

Knowledge, Screening, and Practices Surrounding Iraqi Female Breast Cancer: An Observational Cross-Sectional Survey Study

Mohammed Y Jamal*

Department Clinical Pharmacy, College of Pharmacy, Baghdad University, Iraq

Abstract

Background: Breast cancer (BC) is the most common cancer worldwide and the second most common cause of death in women. This study aimed to increase awareness about BC and the practice of BC screening tests among Iraqi women.

Methods: A cross-sectional survey study was conducted at the Clinical Pharmacy Department, College of Pharmacy, Baghdad, Iraq. The study population comprised 807 Iraqi women. A questionnaire was constructed based on the aims of the study. A likelihood ratio for goodness of fit for a multinomial logistic regression model was used.

Results: The mean age of participants was 25.8±16.5 years. Most participants (590; 73.1%) were educated to undergraduate level and were from Baghdad city. Multinomial logistic regression test of knowledge of breast cancer having a significant association among Iraqi females BC regarding relation between age and information about BC with infectious diseases, risk of the use of contraceptive, breastfeeding, and breast self-examination (BSE) times; and regarding educational level among male BC, hereditary BC, and age of patients; regarding residence with hereditary BC, alcohol ingestion, and part of the hand use in BSE; regarding socioeconomic among weight of patients, and timing of BSE; regarding marital status related to male BC.

Conclusions: Most participants had a low level of knowledge about BC. A higher level of education, higher income, and increased age were all predictive factors for better knowledge of BC.

Keywords: Breast cancer; Knowledge; Screening program; Breast self-examination; Clinical breast examination

***Correspondence to:** Mohammed Y Jamal, Department Clinical Pharmacy, College of Pharmacy, Baghdad University, Iraq. E-mail: mohammedjamal38@yahoo.com

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Introduction

Globally, breast cancer (BC) is the most common form of cancer, and the second highest cause of death in women, despite developments in early diagnosis and screening programs [1]. According to GLOBCAN 2018, there were 2,088,849 (11.6% of all other cancer types) new cases of BC, with 626,679 (6.6%) deaths [1]. In Iraq, in 2011, the incidence of BC was 18.96%, with a morbidity rate of 11.53% [2], but these figures increased to 25.65% and 21.9%, respectively, in 2014, and 33.5% and 22.3%, respectively, in 2015, according to the World Health Organization and ICR [3,4]. The most powerful preventive measure for BC is screening, with three methods considered useful for early detection, which are breast self-examination (BSE), clinical breast examination (CBE), and breast mammography [5-7]. Screening can yield a 20-35% decline in BC mortality between the ages of 50 and 70 years [7]. A CBE every 1 to 3 years and periodic self-examination, generally beginning in young adulthood, is recommended by the National Comprehensive Cancer Network [6]. In the United States,

it is recommended that annual CBE and screening mammography are offered to women aged between 40 and 50 years [8]. In developed countries, where screening programs have become the standard for care, BC mortality has recently begun to decrease [9].

In Iraq, the sequence of wars (1980-1988, 1990-1991, 2003-2006 and 2014-2016), low socioeconomic status, and low levels of education have led to poor knowledge and incorrect beliefs about BC prevention, and is the reason why this study was conducted. The aim of the study was to increase awareness of BC and the practice of BSE among Iraqi women, since there are strong negative perceptions around the treatability of a tumor detected in the early stages and of the efficacy of screening programs.

Methods

Study design

A cross-sectional survey study was conducted among Iraqi women



to assess their knowledge relating to BC, BC screening and screening practices.

Settings

The study was conducted at the Clinical Pharmacy Department, College of Pharmacy, Baghdad University, Baghdad, Iraq, from 1st January 2019 to 30th August 2019. The recruitment period began on the first day of the study until the date the study ended. All participants were asked all the questions. Data collection was performed at the end of each month.

Participants

A total of 807 Iraqi women, aged from 18 to 74 years, were included, comprising only women who lived in Iraq. We excluded women aged less than 18 years and women who lived outside of Iraq. Participants were sought using targeted messages on various social media platforms.

Data collection

A questionnaire was constructed based on the aims of the study and included questions related to personal, demographic, socioeconomic, and educational data. The questionnaire also investigated participants' knowledge of risk factors regarding BC, BSE, and CBE.

Variables

Participants' knowledge about BC was assessed by six questionnaire items. BC risk factors were assessed by eight questionnaire items. Knowledge of BSE practice and CBE were assessed by asking nine questions about BSE and one question about CBE. Knowledge of BC symptoms was assessed by one question. The study questions are available in Box 1.

Ethical considerations

The Medical Ethical Committee of the Clinical Pharmacy Department, College of Pharmacy approved this study (code: 77855).

Data analysis

Microsoft Excel (v. 2010) and SPSS (v. 20) were used to analyze the data. Descriptive statistics with cross-tabulations were obtained. The chi-squared test (χ^2) was used to examine any associations between variables. The level of significance was set at $p \leq 0.05$ using a two-sided test. The likelihood ratio of goodness of fit for a multinomial logistic regression model was used to determine the most important factors considered as predictors of having knowledge about BC, its risk factors, and BSE and CBE practice for BC.

Results

The participants in this study comprised 807 women who were residents in one of 18 major cities in Iraq. All women confirmed as eligible by meeting the study criteria were included, all of whom completed the survey study with a response rate to questionnaire items of 100%, and all questionnaire results were subjected to the data analysis process. The mean age of participants was 25.8 ± 16.5 years (range: 18-74 years). Most women (597; 74.1%) belonged to the 21-30-years age group. Most of the participants (590; 73.1%) were educated to undergraduate level. The largest proportion of participants lived in Baghdad city (517; 64.1%), with a medium socioeconomic status (562; 69.6%). Just over half of participants (410; 50.8%) were single, while 379 (47%) were married (Table 1).

Regarding to the knowledge of BC, the proportion of women who answered "Yes" to Q1 was 453 (56.1%), to Q2 was 312 (38.7%), to Q3

Box 1: Study questions about breast cancer (BC) screening asked to Iraqi women.

<p>Knowledge</p> <ol style="list-style-type: none"> 1. Do you know someone with BC? 2. Do you think BC affects men? 3. Do you think BC is an infectious disease? 4. Do you think BC can be prevented? 5. Do you think BC can be treated or cured? 6. Do you think BC is a hereditary disease? 	<p>Risks</p> <ol style="list-style-type: none"> 1. Do you think the risk of BC increases with weight gain? 2. Do you think the risk of BC increases with eating unhealthy eating food? 3. Do you think the risk of developing BC increases with wearing tight underwear for long periods of time? 4. Do you think the risk of BC increases with age? 5. Do you think the risk of BC increases with the use of contraceptives? 6. Do you think the risk of BC increases with pregnancy at an older age? 7. Do you think the risk of BC decreases with breastfeeding? 8. Do you think the probability of getting BC increases with alcohol ingestion?
<p>Breast self-examination (BSE)</p> <ol style="list-style-type: none"> 1. Have you heard of BSE? 2. Is BSE helpful for early detection of BC? 3. What is the ideal age to begin BSE? 4. What areas should be examined (you can choose more than one answer)? 5. How many times should a BSE be repeated? 6. What is the ideal time to do a BSE? 7. In which position a BSE should be done? 8. What part of the hand is used during a BSE? 9. Should I lift up my arm during a BSE? 	<p>Clinical breast examination</p> <p>When should you go to get your breasts checked at hospital (you can choose more than one answer)?</p> <ol style="list-style-type: none"> 1. If you are older than 50 years 2. If you have symptoms 3. If you have a relative who has been affected by BC 4. Any two of the above 5. All three of the above 6. There is no need to get checked at the hospital
<p>BC symptoms</p> <p>What are the symptoms of BC (you can choose more than one answer)?</p> <ol style="list-style-type: none"> 1. Asymmetric size or shape of breasts 2. Discharge from the nipples 3. Enlarged breast 4. Lump 5. Mass 6. Pain 7. Skin discoloration 8. Swelling 9. Bleeding 	



Table 1: Demographic characteristics (n=807).

Characteristic	n	(%)	
Age (years) mean±SD=25.8±16.5	<20*	86	10.7
	21-30	597	74.1
	31-40	95	11.7
	41-50	21	2.5
	51-60	6	0.7
	61-70	1	0.1
	>70	1	0.1
Level of education	Undergraduate	590	73.1
	Medical group	58	7.2
	Postgraduate	81	10
	Secondary	71	8.8
	Primary	7	0.9
City of residence	Anbar	13	1.6
	Babel	25	3.1
	Baghdad	517	64.1
	Basra	13	1.6
	Diyala	30	3.7
	Duhok	4	0.5
	Erbil	7	0.9
	Karbala	28	3.5
	Karkuk	7	0.9
	Misan	5	0.6
	Musal	18	2.2
	Muthana	4	0.5
	Najaf	35	4.3
	Qadysia	15	1.9
	Sulaimania	3	0.3
	ThiQar	6	0.7
	Tikret	3	0.4
	Wasit	19	2.4
	No answer	55	6.8
	Socioeconomic status	High	231
Medium		562	69.6
Low		14	1.7
Marital status	Married	379	47
	Single	410	50.8
	Widow	5	0.6
	Divorce	13	1.6

*18 years is the initial age of eligibility

was 14 (1.7%), to Q4 was 617 (76.5%), to Q5 was 737 (91.3%), and to Q6 was 548 (67.9%) (Table 2).

Data relating to knowledge of the risk factors for BC are shown in the table (Table 3). The proportion of women who answered “Yes” to Q1 was 251 (31.1%), to Q2 was 579 (71.7%), to Q3 was 584 (72.4%), to Q4 was 372 (46.1%), to Q5 was 454 (56.3%), to Q6 was 139 (17.2%), to Q7 was 522 (64.7%), and to Q8 was 531 (65.8%).

Data concerning BSE practice are presented in the table (Table 4). A total of 741 (91.8%) women had heard about BSE. The number of participants who thought that BSE is a way to enable early detection of BC was 465 (57.6%), whereas 12 (1.5%) participants said it was not. Most participants (715; 88.6%) believed that the ideal age for BSE was <40 years. Most participants (439; 54.4%) also thought that the breasts and axilla should be examined during BSE. Approximately half (403; 49.9%) of the participants said that BSE must be repeated monthly. The ideal time to perform BSE was unknown by 322 (39.9%) women, whereas 313 (38.8%) women said that the perfect time for BSE is following menses. About to the optimal position for BSE, 222 (27.5%)

Table 2: Knowledge of breast cancer in a sample population of Iraqi women (n=807).

Knowledge question	n	(%)	
Do you know someone with BC?	Yes	453	56.1
	No	354	43.9
Do you think BC affects men?	Yes	312	38.7
	No	495	61.3
Do you think BC is an infectious disease?	Yes	14	1.7
	No	793	98.2
Do you think BC can be prevented?	Yes	617	76.5
	No	190	23.5
Do you think BC can be treated or cured?	Yes	737	91.3
	No	70	8.7
Do you think BC is a hereditary disease?	Yes	548	67.9
	No	259	32.1

Table 3: Knowledge of breast cancer risks in a sample population of Iraqi women (n=807).

Breast cancer risk questions	n	(%)	
Do you think the risk of BC increases with weight gain?	Yes	251	31.1
	No	556	68.9
Do you think the risk of BC increases with eating unhealthy eating food?	Yes	579	71.7
	No	228	28.2
Do you think the risk of developing BC increases with wearing tight underwear for long periods of time?	Yes	584	72.4
	No	223	27.6
Do you think the risk of BC increases with age?	Yes	372	46.1
	No	435	53.9
Do you think the risk of BC increases with the use of contraceptives?	Yes	454	56.3
	No	353	43.7
Do you think the risk of BC increases with pregnancy at an older age?	Yes	139	17.2
	No	668	82.8
Do you think the risk of BC decreases with breastfeeding?	Yes	522	64.7
	No	285	35.3
Do you think the probability of getting BC increases with alcohol ingestion?	Yes	531	65.8
	No	276	34.2

of participants did not know this, whereas 381 (47.2%) women believed it was preferable to perform BSE in a standing position. Just over half of the women (425; 52.7%) answered that the fingers are used to perform a BSE. Most participants (585; 72.5%) thought that a woman should lift her arm up during a BSE.

The table shows that 388 (48.2%) participants thought that a woman should have her breasts checked by a clinician if she is >50 years of age, if symptoms are present, or if a member of her family has been affected (Table 5). Just less than one-third (257; 31.8%) of women answered that a woman who meets any two of the three conditions mentioned previously must go for a check-up. Only three women believed that there was no need to go to be checked. The knowledge about BC symptoms is shown in the table (Table 6). All answers to the question were valid choices and most of the women 698 (86%) participants choose multiple answers for this question.

The multinomial logistic regression model of the participants' knowledge included 23 covariates. In total, 13 covariates showed a significant statistical association after modeling the likelihood ratio of goodness of fit, with knowledge, risk factors, and the practice of BSE found to be most powerful among participants who had known about those questions: Q2A for education $\chi^2=14.06$; $p=0.007$ and marital status ($\chi^2=21.34$; $p=0.000$); Q3A for age $\chi^2=45.56$, $p=0.000$; Q6A for education $\chi^2=13.13$; $p=0.011$ and city of residence $\chi^2=33.98$; $p=0.018$; Q1B for economic status $\chi^2=6.06$; $p=0.048$; Q4B for level of education $\chi^2=11.45$; $p=0.022$; Q5B for age $\chi^2=55.22$; $p=0.044$; Q7B for age



Table 4: Knowledge of breast self-examination in a sample population of Iraqi women (n=807).

BSE practice		n	(%)
Have you heard of BSE?	Yes	741	91.8
	No	68	8.1
Is BSE helpful for early detection of BC?	Yes	465	57.6
	Sometimes	330	40.9
	No	12	1.5
What is the ideal age to begin BSE?	<40	715	88.6
	40-50	84	10.4
	50-60	8	1
What areas should be examined (you can choose more than one answer)?	Axilla	99	12.3
	Bilateral axilla	5	0.6
	Between both breasts	13	1.6
	Breast only	137	17
	Breast and axilla	439	54.4
	Bilateral breast and axilla	88	10.9
How many times should a BSE be repeated?	Annually	218	27
	Monthly	403	49.9
	Weekly	21	2.6
	Do not know	165	20.4
What is the ideal time to do a BSE?	After menses	313	38.8
	Before menses	28	3.4
	During menses	19	2.4
	Any time	125	15.5
	Do not know	322	39.9
In which position a BSE should be done?	Setting	51	6.3
	Standing	381	47.2
	Supine	107	13.3
	Donot interesting	46	5.7
	Do not know	222	27.5
What part of the hand is used during a BSE?	Fingers	425	52.7
	Palm of hand	137	17
	Do not know	245	30.4
Should I lift up my arm during a BSE?	Yes	585	72.5
	No	222	27.5

$\chi^2=55.84$; $p=0.039$; Q8B for city of residence $\chi^2=43.04$; $p=0.001$; Q5C for age $\chi^2=82.58$; $p=0.000$; Q6C for socioeconomic status $\chi^2=16.53$; $p=0.035$; Q8C for city of residence $\chi^2=44.88$; $p=0.000$ (Table 7).

Discussion

In Iraq, BC is the most common type of cancer and is the predominant form of cancer in women [4]. It usually presents at an advanced stage and is more frequent in young women in comparison with developed and neighboring countries [10-19]. We noticed that, among women in Iraq, there was a relatively low level of knowledge relating to breast cancer. To the best of our knowledge, no studies have investigated this topic in our country. Our study found that there was unsatisfactory and insufficient knowledge among women about BC risk factors and screening programs. Data from the American National Cancer Opinion Survey revealed low levels of knowledge among the poorest and least educated women around risks related to cancer [2], similar to the findings of our study.

The aim of screening for BC is to reduce mortality from this disease by detecting and treating it at an earlier stage. In the UK and the USA, the current target screening group is women aged 50 to 70 years. Women <50 years of age are not invited for screening because the incidence of cancer is lower in this age group [6, 8]. Two studies, one in the UK and one in Canada, have evaluated the effectiveness of screening

Table 5: Knowledge of clinical breast examination in a sample population of Iraqi women (n=807).

When should you go to get your breasts checked at hospital (you can choose more than one answer)?	n	(%)
If you are older than 50 years	14	1.7
If you have symptoms	142	17.5
If you have a relative who has been affected by BC	3	0.4
Any two of the above	257	31.8
All three of the above	388	48.2
There is no need to get checked at the hospital	3	0.4

Table 6: Knowledge of breast cancer symptoms in a sample population of Iraqi women (n=807).

What are the symptoms (you can choose more than one answer)?	n	(%)
Asymmetric size or shape of breasts	12	1.4
Discharge from the nipples	4	0.5
Enlarged breast	2	0.2
Lump	3	0.4
Mass	61	7.6
Pain	7	0.9
Skin discoloration	3	0.4
Swelling	12	1.5
Bleeding	5	0.6
Multiple answers	698	86.5

by BSE alone [20]. By using BC registry data, Constanza and Foster found fewer deaths from BC (14% vs. 26%) and improved estimated 5-year survival rates (75% vs. 59%) among women who reported performing BSE compared with those who did not [21,22]. In the BC Detection Demonstration Project, the estimated overall sensitivity of BSE in detecting BC was 26%, compared with 75% for CBE and mammography combined [20,23]. CBE and BSE are complementary to mammography, but while it is evident that clinical screening is not as sensitive as mammography, a combination of CBE and mammography can give optimal results in early detection [20,23,24].

Poor socioeconomic status, lower level of education, and incorrect beliefs about BC prevention are responsible for the negative perceptions among some women of the successful treatment of cancer that is detected early and of the efficacy of screening tests [20].

VainioH and BianchiniF (2002) noted that BSE is appealing as it is a patient-centered, noninvasive screening procedure that allows women to become comfortable with their own bodies [25]. The regular performance of this procedure does not self-detection, but it does increase awareness [20]. It is the best way for repeated screening for BC for all women, but it is not the best method for early detection; the best approach is a combination of BSE with CBE and mammography, which have a sensitivity and specificity reaching more than 90%.

In our study, many factors were significantly linked to a better level of BC knowledge, including higher or postgraduate education, increased age, living in a major city, and good socioeconomic status, as determined by a multinomial logistic progression model. Other factors that may play an important role in the development of better BC knowledge levels include the media and health care workers. However, the role of health care workers is very poor in Iraq compared with their role in western countries. These differences and variations could be attributed to poor health education activities of local organizations and the incorrect application of screening programs.

Powe BD (2003) suggested that a fatalistic attitude of participants towards BC curability and attribution of its risk to God or the "evil eye"



Table 7: Likelihood ratio of goodness of fit for multinomial logistic regression model of knowledge about breast cancer and demographic variables of the population of Iraqi women (n=807).

Covariates	Likelihood ratio test (LRT)									
	Age		Education level		City of residence		Socioeconomic		Marital status	
	x ²	P-value	x ²	P-value	x ²	P-value	x ²	P-value	x ²	P-value
A										
Q1	5.3	1	12	0.153	27.6	0.89	0.42	0.98	15.2	0.056
Q2	-	-	14.1	0.007	18.9	0.46	3.86	0.145	21.3	<0.000
Q3	45.6	<0.000	4.1	0.392	8.91	0.975	4.41	0.11	3.52	0.474
Q4	-	-	4.44	0.349	20.1	0.387	5.61	0.06	2.66	0.616
Q5	29.9	0.85	1.92	0.75	15.9	0.667	3.55	0.169	4.07	0.396
Q6	-	-	13.1	0.011	34	0.018	0.29	0.864	5.48	0.241
B										
Q1	35.5	0.629	4.92	0.295	16	0.658	6.06	0.048	1.71	0.788
Q2	40.9	0.386	5.88	0.208	27.7	0.089	1.5	0.472	4.14	0.387
Q3	51	0.094	8.64	0.071	18.9	0.462	0.25	0.88	5.78	0.216
Q4	51.9	0.081	11.5	0.022	14.3	0.767	3.76	0.152	6.86	0.143
Q5	55.2	0.044	4.58	0.333	26	0.131	3.48	0.175	3.9	0.419
Q6	37.5	0.537	4.13	0.388	22.8	0.244	2.46	0.291	4.08	0.394
Q7	55.8	0.039	3.33	0.503	18.1	0.514	0.78	0.674	4.54	0.338
Q8	48.7	0.137	3.09	0.542	43	0.001	0.69	0.706	3.14	0.535
C										
Q1	15.3	1	2.54	0.96	5.28	1	1.41	0.842	6.91	0.546
Q2	16.2	1	10.9	0.208	21	0.988	4.02	0.403	2.83	0.944
Q3	-	-	4.23	0.836	13.3	1	2.92	0.57	7.14	0.521
Q4	-	-	26.8	0.53	52.3	1	14.7	0.4	16	0.966
Q5	82.6	<0.000	7.64	0.959	36.8	1	5.03	0.754	8.27	0.94
Q6	10.6	1	17.6	0.349	35.7	1	16.5	0.035	11.8	0.761
Q7	58.4	1	23.4	0.27	-	-	8.12	0.617	20.6	0.424
Q8	21	1	5.79	0.926	44.9	<0.000	6.11	0.411	7.62	0.814
Q9	18.6	1	2.71	0.951	27.2	0.903	3.34	0.501	10.4	0.24

could be a factor leading to low levels of knowledge and low uptake of screening behaviors. This has led many studies to consider fatalism as a barrier to acquiring knowledge about cancer and participation in cancer detection and treatment programs [26].

Any woman who begins to practice BSE significantly increases her knowledge of BC, its risk factors, and its symptoms. Therefore, these women need accurate information about the risks of BC and the benefits of screening, which should be provided by the Ministry of Health, national health societies, and local organizations.

There are some limitations to our study. These include the fact it was an internet survey study, which may be significantly influenced by participants' knowledge; women were only recruited from major cities; and there may also be bias about participants answering multiple questionnaires, therefore replicating their data.

Conclusion

There was found to be a low level of knowledge about BC among Iraqi females. A higher level of education, higher income, and increased age were predictive factors for better knowledge of BC. The best-known screening method for BC is BSE; however, most of the women surveyed did not practice BSE. Knowing a friend or relative with BC led to better knowledge of the disease. Accordingly, massive educational programs are necessary to improve the knowledge among women regarding BC, its risk factors, and its symptoms. Screening programs are required to increase awareness around this disease, because early detection enhances BC management, which in turn leads to improved prognoses and better survival rates.

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