy, 46.15% had Fine Needle Aspiration (FNA), and 53.85% had True Cut Biopsy. Breast cancer was detected in 1.76% of the 343 symptomatic patients tested. So, this data indicates that a significant proportion of symptomatic patients had benign findings, with a small percentage being suspected of malignancy or confirmed with breast cancer through biopsy and imaging.

Table (2) Category of symptomatic participants' women, Total n= (343) of total participants n= (510).	
Parameters	**n %**
Mean Age = (49) years **≤40** **>40**	**54 (15.74)** **289 (84.26)**
Total No. of Symptomatic Pt's	**343 (67.26)**
Ultrasonographic findings	
no. of Pts who tested with U/S, and they were normal finding	5 (34.98)
no. of Pts who tested with U/S, and they were benign tumor	131 (89.00)
no. of Pts who tested with U/S, and they were suspected malignancy	3 (6.00)
Total no. of Pts who tested with U/S	**139 (100%)**
Mammographic findings	
no. of Pts who tested with Mammo and they were expected, finding	7 (3.60)
no. of Pts who were benign tumor	191 (91.25)
no. of Pts who were suspected of malignancy	6 (5.15)
Total no. of Pts who tested with Mammo	**204 (100%)**
Combined U/S and Mammography	
Total no. of Pts who tested with U/S and Mammo	**343 (85.42)**
Biopsy findings	

no. of Pts who they were done FNA	24 (46.15)
no. of Pts who they were done true cut	28 (53.85)
Total no. of Pts who were done FNA and true cut	**52 (18.37)**
Breast cancer detection	
No. of symptomatic Pts who detected breast cancer of 343 pts tested	9 (1.76)
n= number of samples. Pts= patients, U/S= ultrasound, Mammo= mammography, FNA= fine needle aspiration	

Table (3) provides a comprehensive comparison between asymptomatic and symptomatic patients. Symptomatic patients form a larger proportion of the total participants (67.26%) than asymptomatic patients (32.75%). Related to the final diagnosis, normal findings a higher percentage of asymptomatic patients had normal findings (59.88%) compared to symptomatic patients (3.50%), and benign findings, Symptomatic patients had a much higher percentage of benign conclusions (93.88%) compared to asymptomatic patients (38.92%). The percentage of patients diagnosed with breast cancer is slightly higher in symptomatic patients (2.62%) compared to asymptomatic patients (1.20%). Related to diagnosis methods in clinically diagnosed, more asymptomatic patients were clinically diagnosed (28.74%) compared to symptomatic patients (3.50%). A higher percentage of symptomatic patients were diagnosed through radiological methods (81.34%) compared to asymptomatic patients (66.47%). Fine Needle Aspiration (FNA): Symptomatic patients had a higher percentage of FNA (7.00%) compared to asymptomatic patients (3.59%). Symptomatic patients had a significantly higher percentage of true cut biopsies (8.16%) than asymptomatic patients (1.20%). The chi-square test indicates There isn't a statistically significant difference (p-value = 0.2354) in age distribution between the two groups and a highly significant difference ($p < 0.00001$); this comparison highlights significant differences between asymptomatic and symptomatic patients, particularly in the methods of diagnosis and the final findings, emphasizing the higher diagnostic intervention and findings of benign tumors and breast cancer in symptomatic patients.

Table (3) compares (asymptomatic) and (symptomatic) patients whose final diagnosis was breast cancer, benign tumor, and normal finding and how they were diagnosed, n= 510				
Parameters	**Asymptomatic (n=167)**	**Symptomatic (n=343)**	**Chi sq.**	**p-value**
Age **≤40** **>40**	**19 (11.37)** **148 (88.62)**	**54 (15.74)** **289 (84.26)**	**1.4079**	**0.2354**
Total No. of Patients	**167 (32.75%)**	**343 (67.26%)**		
Final Diagnosis				
Total with normal finding	100 (59.88%)	12 (3.50%)		
Total with benign finding	65 (38.92%)	322 (93.88%)		
Total with breast cancer	2 (1.20%)	9 (2.62)		
Diagnosis Method				

Clinically	48 (28.74%)	12 (3.50%)	**75.5645**	**< 0.00001**
Radiologically (Mammo, U/S)	111 (66.47%)	279 (81.34%)		
FNA	6 (3.593%)	24 (7.00%)		
True cut	2 (1.20%)	28 (8.16%)		
Total	**167 (100%)**	**343 (100%)**		
p≤0.05, pts=patients, FNA=fine needle aspiration, mammo=mammography, u/s=ultrasound,				

Discussion:

Breast cancer is the most commonly diagnosed cancer globally, with 2.26 million cases reported (2). Global initiatives in breast cancer awareness and education have significantly lowered its incidence and improved early detection rates. Early diagnosis enables effective treatment and reduces healthcare costs. Many healthcare institutions worldwide have adopted the establishment of specialized clinics for early detection, which have proven successful in developed countries such as the UK and the US. However, Iraqi women experience higher breast cancer mortality rates due to later diagnoses and younger age groups at diagnosis compared to women in high-income countries (3,4). In Table (1), the result was that the average age of the participants was 54 years old. Among the screened women, 19 were 40 years old or younger (11.37%). One hundred forty-eight were over 40 years old (88.62%). out of 510 total participants, 167 were asymptomatic and screened, representing 32.75%; the modal age group was < 40 years - > 40 years, also the recommended age group for breast cancer screening (12). This finding is encouraging since it indicates that practitioners are requesting breast imaging in line with recommended guidelines. So, as shown in Table (1), the total clinical screening identified normal findings in 87.50% of patients, while 4.17% had breast diseases, and 8.33% required follow-up. Ultrasound screening showed normal findings in 32.00% of patients and benign results in 60.00%, with 8.00% having BIRAD [4, 5] results. Mammography screening revealed normal findings in 40.43% of patients and benign results in 53.19%, with 6.38% having BIRAD [4, 5] results. Biopsies were performed on 8 patients, resulting in 75.00% undergoing FNA and 25.00% undergoing True Cut Biopsy. Ultimately, breast cancer was detected in 1.20% of the asymptomatic patients screened. The cause of these results was the implementation of national programs for early detection and research in Iraq, which appears to be yielding positive results (13–17). This rise in early detection may be partly attributed to increased awareness through social media and educational initiatives despite existing knowledge gaps among Iraqi women regarding breast cancer, as highlighted by previous studies (18,19). Consequently, a comprehensive national breast cancer control strategy has been established, emphasizing public education, early detection guidelines, and treatment protocols (13,14,20,21). Furthermore, Cancer Screening Specialists can be critical in enhancing public awareness of early detection. Table 2 presents valuable data on the prevalence and outcomes of cancer symptoms in the study population. This study explored breast cancer in symptomatic women (n=343) compared to a total of 510 participants. The average age of symptomatic participants was 49 years old, with a relatively even distribution between those younger than 40 (15.74%, n=54) and those 40 or older (84.26%, n=289). This is consistent with findings from the American Cancer Society, which reports that breast cancer risk increases with age (22). Ultrasound was used on all symptomatic women (n=139). Most results (89.00%) indicated benign tumors, with a smaller percentage showing normal findings (34.98%) and suspected malignancy (6.00%). Mammography was also performed on all symptomatic women (n=204), with similar results: a majority showing benign tumors (91.25%), followed by normal findings

(3.60%) and suspected malignancy (5.15%). This aligns with prior research suggesting that most will be benign while screening can identify abnormalities (23). Biopsies were performed on a subset of symptomatic women (n=52) who had suspicious findings on ultrasound or mammogram. Fine needle aspiration (FNA) was used in 46.15% of biopsies and tru-cut biopsy in 53.85%. Ultimately, breast cancer was detected in 1.76% (n=9) of the symptomatic participants tested. This detection rate is lower than in some studies, possibly due to factors like sample size or screening practices (24). Table 3 highlights key differences in breast cancer diagnoses and detection methods between asymptomatic and symptomatic women (n=510). So, the two groups have no statistically significant difference (p-value = 0.2354) in age distribution. Both groups have more women over 40 (asymptomatic: 88.62%, symptomatic: 84.26%). This aligns with established knowledge that breast cancer risk increases with age (12,22,23). As expected, a higher percentage of symptomatic women (9, 2.62%) were diagnosed with breast cancer compared to asymptomatic women (2, 1.20%). This emphasizes the importance of being aware of symptoms and seeking medical attention promptly. Conversely, a significantly higher proportion of asymptomatic women had normal findings (59.88%) compared to symptomatic women (3.50%). This suggests that screening may effectively detect abnormalities even before symptoms arise, supporting the recommendations for routine screening in certain age groups. Most of both groups had benign findings (asymptomatic: 38.92%, symptomatic: 93.88%). A significant difference (p-value < 0.00001) exists in how breast cancer was diagnosed. Clinical examination alone identified more cases in asymptomatic women (48, 28.74%) than in symptomatic women (12, 3.50%). This might be because symptomatic women often have noticeable abnormalities that prompt a clinical exam and potentially less reliance on just a physical exam for asymptomatic women. Radiological methods (mammography and ultrasound) were more commonly used for diagnosis in symptomatic women (81.34%) compared to asymptomatic women (66.47%). This could be because these methods are more helpful in investigating suspicious symptoms identified during a clinical exam or reported by the patient. Fine needle aspiration (FNA) and Tru-cut biopsies were used more frequently in symptomatic women (7.00% and 8.16%) compared to asymptomatic women (3.59% and 1.20%). This aligns with the higher rate of suspicious findings in symptomatic women who would be more likely to undergo biopsies for further evaluation (22–25).

Conclusion:

The data underscore the critical importance of regular screening in both asymptomatic and symptomatic women for early detection of breast conditions. By adopting comprehensive screening protocols, improving diagnostic methods, and enhancing public awareness, healthcare providers can significantly impact the early detection and treatment of breast cancer and other breast-related conditions. Implementing these recommendations can improve patient outcomes and overall public health. **So, the study recommends to:**

1. —Increase routine screening by encouraging regular screening programs for asymptomatic women. This can lead to early detection of both benign and malignant conditions. Routine screenings can help maintain a high percentage of normal findings and detect issues before they become symptomatic.

2. Given the high percentage of symptomatic patients diagnosed through radiological methods, enhancing access to and utilization of mammography and ultrasound can be crucial. Regularly using these tools can improve the detection rates of benign and malignant conditions.

3. Launch awareness campaigns to educate women on the importance of regular breast screenings, even when asymptomatic. Highlight the benefits of early detection and the available diagnostic tools.

4. —Implement robust follow-up care systems for patients with benign findings and those requiring further evaluation. Regular follow-ups can ensure that any changes are promptly identified and managed.

5. Continue collecting and analyzing breast cancer screening data to identify trends and improve screening strategies. Research can help tailor screening programs to be more effective and efficient.

References:

1. Edzie EKM, Dzefi-Tettey K, Gorleku PN, Amankwa AT, Aidoo E, Agyen-Mensah K, et al. Evaluation of the Clinical and Imaging Findings of Breast Examinations in a Tertiary Facility in Ghana. Int J Breast Cancer. 2021 Jul 19;2021:1–9.

2. Ferlay J, Colombet M, Soerjomataram I, Parkin DM, Piñeros M, Znaor A, et al. Cancer statistics for the year 2020: An overview. Int J Cancer. 2021 Aug 15;149(4):778–89.

3. Sathwara JA, Balasubramaniam G, Bobdey SC, Jain A, Saoba S. Sociodemographic Factors and Late-stage Diagnosis of Breast Cancer in India: A Hospital-based Study. Indian J Med Paediatr Oncol. 2017;38(3):277–81.

4. L. R. Hussain AM. "Cancer Trends in Iraq 2000-2016.," . Oman Med J, vol 36, no 1, 31 Jan 2021. 2021 Jan 31;36(1).

5. Austoker J. Breast self examination. BMJ. 2003 Jan 4;326(7379):1–2.

6. Eggertsen SC, Bergman JJ. Breast self-examination: historical perspective and current progress. J Fam Pract. 1983 Apr;16(4):713–6.

7. Jacob TC, Penn NE. The need and value of breast self-examination. J Natl Med Assoc. 1988 Jul;80(7):777–87.

8. Dadzi R, Adam A. Assessment of knowledge and practice of breast self-examination among reproductive age women in Akatsi South district of Volta region of Ghana. PLoS One. 2019 Dec 30;14(12):e0226925.

9. Safarpour Lima Z, Ebadi MR, Amjad G, Younesi L. Application of Imaging Technologies in Breast Cancer Detection: A Review Article. Open Access Maced J Med Sci. 2019 Mar 15;7(5):838–48.

10. Inside Radiology team. Breast imaging. [Internet]. 2016 [cited 2024 May 15]. Available from: https://www.insideradiology.com.au/breast-imaging/

11. Levy L, Suissa M, Chiche JF, Teman G, Martin B. BIRADS ultrasonography. Eur J Radiol. 2007 Feb;61(2):202–11.

12. Debra M. Ikeda. Breast Imaging:," . 1st Edition. The Requisites E-Book. Elsevier Health Sciences.,; 2004.

13. International Agency for Research on Cancer. Data visualization tools for exploring the global cancer burden in 2020.,. 2022.

14. Al-Alwan N, Mualla F. Promoting Clinical Breast Examination as A screening Tool for Breast Cancer in Iraq. Iraqi National Journal of Nursing Specialties. 2014 Jun 30;27(1):76–82.

15. Alwan NAS. Breast Cancer Among Iraqi Women: Preliminary Findings From a Regional Comparative Breast Cancer Research Project. J Glob Oncol. 2016 Oct;2(5):255–8.

16. Ruken YüksekkayaFatih ÇelikyayNuray VoyvodaÖzden Gökdemir Yazar. BREAST ULTRASOUND FINDINGS IN PATIENTS WITH MASTALGIA UNDER THE AGE OF FOURTY . Eur J Breast Health. 2012;8(1):19–22.

17. Jatoi I, Kaufmann M, editors. Management of Breast Diseases. Berlin, Heidelberg: Springer Berlin Heidelberg; 2010.

18. Alwan NAS, Al-Attar WM, Eliessa RA, Madfaie ZA, Tawfeeq FN. Knowledge, attitude and practice regarding breast cancer and breast self-examination among a sample of the educated population in Iraq. Eastern Mediterranean Health Journal. 2012 Apr 1;18(4):337–45.

19. NadaA.S. Alwan WMAANAM. Baseline Needs Assessment for Breast Cancer Awareness among Patients in Iraq. International Journal of Science and Research (IJSR). 2017 Jan 5;6(1):2088–93.

20. Alwan N. ESTABLISHING NATIONAL GUIDELINES FOR EARLY DETECTION OF BREAST CANCER IN IRAQ: Clinical Implications and Perspectives *Corresponding Author. Int J Adv Res (Indore). 2015 Jan 1;3:539–55.

21. Alwan N. Iraqi Initiative of a Regional Comparative Breast Cancer Research Project in the Middle East. Vol. 2, Journal of Cancer Biology & Research Cite this article: Alwan N. 2014.

22. American Cancer Society. Breast Cancer [Internet]. 2024 [cited 2024 May 15]. Available from: https://www.cancer.org/cancer/types/breast-cancer.html

23. NCS. National Cancer Institute. 2024 [cited 2024 May 15]. Breast Cancer Screening. Available from: https://www.cancer.gov/types/breast/hp/breast-screening-pdq

24. Ahmadinejad M, Hajimaghsoudi L, Pouryaghobi SM, Ahmadinejad I, Ahmadi K. Diagnostic Value of Fine-Needle Aspiration Biopsies and Pathologic Methods for Benign and Malignant Breast Masses and Axillary Node Assessment. Asian Pac J Cancer Prev. 2017 Feb 1;18(2):541–8.

25. Hofvind S, Holen ÅS, Aase HS, Houssami N, Sebuødegård S, Moger TA, et al. Two-view digital breast tomosynthesis versus digital mammography in a population-based breast cancer screening programme (To-Be): a randomised, controlled trial. Lancet Oncol. 2019 Jun;20(6):795–805.