

# Correlation between Breast Self-Examination Practices and Demographic Characteristics, Risk Factors and Clinical Stage of Breast Cancer among Iraqi Patients

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## Abstract

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**BACKGROUND:** Breast Cancer (BC) is the most common cancer and the leading cause of cancer death among women globally. The disease can be cured with limited resources if detected early. Breast self-examination (BSE) is considered a cost-effective feasible approach for early detection of that cancer in developing countries.

**AIM:** To determine the correlation between BSE performance and demographic characteristics, risk factors and clinical stage of BC among Iraqi patients.

**METHODS:** This retrospective study included a total of 409 female patients diagnosed with BC at the Referral Training Center for Early Detection of Breast Cancer and the National Cancer Research Center in Baghdad. The studied variables included the age of the patient, occupation, marital and educational status, parity, history of lactation, contraceptive pill intake, family history of cancer and the clinical stage of the disease.

**RESULTS:** Our findings revealed that the most important predictors for practicing BSE was family history of BC or any other cancers (OR = 3.87, P = 0.018) followed by being a governmental employee (OR = 1.87, P = 0.024), history of contraceptive use (OR = 1.80, P = 0.011) and the high level of education (OR = 1.73, P = 0.004). On the other hand, there was no significant correlation between the practice of BSE and the BC stage at the time of presentation.

**CONCLUSION:** There is a relatively poor practice of BSE among Iraqi patients diagnosed with BC. It is mandatory to foster the national cancer control strategies that focus on raising the level of awareness among the community through public education as a major approach to the early detection of cancer in Iraq.

## Introduction

Breast cancer (BC) is the most common cancer and the leading cause of cancer death for women which accounts for 23% of all female cancers globally [1]. The global cancer burden is estimated to have risen to 18.1 million new cases and 9.6 million deaths in 2018. One in five men and one in six women worldwide develop cancer during their lifetime, and one in eight men and one in eleven women die from the disease. Worldwide the 5-year prevalence is estimated to be 43.8 million [2]. In general, BC is a leading cause of cancer death in the less developed countries of the world [2]. For women aged 15 – 49 years, twice as many BC cases are diagnosed in developing countries than in developed countries [1].

In low-resource settings, seven out of ten people newly diagnosed with BC die versus two out of ten in high-resource settings [3]. Although BC tends to attack women in their most productive years of life, however, it could be cured with limited resources if detected early while treating advanced-stage disease is expensive, and the outcome is often poor [4].

Focusing on Iraqi Cancer Statistics, BC has become a major public health problem; its burden is rising with the increase in population size [2], [5]. It is the leading cause of death among the Iraqi population following cardiovascular diseases. The latest Iraqi Cancer Registry (ICR) reveals that a total of 25,556 new cases of cancer were registered among an estimated 37,883,543 Iraqi population in 2016; with a male to female ratio equivalent to 0.7: 1. Overall,

breast cancer remains the most commonly diagnosed, forming 19.6% of total and 34.3% of female cancers [5]. Iraqi studies reveal that a considerable proportion of BC patients are still diagnosed at relatively advanced stages [6], [7], [8], [9]; regrettably about 90% discover the disease accidentally by themselves [8], [9].

It has been demonstrated clearly that early detection of BC improves its outcome and thus remains the cornerstone for its control. Apart from the known screening tools for early detection of BC that include mammography and physical breast examination, breast self-examination (BSE) has been considered a cost-effective feasible strategy in low- and middle-income settings [9], [10], [11]. The procedure of BSE urges women to learn the topography of their breasts to seek advice when any abnormal changes occur later [9]. Previous reports indicated that among educated Iraqi female population only less than 50% of those who have heard about BSE did practice the manoeuvre for reasons attributed to lack of knowledge on how to perform BSE correctly [12], [13].

The current study aimed to assess the correlation between BSE practices and demographic characteristics, risk factors and clinical cancer stage among a sample of Iraqi patients diagnosed with BC.

## Patients and Methods

This retrospective study was performed at the Referral Training Center for Early Detection of Breast Cancer/Medical City Teaching Hospital and the National Cancer Research Center/Baghdad University. Only cases with complete, valid data were included in this study which highlighted the clinical and pathological characteristics of 409 female patients diagnosed with BC during the period between 2016 and 2018.

The study tool was designed to collect information regarding the age of the patient, occupation, marital and educational status, parity, history of breast lactation, contraceptive pill intake, family history of breast or any other cancer and the clinical stage of the disease. The BC Stage was defined following the UICC TNM Classification System [14].

Each questionnaire was assigned with an identifying serial number when the data were entered and analysed by the researchers using the Statistical Package for Social Sciences (SPSS v. 25). The data were presented as frequency tables and bar charts. The chi-square test was applied to test the association between the categorical data; the level of significance was set at a P-value of  $\leq 0.05$ .

A written consent was signed by each patient at the National Cancer Research Center of the University of Baghdad ethically approving the utilisation of the recorded data for research; keeping all information anonymous.

## Results

Overall, 54.6% of the study sample was aged  $\geq 50$  years. The majority of the patients were married (87.5%), less than half were a governmental employee (47.4%), and nearly one-third was highly educated (31.4%). In general, 52.8% have never performed BSE; No statistical differences were noted regarding the practice of BSE among the categorised age groups. Likewise, no significant variations were observed between single and married women. On the other hand, the employed and more highly educated patients had a highly better experience with BSE than those who were housewives and illiterate (62.4% versus 33.5% and 65.9% versus 27.9% respectively) at  $p < 0.001$  (Table 1).

**Table 1: Association of Demographic Characteristics with the Practice of BSE**

Variable	Practice BSE n. (%)	Total (%)	X <sup>2</sup> value	P-value
Age group (years)				
20-34	8(42.1)	19(4.6)	0.340	0.83
35-49	81(48.5)	167(40.8)		
$\geq 50$	104(50.5)	223(54.6)		
Occupation				
G. employee	121(62.4)	194(47.4)	34.13	0.001
Housewife	72(33.5)	215(52.6)		
Education				
Illiterate/Primary	39(27.9)	140(34.2)	39.34	0.001
Intermediate/Secondary	69(49.3)	140(34.2)		
Graduate/Postgraduate	85(65.9)	129(31.6)		
Marital status				
Single	15(42.9)	35(8.6)	1.778	0.41
Married	168(46.9)	358(87.5)		
Divorced/Widow	10(62.5)	16(3.9)		
Total	193 (47.2)	409 (100.0)		

Table 2 illustrates that the history of breast lactation was recorded in 70.7% of patients, contraceptive pills use in 32.5% and family history of BC or any other cancer in 41.3%. About 19% of the patients were nulliparous. Significant correlations were observed between BSE practices and history of contraceptive pills use, family history of BC and smoking ( $P = 0.01$ ,  $P = 0.01$  and  $P = 0.03$  respectively).

**Table 2: Correlation between BC Risk Factors and BSE Practices**

Variable	Practice BSE n. (%)	Total (%)	X <sup>2</sup> value	P-value
History of breast lactation				
Yes	142(49.1)	289(70.7)	1.498	0.23
No	51(42.5)	120(29.3)		
History of contraceptive pills or hormonal use				
Yes	75(56.4)	133(32.5)	6.698	0.01
No	118(42.8)	276(67.5)		
Family history of Cancer				
Yes	92(54.4)	169(41.3)	6.074	0.01
No	101(42.1)	240(58.7)		
Parity				
Nulliparous	39(50.0)	78(19.1)	0.306	0.61
Gravida	154(46.5)	331(80.9)		
Total	193	409 (100.0)		

Overall, 61.6% of the studied population was diagnosed in Stages I and II. Statistically, there was no significant correlation between the practice of BSE and BC stage (Table 3).

**Table 3: Relationship between the Stage of Breast Cancer and the Practices of BSE**

Variable	Practice BSE n. (%)	Total (%)	X <sup>2</sup> value	P-value
BC staging				
Stage I	24(38.7)	62(15.2)	3.412	0.34
Stage II	97(51.1)	190(46.4)		
Stage III	68(45.3)	150(36.7)		
Stage VI	4(57.1)	7(1.7)		
Total	193	409 (100.0)		

As displayed in Table 4, on multiple logistic regression analysis, the only significantly associated variables with the practice of BSE were entered into the model. Our findings revealed that the most important predictors for practicing BSE was family history of BC or any other cancers (OR = 3.87, P = 0.018) followed by being a governmental employee (OR = 1.87, P = 0.024), history of contraceptive use (OR = 1.80, P = 0.011) and the high level of education (OR = 1.73, P = 0.004) (Table 4).

**Table 4: Determinants of Practicing BSE by Logistic Regression Analysis**

Factors	Odds ratio	95% C.I.		P-value
		Lower	Upper	
Family history of cancer	3.87	1.26	11.9	0.018
Governmental employee	1.87	1.08	3.24	0.024
History of contraceptive use	1.80	1.14	2.83	0.011
High education level	1.73	1.59	1.90	0.004

## Discussion

BC is the most common female cancer in the Eastern Mediterranean region, where the witnessed demographic and socioeconomic transitions have increased the cancer burden within the last decades [15], [16]. Early-stage at cancer detection has been regarded as a key determinant of breast cancer outcome specifically in low- and middle-income settings; because of the limited resources required to provide adequate therapy [4], [7], [8], [9], [10]. Whereas no evidence-based data was reported to support the efficacy of BSE as a unique screening tool for BC [4], [10], nevertheless, in countries where breast cancer is diagnosed at an advanced stage it has been emphasised that screening by clinical breast examination with the teaching of BSE, as an integral component, will probably be effective in reducing breast cancer mortality [17].

The current study shows that 45.4% of the patients were diagnosed with breast cancer under the age of 50 years; 69% were aged 40-49 years. That was following the findings displayed in earlier studies from Iraq [5], [6], [7], [8], [9] which emphasises the high prevalence of that disease among the middle-

aged female population. No statistical differences were noted regarding the practice of BSE among the categorised age groups. In a recent survey that aimed to highlight the main demographic and clinical profiles of 1172 female patients registered with breast cancer in Iraq the mean age at presentation was 51 years, 9.8% were not married, 19.2% graduated from universities, and 11% were nulliparous. History of lactation and hormonal therapy was noted in 57.6% and 19.4% respectively. Family history of cancer was positive in 28.8% and of breast cancer, specifically in 18.7% [18].

Our results demonstrate the relatively poor practice of BSE among Iraqi patients affected by BC; more than half of those (52.8%) have never experienced the manoeuvre. Variations in BSE performance rates ranging between 6 and 83% have been reported in different studies from developing countries [6], [8], [9], [12], [13], [19], [20], [21], [22]. When applying the logistic regression analysis, it was found that practising BSE by the affected patients was significantly associated with a family history of cancer, working as a governmental employee, history of using contraceptive pills and high level of education. These findings were by those recorded in previous studies from Iraq which displayed that the greater proportion of those who practised BSE was observed among the highly educated and employed sector of the community [12], [19], [20]. In general, it has been concluded that promoting the level of knowledge, attitudes and practices regarding BSE could play a positive impact on breast cancer screening [19], [20], [21], [22], [23], [24], [25], [26]. Fostering health education among females yields a better perception of breast-related symptoms and consequently raise their awareness of the significance of BSE and early medical consultation.

It was previously reported in the literature that history of contraceptive use and family history of cancer significantly influence the practice of the BSE among the BC affected patients [21], [24], [27]. In this study, family history of cancer among breast cancer patients was relatively high and constituted a significant predictor for practising BSE; reflecting a higher level of awareness towards the disease in the affected families. A previous study from Iraq revealed that 19.1% of breast cancer patients with a positive family history had two affected relatives while a first-degree relative was involved in 43.7% [28]. In that report the characteristics of the patients with a positive family history of cancer did not reveal any distinct clinical markers for their identification; recommending careful screening, regular follow and promoting public education to identify the high-risk groups.

Focusing on the BC stage in the present study, 38.4% of the patients were diagnosed in advanced stages III and IV. Compared to another study that was published in 2017, carried out on 603 Iraqi patients, it was observed that 9.5%, 47.1%, 33.2% and 9.1% of the patients presented at stages I,

II and III and IV respectively [7]. No statistical correlation was noted between the practice of BSE and BC stage in both studies. Nevertheless, earlier reports determined the favorable association between BSE performance and the clinical and pathological stage of breast cancer at first diagnosis [29], [30]. The authors concluded that although the specificity of BSE as a screening modality for BC is low and the costs in terms of false-positive results, anxiety and medical costs might be high, yet when adequately taught BSE could lead to earlier diagnosis.

In conclusion, there is a relatively poor practice of BSE among Iraqi patients diagnosed with BC. While no significant correlation was noted with the BC stage at presentation, the main predictor for practising BSE among the studied population was a positive family history of cancer, followed by being a governmental employee, history of contraceptive use and high level of education. These findings justify endorsing national cancer control strategies that focus on raising the level of awareness on BC among the Iraqi community through public education as a major approach to early detection [16], [31], [32].

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