

SCREENING RATE AND MOTIVATING FACTORS AMONG WOMEN ATTENDING  
BREAST CANCER EARLY-DETECTION CLINICS IN BABYLON, IRAQEvan Thamr A. Alzahraa\*<sup>1</sup>, Assel W. Khudair<sup>2</sup>, Zainab J. Al-Jobawi<sup>3</sup><sup>1</sup>MB ChB, Babylon Health Directorate, Iraq.<sup>2</sup>MB ChB, FRCR, FICOM (Radiology), Imam Al-Sadiq Teaching Hospital, Babylon, Iraq.<sup>3</sup>MB ChB, FIBMS, CABS, Imam Al-Sadiq Teaching Hospital, Babylon, Iraq.

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## ABSTRACT

**Background:** Breast cancer is the most common cancer among women in Iraq. Early detection greatly improves the chances of successful treatment and survival. However, many women in Iraq face barriers such as low awareness, limited access to screening, and social stigma. Promoting early detection through education and improved healthcare services is key to reducing breast cancer deaths. **Objectives:** To assess the screening rate, motives behind screening behavior, and associated determinants among attendees of the Breast Cancer Early Detection Clinics. **Method:** A cross-sectional study was performed over a period of three months from the 1st of January to the 1st of April in 2025, across three key healthcare institutions in Babylon Governorate. These included the Breast Cancer Early Detection Clinics located within Al-Imam Al-Sadiq Teaching Hospital, Al-Hilla Teaching Hospital, and the Babil Maternity and Pediatric Teaching Hospital. The questionnaire addressed various variables, including age, residency, marital status, educational level, parity, menopausal history, cause of visit to Breast Cancer Early Detection Clinics, and the motivation source for screening. **Results:** In total, 298 women were involved in the study, with 140 (47%) women attending the clinic for screening. The screening motives were 64 (45.7%) by medical advice, 40 (28.6%) by herself, 19 (13.6%) by workplace, 14 (10%) by social media & TV, and 3 (2.1%) by her friends. The educational level, occupation, and family history show a significant association with the cause of visit ( $P > 0.001$ ,  $P > 0.001$ , and  $P > 0.003$ , respectively). **Conclusion:** The screening rate in Babylon Governorate is a distinguishing and promising indicator for enhancing early detection and improving health outcomes of females, and the medical advice is a leading and prominent one among the motives.

**KEYWORDS:** Screening Rate, Motivating, Women, Breast, Cancer, Early-Detection.

## INTRODUCTION

Breast cancer is the most common type of cancer among women and the leading cause of deaths among them worldwide.<sup>[1]</sup> There were 2.3 million females diagnosed with breast cancer and 670,000 deaths globally in 2022, and it represented the second most common one diagnosed worldwide.<sup>[2]</sup> The statistics revealed that the high and common incidence rate of breast cancer is in the most developed countries, while the death rate from it is high in less developed ones. This phenomenon is primarily due to a lack of awareness, which results in late-stage diagnoses of the disease, particularly in areas lacking sufficient resources for early diagnosis and treatment.<sup>[3]</sup> Early detection plays a vital role in a broader

strategy that also involves diagnosing the condition, providing appropriate treatment, and ensuring regular follow-up. The goal is to detect cancer while it remains localized, prior to its spread to nearby tissues or distant organs.<sup>[4]</sup> Around one-third of cancer cases worldwide can be detected early, and with timely and effective treatment, many of these cases have a strong chance of being cured.<sup>[5]</sup> Early detection represents the second major pillar of National Cancer Control Programs, with prevention being the first.<sup>[6]</sup> And to ensure the success of early detection programs, they should be designed with consideration for disease mortality rates, the capacity of the healthcare system, and the cost-effectiveness of screening methods, alongside the availability of trained

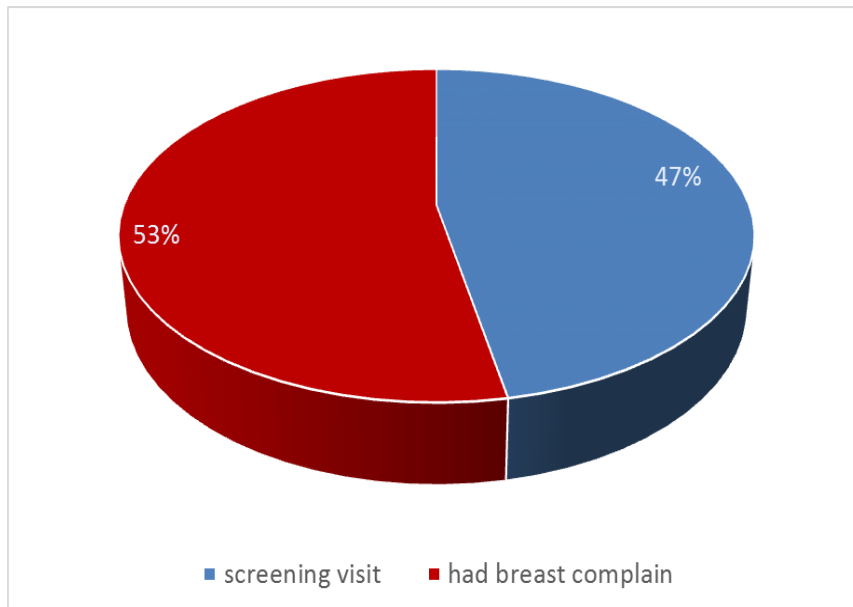
personnel for early detection efforts.<sup>[7]</sup> The early detection program is the systematic and organized implementation in a specific population of early diagnosis or screening or both.<sup>[6]</sup> Early diagnosis involves the public and health providers recognizing and being aware of the early signs and symptoms of breast cancer, which facilitates diagnosis and proper treatment through health education promotion. In contrast, screening is a systematic implementation of non-invasive tools on apparently asymptomatic individuals to detect any abnormalities suggestive of breast cancer. A screening application is more difficult and complex than an early diagnosis application. The reason is that an effective screening test requires 70% of the target population at risk to be included to significantly reduce mortality from cancer.<sup>[8]</sup> The model of early detection of breast cancer in Iraq is a combined program of an early diagnosis for attendants with symptoms like breast mass, pain, nipple discharge, and unsystematic opportunistic screening.<sup>[9]</sup> To evaluate the screening rate, motives behind screening behavior, and associated determinants among attendees of the Breast Cancer Early Detection Clinics at Al-Imam Al-Sadiq Teaching Hospital, Al-Hilla Teaching Hospital, and Babil Teaching Hospital for Maternity and Pediatrics.

**PATIENTS AND METHODS**

A descriptive analytical cross-sectional design was performed from the 1st of January to the 1st of April in 2025 across three key healthcare institutions in Babylon Governorate. These included the Breast Cancer Early Detection Clinics located within Al-Imam Al-Sadiq Teaching Hospital. Al-Hilla Teaching Hospital and the Babil Maternity and Pediatric Teaching Hospital: all women who visited the breast cancer screening clinics during the research period—whether for screening or due to breast-related symptoms—were included in the study. Participants who attended the clinics for follow-up appointments or who had a previous diagnosis of breast cancer were excluded from the sample. In this study, one collection tool (self-constructed questionnaire) had been used, which involved questions about socio-demographic, obstetrical history, menstrual history, family history of breast cancer, family history of another cancer, personal previous breast disease history, cause of visit, and motives of screening visit.

**RESULT**

From 298 women attending the early detection clinic of breast cancer: 140(47%) women attending clinic for screening and other 158 (53%) women attending clinic for breast complain, figure 1 and table 1.



**Figure 1: Cause of women visit to early detection clinic.**

**Table 1: Screening motivation for women who attending the clinic.**

Variable	Number	Percentage
Screening motivated by	Herself	40 28.6%
	Social media & TV	14 10%
	Here friends	3 2.1%
	Medical advice	64 45.7%
	Workplace	19 13.6%
Total	140	100%

The age of studied women had no significant association with cause of visit to early detection clinic (p=0.88), table -2-.

**Table 2: Relation of age of studied women with cause of visit.**

Variable		Cause of visit		Total	Chi-square value	P value
		Screening	Breast complain			
Age group	20-24years	14(10%)	18(11.4%)	32	3.7	0.88*
	25-29 years	14(10%)	21(13.3%)	35		
	30-34 years	17(12.1%)	20(12.7%)	37		
	35-39 years	17(12.1%)	19(12%)	36		
	40-44 years	26(18.6%)	28(17.7%)	54		
	45-49 years	15(10.7%)	16(10.1%)	31		
	50-54 years	15(10.7%)	16(10.1%)	31		
	55-59 years	7(5%)	11(7%)	18		
≥60 years	15(10.7%)	9(5.7%)	24			
Total		140	158	298		

\*Chi-square test, significant ≤0.05.

The residency shown no significant association with cause of visit to early detection clinic (p=0.6) while the educational level shown a significant association with cause of visit (p<0.001), where a 74.2% (66) of women with collage educational level were visit clinic for screening while only 40% (10) of illiterate women were

visit clinic for screening. Occupation was also shown a significant association with cause of visit (p<0.001), where 81.2% (56) of employee were visit clinic for screening while 33% (62) of housewife were visit the clinic for screening, table -3-.

**Table 3: Relation of Socio-demographic character with cause of visit.**

Variable		Cause of visit		Total	Chi-square value	P value
		Screening	Breast complain			
Residency	Rural	25(17.9%)	32(20.3%)	57	0.27	0.60*
	Urban	115(82.1%)	126(79.7%)	241		
Education level	Illiterate	10(7.1%)	15(9.5%)	25	38.4	<0.001*
	Read & write	11(7.9%)	22(13.9%)	33		
	Primary	19(13.6%)	41(25.9%)	60		
	Intermediate	17(12.2%)	27(17.1%)	44		
	Secondary	17(12.2%)	30(19%)	47		
Occupation	Collage	66(47.1%)	23(14.6%)	89	48.4	<0.001*
	Housewife	62(44.3%)	126(79.7%)	188		
	Student	15(10.7%)	15(9.5%)	30		
	Employee	56(40%)	13(8.2%)	69		
	Retired	7(5%)	4(2.5%)	11		
Total		140	158	298		

\*Chi-square test, significant ≤0.05.

The obstetric history of studied women shown no significant association with cause of visit (P value

>0.05), table -4-.

**Table 4: Relation of Obstetric history of studied women with cause of visit.**

Variables		Cause of visit		Total	Chi-square value	P value
		Screening	Breast complain			
Marital status	Married	113(80.7%)	126(79.7%)	239	0.97	0.613*
	Single	23(16.4%)	24(15.2%)	47		
	Separated &Widow	4(2.9%)	8(5.1%)	12		
Total		140	158	298		
Parity	Null parous	31(22.1%)	34(21.5%)	65	0.633	0.88*
	Para one	11(7.9%)	15(9.5%)	26		
	Para two	14(10%)	19(12%)	33		
	Multiparous	84(60%)	90(57%)	174		
Total		140	158	233		
Lactation history	Not lactating	10(9.1%)	7(5.6%)	17	7.14	0.307*
	Less than 6 months	3(2.7%)	10(8.1%)	13		
	6-12 months	7(6.4%)	3(2.4%)	10		

	13-36 months	20(18.4%)	21(16.9%)	41		
	37-60 months	22(20.2%)	21(16.9%)	43		
	61-84 months	14(12.9%)	17(13.7%)	31		
	>85months	33(30.3%)	45(36.4%)	78		
Total		109	124	233		
Menopausal history	Premenopausal	107(76.4%)	121(76.6%)	228	0.1	0.97*
	Menopause	33(23.6%)	37(23.4%)	70		
Total		140	158	298		

Chi-square test, significant  $\leq 0.05$ .

Family history of breast cancer shown a significant association with cause of visit ( $p=0.003$ ), where

69.2%(27) of women with family history were visit the clinic for screening, table -5-.

**Table 5: Past history of studied women.**

Variable	Cause of visit		Total	Chi-square value	P value
	Screening	Breast complain			
Family history of breast disease	Negative	113(80.7%)	146(92.4%)	8.91	0.003*
	Positive	27(19.3%)	12(7.6%)		
Total		140	158		

\*Chi-square test, significant  $\leq 0.05$ .

## DISCUSSION

Early detection and screening for breast cancer are fundamental in decreasing mortality rates and improving prognosis among affected women.<sup>[6]</sup> Identifying breast cancer at an early, localized stage tends to result in more effective, less invasive treatment and higher survival rates.<sup>[10]</sup> Screening methods such as mammography can detect tumors before they become palpable or symptomatic, allowing for timely intervention.<sup>[11]</sup> Public health strategies that promote awareness, education, and access to organized screening programs are therefore critical in the global effort to control and manage breast cancer effectively.<sup>[10]</sup> Approximately 47% of women attended the early detection clinic in Babylon Governorate for routine breast cancer screening. Our rate is higher than those found in earlier studies in Iraq, such as the first study in Baghdad (8.4%)<sup>[12]</sup> and another in Kurdistan (9.5%).<sup>[13]</sup> It is also higher than the results from Jordan (25.4%)<sup>[14]</sup> and Saudi Arabia (8%).<sup>[15]</sup> This increase may partly be due to the strategy implemented by the Babylon health directorate, which involves sending all females employed in the directorate for screening and coordinating with the outpatient clinic to ensure that female patients attending for reasons apart from breast issues also receive breast cancer screening. Furthermore, many activities were done by specialist physicians at many directorates, like the electricity directorate, the oil directorate, and the University of Babylon, to increase awareness about screening and sending female employees for examination. Our findings come close to the rate in France, which was 49.9% in 2017<sup>[16]</sup>, but lower than those reported in the United Kingdom (72% during 2019–2020) and the United States (76.4% in 2019) (National Cancer Institute, 2021). Various sources of motivation influenced women to attend breast cancer early detection clinics. Medical advice and workplace campaigns were the most common motivators, reported by 64 participants (45%) for medical advice and 19 participants (13.6%) for

workplace campaigns. The directives from the Babylon Health Department may have prompted female health workers to undergo routine breast cancer screening. Social media and television influenced 14 women (10%), while 3 women (2.1%) were encouraged by friends. Furthermore, 40 of the participants (28.6%) said that self-motivation or personal reasons were the main reasons they went to the clinic. In another Iraqi study by Al Ameen et al. (2020), it was found that 18 (42.9%) women were self-referred, 13 (31%) had a friend or a family member registered in the same breast clinic, and 11 (26.2%) were recommended to screen their breasts regularly by their private physicians.<sup>[12]</sup> These findings highlight the crucial role of healthcare providers and structured awareness programs in motivating women to participate in breast cancer screening. In the current study, it was shown that the age group between 40 and 45 years had the highest screening rate and breast complaint rate among the other age groups. This phenomenon may relate to the fact that women in their 40s are often the most common age group to undergo breast cancer screening because this demographic is typically the age when the risk of breast cancer begins to rise significantly. Additionally, many national guidelines recommend starting routine screening around the age of 40–45, especially for average-risk women. Increased health awareness, physician recommendation, and greater contact with the healthcare system during this age also contribute to higher screening rates.<sup>[17]</sup> In the current study, the type of residency (urban vs. rural) does not show a significant association with either the reason for attending the early detection clinic ( $p = 0.6$ ) or the likelihood of performing screening. This is consistent with the finding of another Iraqi study<sup>[12]</sup>, which revealed that the residency had no significant association with the reason for attending the early detection clinic. The study reveals a significant link between education level and attendance for breast cancer screening ( $p < 0.001$ ). Specifically, 47.1% ( $n = 66$ ) of women with a college-

level education visited the clinic for screening, compared to only 7.1% ( $n = 10$ ) of illiterate women. This is consistent with the Iraqi study finding.<sup>[12]</sup> Educated females enjoy better health literacy, increased access to healthcare, autonomy, and empowerment, unlike ill-treated women. Furthermore, the study found a significant association between employment status and attendance for breast cancer screening ( $p < 0.001$ ). Among employed women, 40% ( $n = 56$ ) visited the clinic for screening, compared to 8.2% ( $n = 13$ ) of employed women who visited the clinic for breast complaints. The strategy implemented by the Babylon health directorate to send all employed females for screening may partly explain this finding. In our study, married women had a higher percentage of screening compared to singles, separated, and widowed women, with 113 out of 140 participating. This result is similar to the finding of a study conducted in Rasht City, Iran<sup>[18]</sup>, which found that married women had a higher likelihood of undergoing breast cancer screening, particularly mammography, compared to their unmarried counterparts. In the current study, parity was not a significant factor influencing screening behavior. Instead, our findings highlight the importance of non-reproductive determinants. This aligns with an Iraqi cross-sectional study conducted in Sulaymaniyah, which demonstrated that cultural barriers such as feelings of embarrassment, social environment, and uneasiness were stronger predictors of breast self-examination, clinical breast examination, and mammography than reproductive history.<sup>[19]</sup> Such evidence underlines the need to address sociocultural factors and awareness barriers when designing breast cancer screening programs in Iraq. Out of 298 women in the study, 140 (47%) had participated in breast cancer screening. Among these, 107 were premenopausal and 33 were postmenopausal. Statistical analysis showed no significant association between menopausal status and participation in screening, indicating that in this sample, women's menopausal history had no influence on their likelihood of being screened. This finding is similar to an Iraqi study<sup>[20]</sup>, which reported lower screening participation among postmenopausal women. These results suggest that, in our context, menopausal history may be an irrelevant factor for screening behavior, highlighting the importance of targeting awareness programs to all women, not only postmenopausal individuals. A significant association was found between a positive family history of breast cancer and the reason for attending the clinic ( $p = 0.003$ ). Specifically, 69.2% ( $n = 27$ ) of women with a family history of breast cancer visited the clinic for screening. Another Iraqi study by<sup>[12]</sup> supported these results, finding that 59.5% of women with a positive family history attended screening, indicating a strong association. Women with a family history of breast cancer are more likely to undergo mammography due to heightened perceived risk, physician guidance, and greater personal motivation driven by firsthand exposure to the disease.<sup>[21]</sup> This study has some limitations. First, this is a single-institution

study. Second, the study used a cross-sectional design. Third, the sampling method was non-random sampling, and convenience sampling might trigger selection bias and further limit the generalizability of the results.

## CONCLUSION

The screening rate in Babylon Governorate is a distinguishing and promising indicator for enhancing early detection and improving health outcomes of females, and the medical advice is a leading and prominent one among the motives and despite of this high screening.

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This research received no external funding.

## Conflicts of Interest

The authors declare no conflict of interest.

## REFERENCES

1. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.*, 2024; 74(3): 229-263.
2. World Health Organization (WHO): Breast cancer fact sheet. Updated 2026 Apr 16. Accessed 2026 Jun 5.
3. Sedeta ET, Jobre B, Avezbakiyev B. Breast cancer: global patterns of incidence, mortality, and trends. *J Clin Oncol*, 2023; 41(16): e13000.
4. World Health Organization Regional Office for the Eastern Mediterranean. Regional Office for the Eastern Mediterranean (WHO/EMRO). Cairo: WHO, 2000.
5. Langselius O, Rungay H, Vignat J, Charvat H, Rutherford MJ, Mafra A, et al. Avoidable deaths through the primary prevention, early detection, and curative treatment of cancer worldwide: a population-based study. *Lancet Glob Health*, 2026; 14(3): e356-e366.
6. Dillner J. Early detection and prevention. *Mol Oncol*, 2019; 13(3): 591-598.
7. Setyawati R, Astuti A, Utami TP, Adiwijaya S, Hasyim DM. The importance of early detection in disease management. *J World Future Med Health Nurs.*, 2024; 2(1): 51-63.
8. Basu P, Ponti A, Anttila A, Ronco G, Senore C, Vale DB, et al. Status of implementation and organization of cancer screening in the European Union Member States: summary results from the second European screening report. *Int J Cancer*, 2018; 142(1): 44-56.
9. Al Alwan NA. Establishing national guidelines for early detection of breast cancer in Iraq: clinical implications and perspectives. *Int J.*, 2015; 3(12): 539-555.
10. Ginsburg O, Yip CH, Brooks A, Cabanes A, Caleffi M, Dunstan Yataco JA, et al. Breast cancer early

- detection: a phased approach to implementation. *Cancer*, 2020; 126(10): 2379-2393.
11. Sprague BL, Arao RF, Miglioretti DL, Henderson LM, Buist DSM, Onega T, et al. National performance benchmarks for modern diagnostic digital mammography: update from the Breast Cancer Surveillance Consortium. *Radiology*, 2017; 283(1): 59-69.
  12. Al Ameen MI, Rajab KK, Ali BM, Al Diwan JK. Screening motives among attendants of breast cancer early detection clinics in Iraq. *Indian J Forensic Med Toxicol*, 2020; 14(1): 637-642.
  13. Shakor JK, Mohammed AK. Assessment of breast cancer early detection program in Iraq-Sulaimania: measuring the cancer detection rate. *Indian J Cancer*, 2018; 55(1): 84-87.
  14. Abu-Helalah MA, Alshraideh HA, Al-Serhan A, Kawaleet M, Nesheiwat AI. Knowledge, barriers and attitudes towards breast cancer mammography screening in Jordan. *Asian Pac J Cancer Prev.*, 2015; 16(9): 3981-3990.
  15. AlSaleh KA. Efficacy of breast cancer screening program in the Kingdom of Saudi Arabia. *Saudi Med J.*, 2022; 43(4): 428-434.
  16. Hassaine Y, Jacquet E, Seigneurin A, Delafosse P. Evolution of breast cancer incidence in young women in a French registry from 1990 to 2018: towards a change in screening strategy? *Breast Cancer Res.*, 2022; 24(1): 87.
  17. Giaquinto AN, Sung H, Newman LA, Freedman RA, Smith RA, Star J, et al. Breast cancer statistics, 2024. *CA Cancer J Clin.*, 2024; 74(6): 477-495.
  18. Ghanbari A, Rahmatpour P, Hosseini N, Khalili M. Social determinants of breast cancer screening among married women: a cross-sectional study. *J Res Health Sci.*, 2020; 20(1): e00467.
  19. Azeez SS, Andsoy II. Evaluation of Arab cultural barriers that influence Muslim Arab Iraqi women's breast cancer screening behavior. *Eur J Breast Health*, 2022; 18(4): 329-336.
  20. Al-Gburi A, Alwan N, Al-Tameemi E, Al-Dabbagh W. Opportunistic screening for early detection of breast cancer in Iraq. *Int Med J.*, 2021; 28(1): 28-32.
  21. Tracy KA, Quillin JM, Wilson DB, Borzelleca J, Jones RM, McClish D, et al. The impact of family history of breast cancer and cancer death on women's mammography practices and beliefs. *Genet Med.*, 2008; 10(8): 621-625.