



# Level of Awareness, Screening Practices, and Self-Detection Among Breast Cancer Patients

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## ABSTRACT

**Objective:** Having good knowledge and performing regular pre-tests under physician supervision play a crucial role in the early detection of breast cancer. The aim of this study was to investigate the level of awareness, frequency of performing routine screening, types of screening methods prior to detection, and who detected the case, among women diagnosed with breast cancer.

**Materials and Methods:** A cross-sectional study that used a designed questionnaire applied to investigate demographic data and four other aspects: level of awareness, screening practices, type of screening methods used, and who detected the case for the first time. Women who were diagnosed with breast cancer and registered at Nanakali Hospital were included.

**Results:** A total of 150 women participated. Most of the participants (80%) had no previous knowledge regarding causes, signs and symptoms, or detection methods, while only 20% had little information. Among the participants, most (87.3%) did not undergo any pre-tests before the time of diagnosis, while only 12.7% did pre-test at least once. The screening methods used prior to the diagnosis were: breast self-exam (n=9); ultrasonography (n=8), and only two had mammography. Detecting the case for the first time, 68.7% of the cases were detected by chance or accidentally, and 31.3% were detected by physicians.

**Conclusion:** The level of awareness and performance of routine screening differ greatly among different populations and countries. Women in Erbil, generally have a low level of awareness and insufficient knowledge regarding breast cancer; most women do not undertake any regular screening for early detection of this cancer compared to Western countries. Having previous knowledge and doing pre-tests regularly play a key role in the early detection of this cancer, which minimizes the consequences.

**Keywords:** Breast cancer; level of awareness; pre-tests; screening methods; self-detection

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## Key Points

- Having sufficient knowledge regarding breast cancer (BC) is important for all women, of all ages.
- Performing a pre-test enables the early diagnosis of BC.
- Women in the northern part of Iraq, like other low- and middle-income countries, have little information and very poor screening practices before being diagnosed with BC.
- Increasing awareness and encouraging women to undergo regular screening to enable the early detection of BC.

## Introduction

Breast cancer is a neoplasm that affects the breast tissue, and it is the most common type of cancer among women. Annually, more than two million new cases of breast cancer are diagnosed, which causes about 685,000 deaths globally. About two-thirds of these deaths were recorded in low- and middle-income countries (1-3). Women's awareness of breast cancer is very important and plays a key role in its early diagnosis, which increases overall survival. In high-income countries, the overall five-year survival rate is over 80%, while in low-income countries, like India, it is less than 70%, and in South Africa,

it is less than 50%. The United States achieved a 36% reduction in breast cancer mortality rates between 1989 and 2012. The high survival rate in developed countries results from advanced strategies for early detection, access to early diagnosis, and effective treatments (1, 4, 5). The degree of awareness and levels of knowledge about the disease differ among different countries and societies and generally women in low- and middle-income countries have less awareness and knowledge of breast cancer (6, 7). Several factors, such as education, socioeconomic status, health care levels, and geographical distribution, contribute to the level of awareness among women in different countries and populations (6).

Diagnosis of any cancer type at its early stages plays a key role in the treatment strategies, control of the disease, and reduction of morbidity and mortality of the cancer (8). Diagnosis of breast cancer at earlier stages will reduce the likelihood of a poor outcome, and the approach to treatment will be easier and more varied than when detecting the cancer at advanced stages (9, 10). Unfortunately, women in low- and middle-income countries do not perform screening as a pre-test regularly, compared to women in Western countries (11, 12). There are different methods that can be used for screening breast cancer, such as mammography (MG), ultrasonography (USG), magnetic resonance imaging (MRI), biopsy, molecular based methods, flow cytometers, and breast self-examination (BSE). The simplest way is BSE that women can perform at home at any time and it costs nothing; however, women should be trained well to be able to do BSE effectively and regularly (13, 14). It should be noted that BSE is not able to detect the cancer at its preliminary stages, so regular MG screening is highly recommended for its ability to detect this cancer even at its first stage (15, 16).

The initial detection of breast cancer may be by the patient or by physicians and health care workers. Self-detection of cancer is encouraged, especially in low- and middle-income countries where there are poor screening practices for early detection (17). Breast cancer in Iraq has become a pressing public health concern as the number of cases rises every year (18, 19). There is a shortage of studies covering these issues regarding breast cancer in our region. The aim of this study was to investigate the level of awareness and prior knowledge of breast cancer, investigating the frequency of performing pre-tests for the early detection, the types of screening methods that were used, and how the case was detected for the first time among women with breast cancer in the Erbil governorate of Iraq.

## Materials and Methods

### Study Design, Sample Collection, Parameters

Iraqi Kurdish women who had an existing diagnosis of breast cancer were included in the study. Samples were collected at Nanakali Hospital for Blood Diseases and Cancer, Erbil, Iraq. After obtaining their agreement, they were included in this study.

The present study was a cross-sectional study that used a structured questionnaire to investigate parameters related to the aim of the present study. Four parameters were investigated. The first was level of awareness and prior knowledge regarding breast cancer, such as

information about the cancer, risk factors, early signs, and screening methods. The second was performance of any pre-test before the time of diagnosis and how many times the individual underwent screening. Then the type of screening method used, if any, was investigated. Finally, how the case was detected for the first time, by the patients or by the physician was collected. Demographic data including age, education level, place of residence (rural/urban), and marital status were also collected.

### Inclusion and Exclusion Criteria

Women who were diagnosed with breast cancer and belonged to the Iraqi Kurdish population were included in the present study. Women who did not meet these criteria or who declined to participate were excluded.

### Ethics Consideration

All participants were fully informed about the aim and objectives of the study through a written consent form, and after obtaining their agreements, they were included as participants in accordance with the Helsinki Declaration. The research was approved by the Medical Ethics Committee of Erbil Polytechnic University (approval no: 23-0011, date: 30/10/2023).

### Statistical Analysis

To compare between different groups, a chi-square test was used. Statistical analysis was performed using GraphPad Prism, version 9.0.0 (121) (GraphPad Software LLC, www.graphpad.com). A  $p$ -value less than  $<0.05$  was considered significantly different.

## Results

### Demographic Data

A total of 150 women were included in the study, with a mean age of 53.7 years, ranging from 29 to 75 years. Most (76.7%) were 50 years of age or older. In terms of level of education, 42.7% were illiterate and 70%, lived in urban areas. The marital status showed that the majority, 87.3%, were married. The details and results of the statistical analysis of these parameters are shown in Table 1.

### Level of Awareness and Having Previous Knowledge of Breast Cancer

Among 150 participants, only 30 (20%) had some previous knowledge about some aspects of breast cancer, while 120 (80%) had no previous knowledge about breast cancer ( $p < 0.0001$ ; Table 2).

Table 1. Demographic parameter of the participants (n=150)

Parameter	Categories	n	%	p-value
Age, years	<50	35	23.3	<0.0001
	≥50	115	76.7	
Education	Illiterate	64	42.7	0.01
	Primary or Secondary School	45	30	
	Institute or University	41	27.3	
Rural / Urban	Urban	105	70	<0.0001
	Rural	45	30	
Marital State	Single	19	12.7	<0.0001
	Married	131	87.3	

**Performing Routine Test for Pre-diagnosis of Breast Cancer**

Only 19/150 (12.7%) reported that they had undergone a pre-test at least once before being diagnosed with breast cancer, while the majority, 131 (87.3%), did not undergo any pre-tests before the time of diagnosis ( $p < 0.0001$ ; Table 2).

**Type of Pre-screening**

Among the 19 participants who did have a pre-test, the screening methods were: BSE (n=9; 47.4%); USG (n=8; 42.1%); and only two (10.5%) underwent MG ( $p = 0.03$ ; Table 2).

**How the Cancer was Detected for the First Time and by Who**

Most of the cases, 103 (68.7%) reported that the case was detected at first through self-detection, feeling abnormal mass, or by chance, while 47 (31.3%) of the cases were detected by physicians ( $p < 0.0001$ ; Table 2).

**Discussion and Conclusion**

Among the participants in the current study, 80% reported having no previous knowledge of breast cancer. The 30 participants who reported prior knowledge of breast cancer knew little about the causes, risk factors, diagnosis, or screening methods. An earlier study from Iraq that included educated participants from two different universities, found about 50% of the participants had poor knowledge regarding breast cancer and only 14.3% were graded as “good” (20). Thus, the findings of the current study are not surprising as nearly half were illiterate and only just over a quarter had post-secondary school education. Another study carried out in 2015 in Baghdad, included 508 women, of whom 61.2% had poor knowledge about breast cancer (21). A recent study carried out in 2021 in Al-Hilla province, Iraq, reported that 68.4% of the participants didn’t know or were not sure about risk factors for breast cancer, and 95% didn’t know or were not sure about symptoms of breast cancer (22). The results of the current study are in line with the findings of these earlier studies from Iraq. Having poor knowledge of breast cancer among women in developing countries is not limited to Iraq. According to research carried out in Bangladesh, 61.5% of the women were unaware of the causes and risk factors of this type of cancer (23). In Delhi research carried out by Dey et al. (24) showed that 53.4% of the women had awareness, at different levels, about different aspects of breast cancer; their result differed from ours, indicating that geographical distribution plays a role in the level of awareness.

Several factors may play a role in having poor knowledge about breast cancer, including education, age, health care services, socio-demographic characteristics, community, religion, and the society the sample is taken from (25, 26). One possible explanation for the high proportion of our participants with insufficient information about breast cancer is the relationship between age and education. Around three quarter of the participants were of old age, and a similar proportion were either illiterate or had primary and secondary school education. Unfortunately, these high proportions of female illiteracy and poor education is not unusually in Iraqi society because until the mid-1970s to the early 1980s there were not enough schools, and many parents refused to send their daughters to school for cultural or traditional beliefs. Our findings and those of other researchers in Iraq and other developing countries suggest that urgent action is required, at national government level and through non-governmental organizations (NGOs), to increase awareness of breast cancer amongst women, given the severe morbidity and mortality associated with later diagnosis.

About 87% of women in the present study had not had any pre-test, while only 12.7% did pre-test at least once before being diagnosed with breast cancer. Of the 19 participants who had a pre-test, less than half used BSE despite this technique being among the easiest and most cost-effective ways that women can perform self-testing at home by themselves. It should be noted that BSE is not reliable and has limitations and should not replace the clinical breast exam. Unfortunately, women in Middle Eastern countries do not perform BSE (14). A study from Turkey showed that among 103 participants only 26.2% had knowledge about BSE, and only 4.3% of the participants performed BSE, in keeping with the findings of the present study (27). In Delhi, BSE was more commonly reported by Indian women with 34.9% performing BSE, while only 6.9% underwent clinical breast-examination through MG (24). Another study from Bangladesh in 2022 reported that only 14% of the participating women had information about screening tests for breast cancer, which again is supported by our findings (23). That only 12.7% of the participants in the present study performed any form of pre-test before being diagnosed with breast cancer is clinically worrying. Unfortunately, the majority of women in developing countries are not undergoing any pre-tests or screenings for breast cancer (28). Some reasons for this may be the low level of awareness and feeling of shame regarding this issue among women in these countries. We suggest that this situation is contributed to by the negligence of the competent authorities in the related ministries and directorates. NGOs have tried to increase

Table 2. Parameters of prior knowledge, screening, types of screening and who detected the disease (n=150)

Parameter	Results	n	%	p-value
Level of awareness by having previous knowledge	Yes	30	20	<0.0001
	No	120	80	
Performing screening tests	Yes	19	12.7	<0.0001
	No	131	87.3	
Type of screening method	BSE	9	6	0.03
	Ultrasonography	8	5.3	
	Mammography	2	1.3	
Who detected the cancer at first	Self-detection	103	68.7	<0.0001
	Physicians	47	31.3	

awareness and the importance of screening for breast cancer among healthy women in recent years, but our findings show that this is still not enough.

Regarding the detection of a tumor in the breast and who detected it for the first time, among participants, 68.7% of them detected the tumor by themselves, mostly accidentally or by chance. According to research carried out in the USA that included 361 participants, 43% of the participants detected breast cancer by themselves, 18% detected it accidentally, and 25% detected it through BSE (29). In contrast, another study from the USA reported the reverse with, 88% of new cancer cases diagnosed in hospitals (30). This results from pre-test and screening policies because usually stage I cancer cannot be detected by women themselves, while it can be detected through screening and MG. This highlights the importance of routine screening for early detection of the disease. The detection of breast cancer by women rather than physicians or health care workers in the present study is logical, as most of them did not take any pre-tests or screenings for having breast cancer before being diagnosed with the disease. These results again show the significance of performing pre-tests periodically.

Finally, doing pre-tests among women to investigate breast cancer, especially among women at higher risk and those who have relatives with breast cancer, is highly recommended to minimize the consequences of the disease. Screening methods depending on MG are recommended among women to enable an early diagnosis (31, 32). The Ministry of Health and other relevant authorities must make greater efforts through an extensive awareness program and should offer free screening tests, as is done in other countries, to enable women, especially those who had low incomes, to conduct periodic and regular examinations under the supervision of physicians and specialists. This could be introduced to the public through general and social media channels to reach the largest possible number of women throughout society.

Women in Erbil, Iraq, like other low- and middle-income countries, have a very low awareness level and poor knowledge regarding aspects of breast cancer. Unfortunately, women in these countries do not perform routine pre-tests for breast cancer compared to Western countries. Performing pre-tests regularly is very important among women, especially after the age of forty years, to detect the disease in its early stages. Women are encouraged to undergo reliable pre-tests, such as MG under the supervision of physicians, and, if not applicable for any reason, BSE must not be neglected. Intensive programs by relevant authorities and health care providers are required to increase awareness levels among all women regarding breast cancer.

### Study Limitations

The limitations include the small number of participants, the cross-sectional, questionnaire-based nature of the study and the single-center design.

### Ethics

**Ethics Committee Approval:** The research was approved by the Medical Ethics Committee of Erbil Polytechnic University (approval no: 23-0011, date: 30/10/2023).

**Informed Consent:** All participants were fully informed about the purpose and objectives of the study through a written consent form, and their approval was obtained.

### Footnotes

**Authorship Contributions:** Concept: A.N.H., M.S.A.; Design: A.N.H., M.S.A.; Data Collection and/or Processing: A.N.H.; Analysis and/or Interpretation: A.N.H.; Literature Search: A.N.H.; Writing: A.N.H.

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