

# Students' Knowledge about Breast Cancer: A Cross-Sectional Study

Husham Hussain Abdul-Ra'aoof<sup>1</sup>, Abdulkareem Salman Khudhair<sup>1</sup>, Sundus Baqer Dawood<sup>1</sup>, Ali Malik Tiryag<sup>1</sup>, Mohammed M. J. Al-Khalissi<sup>2</sup>, Moustafa A. Al-Shammari<sup>3</sup>, Tooba Akbari<sup>4</sup>, Fatimah Saleh Alsuwayidi<sup>5</sup>, Maher Abdulameer Atiyah<sup>1</sup>, Alaa Hamza Hermis<sup>6</sup>, Mohammad Ali Zakeri<sup>7,8</sup>

<sup>1</sup>College of Nursing, University of Basrah, Basrah, Iraq, <sup>2</sup>Department of Radiology Techniques, Al-Hadi University College, Baghdad, Iraq, <sup>3</sup>Department of Genetic Engineering, Al-Qasim Green University, Hillah, Iraq, <sup>4</sup>Cardiovascular Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran, <sup>5</sup>Department of General Surgery, Armed Forces Hospital-Taif, Taif, Saudi Arabia, <sup>6</sup>Nursing College, Al-Mustaqbal University, Hillah, Iraq, <sup>7</sup>Social Determinants of Health Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran, <sup>8</sup>Clinical Research Development Unit, Ali-Ibn Abi-Talib Hospital, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

## Abstract

**Background:** Breast cancer is a condition when the cells in the breast grow out of control. Breast cancer comes in a variety of forms. Which breast cells develop into cancer determines the kind of breast cancer. **Objectives:** To evaluate the participants' sociodemographic features and the relationship between their knowledge of breast cancer and their degree of knowledge about the disease among university students. **Materials and Methods:** Students of Bab Al-Zubair Colleges Campus participated in descriptive research regarding breast cancer. The study's time frame was extended from September 15, 2022 to April 1, 2023. The study's sample size was 200. Five experts were chosen to examine the questionnaire in order to assess the study's content validity, and Cronbach's  $\alpha$  test was used to assess the questionnaire's reliability. **Results:** According to the study's findings, 86% of the sample had inadequate knowledge about breast cancer, 13% had intermediate knowledge, and just 1% had excellent knowledge. **Conclusions:** According to this study's findings, students know very little about breast cancer.

**Keywords:** Breast cancer, knowledge, students

## INTRODUCTION

Breast cancer is a severe public health problem that affects women all over the world.<sup>[1]</sup> Breast cancer accounts for 23% of all cancer cases and 14% of cancer deaths worldwide, but there is a five-fold difference in incidence between high-incidence regions such as the United States and Western Europe and low-incidence regions such as Africa and Asia. Breast cancer is also the most frequently diagnosed cancer and the leading cause of cancer death among female population.<sup>[2]</sup> In the US, women between the ages of 65 and 74 are diagnosed with 26% of all cases of breast cancer. Older persons are more likely than younger ones to get breast cancer.<sup>[3]</sup> Breast cancer is the second leading cause of cancer-related fatalities in Iraq and one of the major causes of female malignancy, accounting for nearly one-third of all female malignancies reported in the most recent Iraqi cancer registry.<sup>[4]</sup>

Owing to its high mortality and morbidity rates, breast cancer is a prominent cause of worry for women's health. Even with adjuvant treatment, the five-year survival rate for metastatic breast cancer is less than 30%.<sup>[5]</sup> Recent International Agency for Research on Cancer GLOBOCAN 2018 statistics from 185 countries revealed 2.3 million new cases of breast cancer (11.7%) and a death rate of 6.9%.<sup>[6]</sup> As a result of globalization, breast cancer incidence is higher in high-income nations (571/100,000) than in low-income countries (95/10,000). Considering the occurrence of multiple biological subtypes reflecting unique molecular profiles and clinicopathological traits,

**Address for correspondence:** Dr. Alaa Hamza Hermis, Nursing College, Al-Mustaqbal University, 51001 Hillah, Babylon, Iraq  
E-mail: alaa.hamza.hermis@mustaqbal-college.edu.iq

**Submission:** 01-Sep-2023 **Accepted:** 27-Dec-2023 **Published:** 30-Apr-2026

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 License (CC BY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

**For reprints contact:** WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Abdul-Ra'aoof HH, Khudhair AS, Dawood SB, Tiryag AM, Al-Khalissi MMJ, Al-Shammari MA, *et al.* Students' knowledge about breast cancer: A cross-sectional study. *Med J Babylon* 2026;23:475-9.

### Access this article online

#### Quick Response Code:



**Website:**  
<https://journals.lww.com/mjby>

**DOI:**  
10.4103/MJBL.MJBL\_1334\_23

breast cancer is often referred to be a collection of diseases (>100).<sup>[6,7]</sup> In addition to histological subtypes, gene expression profiling has identified several molecular subtypes of breast cancer, including those that are receptor-positive (luminal A, luminal B, normal like, and HER-2 positive) and those that are receptor-negative (TNBC [Triple Negative Breast Cancer] or basal-like).<sup>[8-10]</sup>

The several categories discovered in TNBC subtypes were further identified by Lehmann *et al.* Depending on the expression of certain genes, basal like-1, basal like-2, immunomodulatory, mesenchymal, mesenchymal stem cell-like, and luminous androgen are produced.<sup>[11]</sup> The sum of the data revealed that these breast cancer subtypes exhibit distinct histological and clinical characteristics and are related to various age groups and racial/ethnic groupings,<sup>[12,13]</sup> such as TNBC and HER-2 positive subtypes, which are more frequent in African-American and Asian women, younger women, and premenopausal women, respectively, and which have a higher metastatic potential and relapse rate.<sup>[14-19]</sup>

The main risk factors for breast cancer development in industrialized nations include altered lifestyle, delayed marriageable age, delayed first child, late-night work schedules, and hormone replacement medication.<sup>[20,21]</sup> The major causes of high breast cancer incidence and death in underdeveloped nations include inadequate medical infrastructure, improper screening programs, delayed diagnosis, and inadequate public health education.<sup>[22,23]</sup> Surgery, radiation, chemotherapy, endotherapy, and immunotherapy are just a few of the treatments that are available to treat breast cancer.<sup>[24,25]</sup> Although these treatments are available, breast cancer incidence and death are still high.<sup>[26,27]</sup> Multiple omics studies have highlighted intra- and intertumor heterogeneity in breast cancer as the primary driver of recurrence or resistance to therapeutic interventions as a barrier to addressing this issue.<sup>[27-30]</sup> As type 2 diabetes, heart disease, and various malignancies (e.g., breast cancer) are among the leading causes of death, obesity is a global health problem.<sup>[31]</sup>

## MATERIALS AND METHODS

Students of Bab Al-Zubair Colleges Campus participated in this descriptive (a cross-sectional) study regarding breast cancer. The study's time frame was extended from September 15, 2022 to April 1, 2023. The study's sample size was 200. Five experts were chosen to examine the questionnaire in order to assess the study's content validity, and Cronbach's  $\alpha$  test was used to assess the questionnaire's reliability. The questionnaire consists of two parts: the first part includes sociodemographic characteristics such as age, gender, marital status, residential address, and type of college. The second part includes questions about diagnosis, risk factors, and management of breast cancer. The data analysis was done by using Statistical Package

of Social Sciences (SPSS) version 26 (Released 2019, IBM Corp., Armonk, New York, USA). This study uses a three-point Likert Scale represented as the following: agree, uncertain, and don't agree. The researchers coded the answers as the following 3 for agree, 2 for uncertain, and 1 for don't agree and also, the researchers determined the level of knowledge by three levels (poor, moderate, and good) according to the cut-off point (0.66) and mean of score (poor = 1–1.66, moderate = 1.67–2.33, and good = 2.34–3).

## RESULTS

The sociodemographic characteristics of the study's participants were 20–29 years old (80%) and 50.5% female (more than half) (87.5%). The majority of the students were single. Regarding educational levels, the nursing institution accounts for the biggest number (41.5%). Most of the students reside in Al-Basrah (96%) with regard to addresses. The majority (48%) comes from a literature college [Table 1]. The findings of this study show that, according to the mean score and standard level deviation of (1.45+0.643), the majority of students (86.5%) had low knowledge of breast cancer, (13%) intermediate knowledge, and only (0.5%) excellent knowledge [Table 2].

At a *P* value of 0.05, this study demonstrates a significant correlation between students' marital status and their knowledge about breast cancer. Additionally, the findings of this study demonstrate that there is no correlation between students' demographic information (gender, age, residence, and college) and their knowledge of breast cancer with a *P* value >0.05 [Table 3].

## DISCUSSION

Nearly half (49%) of the women in the study were aware of breast cancer, according to the study. Women who had heard about breast cancer regarded discomfort in one breast (56%) and changes in the size and shape of the breasts (57%) as the most significant and typical symptoms. Early menstruation (5.6%), late menopause (10%), hormone treatment (13%), late pregnancy (15%), and obesity (19%) were the risk factors for breast cancer that were mentioned by less than one-fifth of the women who were aware of the disease. According to the multivariate regression analysis, women with more than 10 years of education were almost four times more likely than those with fewer than 10 years to be aware of breast cancer.<sup>[32]</sup>

This finding agrees with study in Nigerian that showed most women have fairly little understanding of breast cancer. This may help to partially explain the disease's late manifestation in more than 70% of female patients. The appalling degree of ignorance regarding breast cancer risk factors and frequent symptoms among Nigerian women is shown by a mean knowledge score of 42.3%, with just 22.9% scoring 50.0% and above. In contrast to other

**Table 1: Sociodemographic characteristics of the students**

Demographic data	Classes	Frequency	%
Gender	Male	99	49.5%
	Female	101	50.5%
	Total	200	100%
Age	<20	37	18.5%
	20–29	160	80%
	30–40	3	1.5%
	Total	200	100%
Marital status	Married	25	12.5%
	Single	175	87.5%
	Total	200	100%
Address	Al-Basrah	192	96%
	Al-Nasiriyah	2	1%
	Al-Kut	2	1%
	Baghdad	3	1.5%
	Diyala	1	0.5%
	Total	200	100%
College	Management and economy	47	23.5%
	Literature	69	34.5%
	Law	12	6%
	Arts	13	6.5%
	Nursing	3	1.5%
	al-Zahra's medicine Girl's education	8 48	4% 24%

% = Percent

**Table 2: Knowledge of the students**

Level of assessment	Frequency	Percent	Scale	Total		
				MS	Sd	Assessment
Poor	173	86.5%	1–1.66	1.45	0.643	Poor
Moderate	26	13%	1.67–2.33			
Good	1	0.5%	2.34–3			
Total	200	100%				

MS: mean of score, SD: standard deviation

research on this topic among Nigerian women, our study included community-dwelling women who range widely in age, employment, and educational attainment. The wide age coverage was intentional because, contrary to reports in other populations of black descent in the Diaspora, breast cancer in Nigerian women exhibits a younger age profile; the reported mean ages of 38, 44, and 48 years at presentation reported by various investigators in Nigeria support this claim.<sup>[33]</sup>

The survey's findings showed that although British women are knowledgeable about certain parts of breast cancer, they are less knowledgeable about other critical concerns, such as the lifetime risk of having the illness and symptoms other than lumps in the breast. The poll also revealed significant differences by age and sociodemographic characteristics in understanding breast cancer risk and a spectrum of possible symptoms. These variances might explain some of the variability in help-seeking behavior

seen among women in the UK who had breast cancer symptoms.<sup>[34]</sup>

In the current research, 73.5% of participants understood that a breast mass is one of the symptoms of breast cancer, whereas 25.8% and 47.6% of participants correctly identified nipple retractions. Rabia Latif's study on Saudi female students found that only 34.7% were aware of bloody nipple discharge as a symptom of breast cancer, while 55.3% knew that a breast lump could indicate breast cancer.<sup>[35]</sup> A study conducted in 2006 by Parsa *et al.* on female secondary school teachers found that only 16.6% were aware of the association between breast cancer and nipple retraction. However, 69% of them knew that a bloody discharge from the nipple is not normal.<sup>[36]</sup> The key to primary breast cancer prevention is having a sufficient understanding of the risk factors for the disease.<sup>[37]</sup> This research revealed that participants knew little about the risk factors for breast cancer. Age (65.4%) and having

**Table 3: Relationship between students' knowledge and sociodemographic data**

Demographic data	Classes	Knowledge			$\chi^2$	df	P value	Sig.
		Don't agree	Uncertain	Agree				
Gender	Male	83	15	1	1.879	2	0.391	NS
	Female	90	11	0				
Age	<20	33	4	0	1.511	4	0.825	NS
	20–29	138	21	1				
	30–40	2	1	0				
Marital status	Married	17	8	0	9.207	2	0.010	HS
	Single	156	18	1				
Address	Al-Basrah	167	24	1	5.516	8	0.701	NS
	Al-Nasiriyah	1	1	0				
	Al-Kut	1	1	0				
	Baghdad	3	0	0				
	Diyala	1	0	0				
College	Management and economy	37	10	0	9.797	12	0.634	NS
	Literature	63	5	1				
	Law	11	1	0				
	Arts	10	3	0				
	Nursing	3	0	0				
	Al-Zahra's medicine	8	0	0				
	Girl's education	41	7	0				

a family history of breast cancer (75% of risk factors) were the most often indicated ones. The majority of individuals were unaware of how oral contraceptive usage (33.7%), hormone replacement therapy (30.4%), alcohol use (34.7%), and obesity after menopause (31.3%) affect breast cancer risk. More than half (62%) of respondents had inadequate levels of awareness of breast cancer risk factors, as is shown by these data. Therefore, it is necessary to provide health education programs to increase young women's understanding about breast cancer.<sup>[38]</sup>

About 44% of our participants were scored as having a good to outstanding level of knowledge of breast cancer signs and symptoms, and roughly 53.7% of participants were classified as having an intermediate degree of awareness about risk factors. The participant's level of education was shown to be the key factor impacting their awareness of breast cancer risk factors, symptoms, and early detection techniques. Mammography screening knowledge among the study group was judged as being at an intermediate level; however, mammography screening participation was poor.<sup>[39]</sup>

## CONCLUSION

The majority of the students were single. Regarding educational levels, the nursing institution accounts for the biggest number. Most of the students reside in Al-Basrah with regard to addresses. The majority come from a literature college. The findings of this study concluded that most of the students have poor knowledge about breast cancer. At a *P* value of 0.05, this study demonstrates a

significant correlation between students' marital status and their knowledge about breast cancer. Additionally, the findings of this study demonstrate that there is no correlation between students' demographic information (gender, age, residence, and college) and their knowledge of breast cancer with a *P* value >0.05.

## Ethical approval

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. The study protocol and subject information were reviewed and approved by a local ethics committee at University of Basrah, Iraq, according to the document number 39/2023 on April 22, 2023.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. Al-Ganimi AK, Abd Al-Salam AS. Incidence of breast cancer among blood groups of women in the holy Governorate of Karbala. *Med J Babylon* 2023;20:338.
2. Sud R, Viswanath S, Gupta S, Jaiswal P, Khurana H. Breast cancer in 2020: Does receptor status still drive the cancer as before – An Indian study. *Med J Babylon* 2020;17:363-8.
3. Touma HS, Shani WS. Increased transforming growth factor- $\beta$  and interleukin-17 transcripts in peripheral blood of breast cancer patients with different clinical stages. *Med J Babylon* 2018;15:146.

4. Zagami P, Carey LA. Triple negative breast cancer: Pitfalls and progress. *npj Breast Cancer* 2022;8:95.
5. Riggio AI, Varley KE, Welm AL. The lingering mysteries of metastatic recurrence in breast cancer. *Br J Cancer* 2021;124:13-26.
6. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018;68:394-424.
7. Ghoncheh M, Pournamdar Z, Salehiniya H. Incidence and mortality and epidemiology of breast cancer in the world. *Asian Pacific J Cancer Prevent* 2016;17:43-6.
8. Mjali A, Obaid MM, Al-Shammari HH, Alwakeel AF, Sedeeq AO, Abbas NT, *et al.* Histopathological patterns and luminal subtypes among breast cancer patients in the middle Euphrates Region of Iraq. *Asian Pacific J Cancer Biol* 2022;7:233-8.
9. Arpino G, Generali D, Sapino A, Del Matro L, Frassoldati A, de Laurentis M, *et al.* Gene expression profiling in breast cancer: A clinical perspective. *Breast (Edinburgh, Scotland)* 2013;22:109-20.
10. Eliyatkin N, Yalçın E, Zengel B, Aktaş S, Vardar E. Molecular classification of breast carcinoma: From traditional, old-fashioned way to a new age, and a new way. *J Breast Health* 2015;11:59-66.
11. Hu Z, Fan C, Oh DS, Marron JS, He X, Qaqish BF, *et al.* The molecular portraits of breast tumors are conserved across microarray platforms. *BMC Genomics* 2006;7:1-2.
12. Molnár IA, Molnár BA, Vizkeleti L, Fekete K, Tamás J, Deák P, *et al.* Breast carcinoma subtypes show different patterns of metastatic behavior. *Virch Archiv* 2017;470:275-83.
13. Rossing M, Pedersen CB, Tvedskov T, Vejborg I, Talman ML, Olsen LR, *et al.* Clinical implications of intrinsic molecular subtypes of breast cancer for sentinel node status. *Sci Rep* 2021;11:2259.
14. Gonzalez-Angulo AM, Hortobagyi GN. Triple-receptor-negative breast cancer: What we know and issues to be resolved. *Oncology (Huntingt)* 2008;22:1239.
15. Hubalek M, Czech T, Müller H. Biological subtypes of triple-negative breast cancer. *Breast Care (Basel, Switzerland)* 2017;12:8-14.
16. Carey LA, Perou CM, Livasy CA, Dressler LG, Cowan D, Conway K, *et al.* Race, breast cancer subtypes, and survival in the Carolina Breast Cancer Study. *JAMA* 2006;295:2492-502.
17. Godoy-Ortiz A, Sanchez-Muñoz A, Chica Parrado MR, Álvarez M, Ribelles N, Rueda Dominguez A, *et al.* Deciphering HER2 breast cancer disease: Biological and clinical implications. *Front Oncol* 2019;9:1124.
18. Steinerová K, Jindra P, Lysák D, Karas M. Rozvoj rezistentní GVHD u pacientky léčené nivolumabem pro relaps Hodgkinova lymfomu po alogenní nepřibuzenské transplantaci-kazuistika. *Klinicka Onkolog* 2019;32:66-9.
19. Thakur KK, Bordoloi D, Kunnumakkara AB. Alarming burden of triple-negative breast cancer in India. *Clin Breast Cancer* 2018;18:e393-9.
20. Lehmann BD, Pietenpol JA, Tan AR. Triple-negative breast cancer: Molecular subtypes and new targets for therapy. *Am Soc Clin Oncol Educ Book* 2015;35:e31-9.
21. Tfyali A, Temraz S, Abou Mrad R, Shamseddine A. Breast cancer in low-and middle-income countries: An emerging and challenging epidemic. *J Oncol* 2010;2010:490631.
22. da Costa Vieira RA, Biller G, Uemura G, Ruiz CA, Curado MP. Breast cancer screening in developing countries. *Clinics (Sao Paulo, Brazil)* 2017;72:244-53.
23. Shulman LN, Willett W, Sievers A, Knaul FM. Breast cancer in developing countries: Opportunities for improved survival. *J Oncol* 2010;2010:595167.
24. Nounou MI, ElAmrawy F, Ahmed N, Abdelraouf K, Goda S, Syed-Sha-Qhattal H. Breast cancer: Conventional diagnosis and treatment modalities and recent patents and technologies. *Breast Cancer* 2015;9(Suppl 2):17-34.
25. Sharma GN, Dave R, Sanadya J, Sharma P, Sharma K. Various types and management of breast cancer: An overview. *J Adv Pharm Technol Res* 2010;1:109.
26. Brand TC, Sawyer MM, King TA, Bolton JS, Fuhrman GM. Understanding patterns of failure in breast cancer treatment argues for a more thorough investigation of axillary lymph nodes in node-negative patients. *Am J Surg* 2000;180:424-7.
27. Gawde KA, Sau S, Tatiparti K, Kashaw SK, Mehrmohammadi M, Azmi AS, *et al.* Paclitaxel and di-fluorinated curcumin loaded in albumin nanoparticles for targeted synergistic combination therapy of ovarian and cervical cancers. *Colloids Surf B* 2018;167:8-19.
28. Turashvili G, Brogi E. Tumor heterogeneity in breast cancer. *Front Med* 2017;4:227.
29. Tuasha N, Petros B. Heterogeneity of tumors in breast cancer: Implications and prospects for prognosis and therapeutics. *Significa* 2020;2020:4736091.
30. Löönd F, Tiede S, Christofori G. Breast cancer as an example of tumor heterogeneity and tumor cell plasticity during malignant progression. *Br J Cancer* 2021;125:164-75.
31. Tiryag AM, Atiyah HH. Nurses' knowledge toward obesity in al-Basra city. *Ann Romanian Soc Cell Biol* 2021;18:4667-73.
32. Prusty RK, Begum S, Patil A, Naik DD, Pimple S, Mishra G. Knowledge of symptoms and risk factors of breast cancer among women: A community-based study in a low socio-economic area of Mumbai, India. *BMC Women's Health* 2020;20:1-2.
33. Okobia MN, Bunker CH, Okonofua FE, Osime U. Knowledge, attitude and practice of Nigerian women towards breast cancer: A cross-sectional study. *World J Surg Oncol* 2006;4:1-9.
34. Grunfeld EA, Ramirez AJ, Hunter MS, Richards MA. Women's knowledge and beliefs regarding breast cancer. *Br J Cancer* 2002;86:1373-8.
35. Latif R. Knowledge and attitude of Saudi female students towards breast cancer: A cross-sectional study. *J Taibah Univ Med Sci* 2014;9:328-34.
36. Parsa P, Kandiah M, Mohd Zulkefli NA, Rahman HA. Knowledge and behavior regarding breast cancer screening among female teachers in Selangor, Malaysia. *Asian Pac J Cancer Prev* 2008;9:221-7.
37. Alam AA. Knowledge of breast cancer and its risk and protective factors among women in Riyadh. *Ann Saudi Med* 2006;26:272-7.
38. Parthasarathy V, Rathnam U. Nipple discharge: An early warning sign of breast cancer. *Int J Prev Med* 2012;3:810-4.
39. Al-Mousa DS, Alakhras M, Hossain SZ, Al-Sa'di AG, Al Hasan M, Al-Hayek Y, *et al.* Knowledge, attitude, and practice around breast cancer and mammography screening among Jordanian women. *Breast Cancer* 2020; 12:231-42.