EVALUATION OF THE EFFECTIVENESS OF BREAST CANCER SCREENING PROGRAM IN ALKARKH TEACHING HOSPITAL, BAGHDAD, IRAQ.

∗[1]Rawia Faleh Albayati, [2]Khalid Kareem Rajab and [3]Besmah M. Ali

[1]Baghdad Health Directorate - Al-Karkh, Baghdad, Iraq.
[2]Al Mustanstryia Medical College/Consultant Surgeon Al Yarmouk Teaching Hospital, Baghdad, Iraq.
[3]Consultant In Community Medicine, Head of Public Health Unit In Ghazi Al-Hariri Hospital For Surgical Specialties, Baghdad- Iraq.

∗Corresponding Author: Rawia Faleh Albayati

Baghdad Health Directorate - Al-Karkh, Baghdad, Iraq.

ABSTRACT

Introduction: Breast cancer is the most common cancer among women worldwide, with an estimated 2.2 million new cases diagnosed in 2022. Early detection and treatment of breast cancer can improve survival rates, making screening programs an important public health intervention. However, screening programs are not perfect and can lead to false-positive results, which can cause anxiety and lead to unnecessary treatments. **Objectives:** This cross-sectional study was conducted to evaluate the effectiveness of breast cancer screening programs in asymptomatic women in Baghdad, Iraq. **Methods:** This cross-sectional study was conducted to evaluate the effectiveness of breast cancer screening programs Alkarkh Teaching Hospital in Baghdad. The study population included 1,524 women who attended breast clinic from June 1, 2022 to June 1, 2023. The screening program included a clinical examination, ultrasound, mammography, and fine needle aspiration (FNA) or core biopsy. Statistical analysis was performed using SPSS software. **Results:** The total number of participants in the breast clinic was 1524 during 1/6/2022 -1/6/2023, 607 (39.83%) of them were screened to detect cancer without symptoms. 277 (45.63%) patients with U/S BIRAD [1, 2, 3] and 32 (5.27%) with BIRAD [4, 5]. Total number of mammography was 27 patients, 25 (4.12) of them had BIRADs [1, 2, 3] and 2 (0.33%) had BIRADs [4, 5] and 271 (44.64%) screened patients with BIRADs [4, 5]. All patients who clinically suspicious or by U/S and mammography with BIRADs [4,5] send for cytology (FNA and histopathology study core). Also, total number of symptomatic patients was 917 (60.17%), so number of patients with results of U/S, Mammography BIRAD [4, 5], was 8 (0.87%). **Conclusions:** The findings from the data suggest that breast cancer screening and detection have varying levels of success in the specific population studied. High-risk BIRADS 4 and 5 categories were indicative of breast cancer in a significant portion of the screened population. This highlights the critical role that screening plays in early cancer detection, especially among symptomatic patients.

KEYWORDS: Breast Cancer, Screening, effectiveness, Asymptomatic, Evaluation.

INTRODUCTION

It is estimated that breast cancer is the second the most common malignant tumor worldwide and the most frequent diagnosis of female cancer. Breast cancer stands as the most widespread form of malignancy worldwide, particularly prevalent among women in both developed and developing nations.[1],[2],[3] Global endeavors aimed at combatting breast cancer through health education initiatives and awareness campaigns have made a substantial impact in reducing its occurrence risk or, at the very least, enabling early detection. Early detection, in turn, aids in effective control and treatment, thus reducing healthcare and economic burdens.[4] One of the crucial strategies implemented by healthcare institutions worldwide to tackle the rising incidence of this disease is the creation of dedicated clinics for early cancer detection and screening. The successful results of such efforts are evident in advanced nations like the UK and the US. However, breast cancer carries a higher mortality rate among Iraqi women. This is primarily because patients in Iraq tend to receive diagnoses at advanced stages and among younger age groups, in contrast to their counterparts in high-income countries.[2] To combat the national burden of cancer, The Iraqi health system has been experiencing challenging circumstances since the 1980s, as a result of continuous wars, conflicts and

population displacement that led to the deterioration of health indicators and capacities within the country.[5],[6] Nevertheless, initiatives have been put in place to strengthen the system, which have led to improvements in some health indicators.[7] The breast cancer early detection (BCED) programme has been established since 2000 by the Iraqi Ministry of Health and Environment (MoH) to promote early detection of BC in an attempt to downstage it at presentation and decrease related mortalities. These efforts were supported by the establishment of the Iraqi National Cancer Research Centre (INCRC) by the Ministry of Higher Education and Scientific Research (MoHESR) in 2012.[8], [9] There are deficiencies in the required human resources and infrastructure available to the breast cancer early detection programme as it lacks direct budget allocation from the government. Other obstacles include poor implementation of the national protocol guidelines and weak monitoring and evaluation systems.[2] Also, poor survival is the result of the late stage of presentation, reflecting limited access to screening, diagnostic and treatment facilities along with a lack of awareness of the importance of early detection of breast cancer among the population.[10]

AIM OF THE STUDY: To Evaluate of the effectiveness of screening program in asymptomatic women in Alkarkh Teaching Hospital, Baghdad, Iraq.

MATERIAL AND METHODS
This cross-sectional study was conducted to evaluate the effectiveness of breast cancer screening programs Alkarkh Teaching Hospital in Baghdad. The study population included 1,524 women who attended breast clinic from June 1, 2022 to June 1, 2023. The screening program included a clinical examination, ultrasound, mammography, and fine needle aspiration (FNA) or core biopsy. Statistical analysis was performed using SPSS software. Self-referring women, for screening purpose and all cases are graded according BIRADS lexicon. BIRADS category 4 and 5, or clinically suspicious were followed by cytopathological analysis. The data were collected from records of statistical unit in Alkarkh Teaching Hospital. This data was obtained the BI-RADS scores, were organized, coded, and analyzed using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) version 20.0.

RESULTS
The total number of participants in the breast clinic was 1524 during 1/6/2022 -1/6/2023, 607 (39.83%) of them were screened to detect cancer without symptoms. 277 (45.63%) patients with U/S BIRAD[1,2,3] and 32 (5.27%) with BIRAD.[4,5] Total number of mammography was 27 patients, 25 (4.12) of them had BIRADs[1,2,3] and 2 (0.33%) had BIRADs[4,5] and 271 (44.64%) screened patients with BIRADs.[4, 5] All patients who clinically suspicious or by U/S and mammography with BIRADs[4,5] send for cytology (FNA and histopathology study core). Also, total number of symptomatic patients was 917 (60.17%), so number of patients with results of U/S, Mammography BIRAD.[4, 5], was 8 (0.87%).

Table 1: Category of patients who were screening in asymptomatic women, Total n= 1524 (100%) in Baghdad. Between 1/6/2022-1/6/2023.

Parameters	n	%
Total No. of Asymptomatic Patients	607	100 %
no. of Pts who they were clinically screened with normal finding	277	45.63
no. of Pts who they were clinically screened with Benign.	32	5.27
no. of Pts who they were clinically screened with follow up	271	44.64
Pts who screened with results of Mammography BIRAD[4, 5]	25	4.12
No. of Pts who asymptomatic and screened with results of U/S, Mammography BIRAD[4, 5], FNA done and diagnosed breast cancer	2	0.33
Total No. of Symptomatic Patients	917	100 %
No. of Pts who symptomatic and non-screened with results of U/S, Mammography BIRAD[4,5], FNA done and diagnosed breast cancer	8	0.87
U/S = Ultrasound, BIRAD = [Breast Imaging Reporting and Data System], n= number of samples. Pts= patients		

from Figure (1), which displays the number of patients whose results were according to BIRADS 1, 2, 3, that there were 1,457 (95.60%) patients, including 354 (23.22%) screenings. Additionally, for those whose results were according to BIRADS 4, 5, there were 110 (7.22%) patients, including 13 (0.85%) screenings. Also, out of the 110 patients with BIRADS 4, 5 results, only 8 (0.87) were no. of symptomatic pts with BIRADS[4,5] who diagnosed with clinically, cytologically and histopathological as a breast cancer, and there were 2

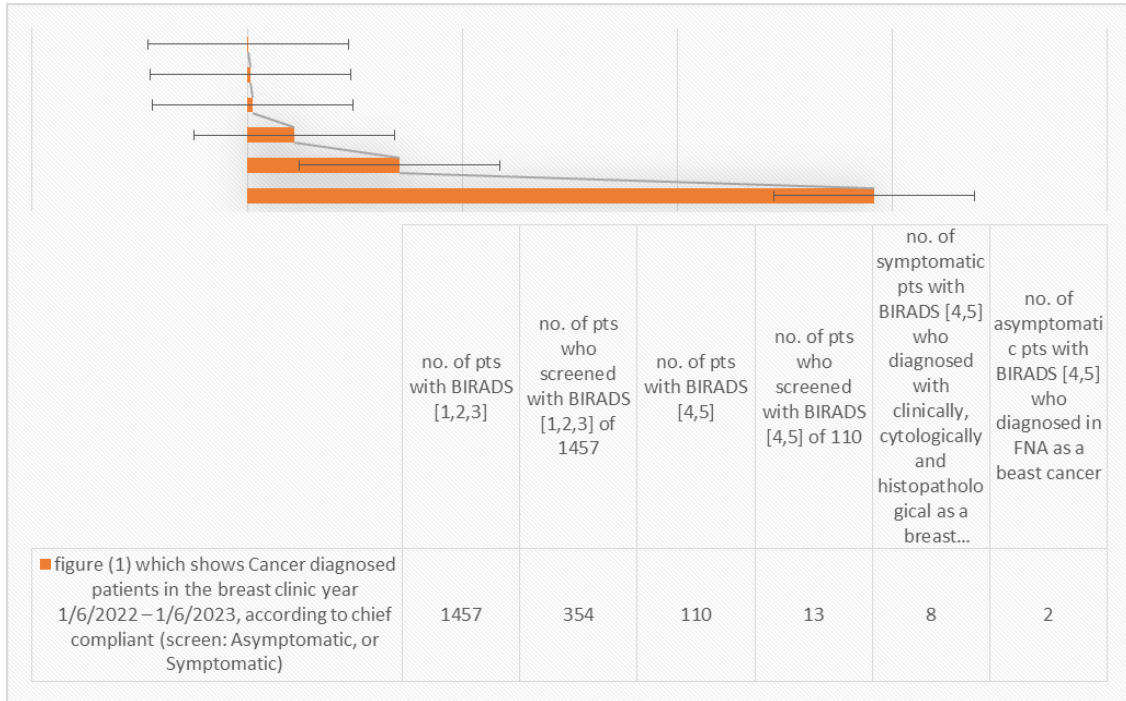(0.33) of asymptomatic patients who were diagnosed in FAN with breast cancer.

	no. of pts with BIRADS [1,2,3]	no. of pts who screened with BIRADS [1,2,3] of 1457	no. of pts with BIRADS [4,5]	no. of pts who screened with BIRADS [4,5] of 110	no. of symptomatic pts with BIRADS [4,5] who diagnosed with clinically, cytologically and histopathological as a breast...	no. of asymptomatic pts with BIRADS [4,5] who diagnosed in FNA as a beast cancer
figure (1) which shows Cancer diagnosed patients in the breast clinic year 1/6/2022 – 1/6/2023, according to chief compliant (screen: Asymptomatic, or Symptomatic)	1457	354	110	13	8	2

Figure 1: Which Shows Cancer Diagnosed Patients In The Breast Clinic Year 1/6/2022 – 1/6/2023, According To Chief Compliant (Screen: Asymptomatic, Or Symptomatic).

The following table (Table 2) presents a comparison between asymptomatic screening cases and symptomatic cases. The total number of asymptomatic cases was 607 (39.83%), the total number of symptomatic cases was 917 (60.17%). It is noted that the number of cases diagnosed as normal was 4 (0.66%) in asymptomatic group, whereas it was 10 (1.65%) in symptomatic group. The overall number of cases diagnosed with benign tumors was 601 (99.01%) in the screening group, whereas cases of benign tumors in the non-screening symptomatic group were 899 (98.03%). The number of cases diagnosed as breast cancer in the screening group was 2 (0.33%), while in the non-screening symptomatic group, it was 8 (0.87%). Furthermore, it can be observed that there is no significant relationship whereas the p-value was (0.1918) at a significance level of p ≤0.05.

Table 2: comparing between screening (asymptomatic) and non-screening (symptomatic) patients who their final diagnosis with breast cancer, benign tumor, and normal finding and how they diagnosed, n= 1524.

parameters	Asymptomatic		Symptomatic		p-value
	n	%	n	%	
Total No. of Pt's who screened and non-screened	607	(39.83)	917	(60.17)	1.1918
Total no. of pts with normal finding	4	(0.66)	10	(1.65)	
Total no. of pts with benign finding	601	(99.01)	899	(98.03)	
Total no. of pts with breast cancer	2	(0.33)	8	(0.87)	
p≤0.05, pts=patients, FNA=fine needle aspiration, mammo=mammography, u/s=ultrasound.					

DISCUSSION

Breast cancer is a global public health concern that impacts individuals and healthcare institutions alike. The International Agency for Research on Cancer (IARC) has reported approximately 292,677 diagnosed cases of breast cancer among women in the Middle East, resulting in approximately 176,139 deaths from the disease.[11] In Iraq, data from the Iraqi Cancer Registry reveals that around 4,115 cases of cancer were diagnosed in women, at a rate of 22 cases per 100,000 females in the population. So, as the total number of participants in the breast clinic was 1524 (100%), 607 (100%) of them were screened to detect cancer without symptoms. 277 (45.63%) patients with U/S BIRAD.[1, 2, 3] and 32 (5.27%) with BIRAD.[4,5] This is similar to a study which had conducted that findings by radiologists were associated with higher abnormality scores in the multivariable regression analysis. The overall PPV of AI-CAD was 32.5% (213/656) for all breasts, including 213 breast cancers, 129 breasts with benign biopsy results, and 314 breasts with benign outcomes in the follow-up or diagnostic studies.[12] Total number of

mammography was 27 patients, 25 (4.12) of them had BIRADs[1,2,3] and 2 (0.33%) had BIRADs[4,5] and 271 (44.64%) screened patients with BIRADs.[4,5] All patients who clinically suspicious or by U/S and mammography with BIRADs[4,5] send for cytology (FNA and histopathology study core). Also, total number of symptomatic patients was 917 (100%), so number of patients with results of U/S, Mammography BIRAD.[4,5] was 8 (0.87%). And from Figure (1), which displays the number of patients whose results were according to BIRADS 1, 2, 3, that there were 1,457 (95.60%) patients, including 354 (23.22%) screenings, like a study indicated that of the 118 BI-RADS 4 lesions, 74 lesions (62.7%) were benign and 44 lesions (37.3%) were malignant. The diagnostic sensitivity and specificity for US, US + CEUS, US + SWE, US + CEUS + SWE were 88.6% and 75.7%, 86.4% and 94.6%, 88.6% and 90.5%, 97.7% and 93.2%, respectively.[13] The data presented suggests several important observations and interpretations regarding breast cancer screening in a specific population BIRADS 4 and 5 results the data shows that out of 110 patients with BIRADS 4 and 5 results, 8 (0.87%) were symptomatic and diagnosed with breast cancer through clinical, cytological, and histopathological evaluations, while 2 (0.33%) were asymptomatic patients who were diagnosed with breast cancer through fine-needle aspiration (FNA). These findings indicate that a significant portion of patients with high-risk BIRADS categories indeed had breast cancer, highlighting the importance of screening in detecting the disease, as such it can be indicates to decrease in cancer screenings the observed decrease in the number of participants seeking cancer screenings without symptoms between 1/6/2022 – 1/6/2023, compared to other centers, may be linked to the center's location in impoverished residential neighborhoods in the western outskirts of Baghdad. This suggests that socioeconomic factors may play a significant role in screening uptake. Also, it seems that the impact of socioeconomic factors related with center's location in low-income neighborhoods, typically characterized by lower education and awareness levels, may contribute to the reduced inclination of individuals to seek early cancer screening. This aligns with a study conducted by Neha et al. on rural women, which found that barriers such as lack of awareness and access to healthcare services could hinder early detection of breast cancer, and a problem with Potential Barriers to Early Detection The results suggest that socioeconomic factors such as poverty, lower education, and reduced access to healthcare services can present barriers to early detection of breast cancer, impacting overall health outcomes for these individuals[14], also, it is near to a study by et al, that they assumed that breast cancer among young women is a rare pathology, but is known to have a more aggressive behavior and poorer outcome, and they concluded that young females with breast cancer have higher stage of tumor.[15] Based on this data, we can conclude that cancer screening plays a significant role in early cancer detection and preventing it from reaching advanced stages in all patients and across all age groups.

There is no significant correlation between age and cancer screening, as confirmed by Kolade-Yunusa, Itanyi, in their study, they reached the conclusion that there is no substantial correlation between age and cancer screening, which affects the screening outcomes in relation to age.[16] In (Table 2) which presents a comparison between asymptomatic and symptomatic cases, The table indicates the diagnostic method or test relied upon for the diagnosis. Whereas the total number of screening cases was 607 (39.83%), the total number of symptomatic cases was 917 (60.17%). It is noted that the number of cases diagnosed as normal was 4 (0.66%) in the asymptomatic group, whereas it was 10 (1.65%) in the symptomatic group. The overall number of cases diagnosed with benign tumors was 601 (99.01%) in the asymptomatic group, whereas cases of benign tumors in the symptomatic group were 899 (98.03%). The number of cases diagnosed as breast cancer in the asymptomatic group was 2 (0.33%), while in the symptomatic group, it was 8 (0.87%). Furthermore, it can be observed that there is no significant relationship whereas the p-value was (1.1918) at a significance level of p ≤0.05. As presented in Table 2, the results differ somewhat from those published in the two studies that confirmed the successful detection and early diagnosis of cancer, in contrast to the findings of this study.[17][18] The reasons for this disparity may include the level of awareness and knowledge among women regarding cancer screening, as mentioned earlier. Additionally, economic factors play a significant role, as noted above. There may also be other obstacles related to the accurate diagnosis of cases that underwent screening, such as the absence of a radiology specialist for professional examination and report writing. Most diagnoses are made by reviewing the mammogram or ultrasound films rather than using a computer, resulting in less precise outcomes.

CONCLUSION

The findings from the data suggest that breast cancer screening and detection have varying levels of success in the specific population studied. High-risk BIRADS 4 and 5 categories were indicative of breast cancer in a significant portion of the screened population. This highlights the critical role that screening plays in early cancer detection, especially among symptomatic patients. However, the decrease in screenings without symptoms between 1/6/2022 and 1/6/2023 may be linked to socioeconomic factors in impoverished residential neighborhoods of Baghdad, affecting access to and participation in screening programs. Additionally, there are several potential barriers to early detection, including a lack of awareness and education regarding the importance of screening, reduced access to healthcare services, and economic constraints. These factors can hinder early detection and subsequent treatment, thereby impacting the overall health outcomes of individuals in the region.

REFERENCES

1. I. (2020a)., "Data visualization tools for exploring the global cancer burden in 2020.," *CANCER TODAY. Lyon: International Agency for Research on Cancer,* 2022.

2. J. J. N. N. A. Mina Maallah, "Barriers Impeding Early Detection of Breast Cancer in Iraq: A Critical Analysis," *Azerbaijan Medical Journal,* 2022; 62(07): 2845-2863.

3. B. G. B. S. J. A. S. S. Sathwara JA, "Sociodemographic Factors and Late-stage Diagnosis of Breast Cancer in India: A Hospital-based Study.," *Indian J Med Paediatr Oncol,* 2017; 38: 277-281.

4. K. N. F. M. D. S. I. A. Rezabeigi davarani E, "Breast self-examination and its effective factors based on the theory of planned behavior among women in Kerman.," *J Educ Community Health.,* 2016; 3: 1-8.

5. WHO, "2022). The Global Health Observatory, Health workforce.," WHO, 18 July 2022. [Online]. Available: https://www.who.int/data/gho/data/themes/topics/health-workforce..

6. P. f. H. R. (2021)., "Challenges Faced by the Iraqi Health Sector in Responding to COVID-19.," Physicians for Human Rights, 28 July 2022. [Online]. Available: https://phr.org/our-work/resources/challenges-faced-by-the-iraqi-health-sector-in-responding-to-covid-19/..

7. N. &. K. D. (Alwan, "Cancer control in war-torn Iraq.," *The Lancet Oncology,* 2018; 19(3): 291–292.

8. N. (Alwan, "Establishing National Guidelines For Early Detection Of Breast Cancer In Iraq: Clinical Implications And Perspectives.," *International Journal of Advanced Research,* 3(12): 539-555.

9. T. U. S. A. f. I. D. &. M. (2013), "Guidelines for Early Detection and Periodic Screening of Breast and Cervical Cancers in Primary Health Care Settings in Iraq.," 28 July 2022. [Online]. Available: http://pdf.usaid.gov/pdf_docs/PA00K4N5.pdf.

10. A. N. &. D. L. (Sankar R, " How Can We Improve Survival from Breast Cancer in Developing Countries?" Future Medicine, 2 (3):," *Breast Cancer Management,* 2013; 2(3): 179-183.

11. G. 2012, "International Agency for Research on Cancer,," *Lyon, IARC Press,* 2013.

12. H. H. K. E. Lee SE, "Positive Predictive Values of Abnormality Scores From a Commercial Artificial Intelligence-Based Computer-Aided Diagnosis for Mammography.," *Korean J Radiol,* April 2024; 25(4): 343-350.

13. M.-K. Z. Y. H. Y. L. X.-R. L. Z.-L. W. Gang Liu1, "BI-RADS 4 breast lesions: could multi-mode ultrasound be helpful for their diagnosis?," *Gland Surgery J,* 19 June 2019; 8(3).

14. Y. R. K. R. V. D. A. D. G. Neha Tripathi, "Barriers for early detection of cancer amongst Indian rural women," *South Asian Journal of Cancer,* 2014; 3(2): 122.

15. R. S. L. K. D. Shitalmala Thangjam, "Breast carcinoma in young females below the age of 40 years: A histopathological perspective," *South Asian Journal of Cancer,* 2014; 3(2): 97-100.

16. I. U. Kolade-Yunusa HO, "Outcome of mammography examination in asymptomatic women.," *Ann Afr Med,* 2021; 20(1): 52-58.

17. A. B. M. D. G. e. a. Crispo, "Molecular profiles of screen detected vs. symptomatic breast cancer and their impact on survival: results from a clinical series.," *BMC Cancer,* 2013; 13(15).

18. J. L. S. B. S. C. M. Y. L. J. J. S. P. K. S. C. J. H. K. J. H. K. J. S. L. J. E. N. S. J. &. Y. J. H. Kim, "Comparison between screen-detected and symptomatic breast cancers according to molecular subtypes.," *Breast cancer research and treatment,* 2012; 131(2): 527–540.