



Original Research Article

Impacts of empowerment intervention on breast cancer awareness, attitude and practice among young female students at Shaqra University.

Article History:

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Received: 29-12-2025

Revised: 14-01-2026

Accepted: 23-01-2026

Published: 26-01-2026

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Abstract: Breast cancer (BC) is the most common malignancy among Saudi female, and its incidence continues to rise. Most BC cases are diagnosed in women over the age of 50. A lack of awareness during younger years may contribute to this high prevalence. Therefore, this study aimed to assess BC awareness among young females and to evaluate the effect of an empowerment-based educational intervention on their knowledge, attitudes, and practices. **Methods:** A total of 75 females aged 18–23 years participated in this pre–post intervention study, with the majority (97.3%) being unmarried. Data were collected using a structured questionnaire that measured participants' awareness, attitudes, and practices before and after the intervention. **Results:** Findings revealed that participants initially demonstrated limited awareness of BC. Following the educational intervention, statistically significant improvements were observed in their knowledge of BC symptoms, early detection methods, treatment options, and prevention strategies. Significant positive changes were also noted in participants' attitudes, along with highly significant improvements in preventive practices. **Conclusion:** The results confirm that empowerment-based educational interventions can effectively enhance young women's awareness, attitudes, and practices regarding BC, thereby promoting early detection and contributing to a reduction in its long-term burden.

Keywords: Breast cancer, young females, health education, awareness, attitude & practice.

INTRODUCTION

Breast cancer (BC) represents a critical global public health issue and continues to be a leading cause of cancer morbidity and mortality among women worldwide.^[1] The World Health Organization (WHO), along with other BC-related agencies and researchers, reported that approximately 670,000 women died from BC in 2022. By 2050, the incidence of new cases is projected to rise by 38%, while mortality is expected to increase by 68%, underscoring the escalating global health burden of

the disease.^[2] In Saudi Arabia, it is also the most prevalent cancer affecting females.^[3] 28.7% of all BC diagnosed in Saudi females across different age groups and particularly Saudi females were diagnosed with invasive BC at a mean age of 56 years-old, compared to 51 years-old for in situ cases.^[4]

Mostly, BC cases are diagnosed at an advanced stage with late detection which often leads to more aggressive disease, reduces treatment options, and is

associated with poorer prognosis and higher mortality rates.^[5]

BC is influenced by a variety of risk factors, which can be categorized as non-modifiable, such as age, family history, and late menopause, and modifiable, including obesity, post-menopausal status, use of hormone therapy, alcohol consumption, and lack of breastfeeding. Early detection remains the most effective strategy to reduce the burden of the disease and prevent severe complications.^[6,7] However, in regions with limited screening programs or low public awareness, opportunities for early detection are often insufficient, leading to delayed diagnosis and poorer outcomes.^[5] Therefore, global initiatives have been proposed to raise public awareness of BC, aiming to reduce its complications and mortality through targeted strategies used for women at all ages, with particular emphasis on young females.^[8,9]

One of the targeted strategies to increase BC awareness is by performing empowerment-based educational interventions which in turn help in the management of diseases and their effects.^[10] Empowerment-based educational interventions can play a crucial role in addressing these challenges by increasing knowledge, promoting positive attitudes, and encouraging preventive practices among women, thereby facilitating timely detection and improving overall BC outcomes.^[11-15] A significant proportion of female whom participated in the study lacked adequate awareness and understanding of breast cancer and BSE.^[16]

Furthermore, raising awareness about breast health among young females is thought to alleviate breast-related worries, foster healthier attitudes toward breast care, and promote beneficial habits, such as self-checks^[16], which could minimize the increased prevalence of BC and the late detection of BC. Thus, Educational intervention aimed to improve young females' knowledge, attitude, practice will empower them to early detection of BC. Despite the growing burden of BC, little is known about how young Saudi females perceive the disease, its causes, and its early detection methods. This study seeks to bridge that gap by assessing their knowledge, attitudes, and practices toward BC, while also evaluating the impact of an empowerment-based educational intervention designed to enhance awareness and promote proactive health behaviors.

MATERIALS AND METHODS

Study design and participants

This study employed a pre- and post-educational intervention design and was conducted at Shaqra University in Al-Dawadmi, Saudi Arabia (KSA). A total of 75 female students participated. Inclusion criteria consisted of young female students who were willing to participate, while exclusion criteria

included students who had previously been exposed to similar interventions, those unwilling to participate, or those who did not complete the study.

Data Collection

Data collection was carried out using a structured questionnaire (the study tool) specifically developed by the researchers following an extensive review of related literature. The tool comprised six main sections: (1) demographic characteristics of the participants, (2) knowledge of BC manifestations, (3) knowledge of BC predisposing factors, (4) overall awareness of BC, (5) attitudes toward BC, and (6) preventive practices regarding BC, all of which were assessed pre- and post-educational intervention. Notably, the content validity of the study tool was evaluated by a panel of two experts in the medical fields who reviewed the questionnaire for clarity, relevance, applicability, comprehensiveness, and ease of understanding and implementation. Based on their feedback, necessary modifications were applied. The reliability of the questionnaire was assessed using Cronbach's alpha test, which demonstrated a high level of internal consistency with a value of 0.812.

Statistical Analysis

After data collection, the dataset was carefully coded, organized, and exported into a Microsoft Excel-compatible format for efficient management and quality control. Rigorous checks, including error detection, consistency verification, frequency analysis, and cross-tabulation, were conducted, with manual corrections applied as needed to ensure accuracy. Statistical analysis was performed using IBM SPSS Statistics (version 24), and results were presented as numbers, percentages, means, and standard deviations. Paired t-tests were used to compare pre- and post-intervention means, with $p < 0.05$ considered statistically significant and $p < 0.001$ considered highly significant.

Ethical Approval and Informed Consent

Ethical approval for the study design and data collection was obtained from the Local Committee of Research Ethics at Shaqra University (ERC_SU_2021010). To protect participant privacy and confidentiality, written informed consent was obtained from all participants after explaining the study's purpose, procedures, benefits, and potential risks. Participants were also informed of their right to withdraw from the study at any time without any consequences.

RESULTS

Participants' Demographic Characteristics

A total of 75 young female students, with the majority aged 18–20 years (58.7%) and most being unmarried (97.3%) as detailed in Table 1. Analysis of the pre- and post-intervention data revealed substantial improvements in participants'

knowledge, awareness, attitudes, and preventive practices regarding BC.

Participants' Knowledge of BC Manifestations

Before the intervention, participants' knowledge regarding BC symptoms was generally low. Only 12.0% recognized the presence of a breast lump, 13.3% identified milky nipple discharge, 8.0% noticed clear veins above the skin, 32.0% reported itching with crusty sores, 13.3% recognized changes in breast shape, 14.7% were aware of breast pain, and 13.3% identified all the above symptoms collectively. After the educational program, awareness of these manifestations improved dramatically: 88.0% recognized a lump, 86.7% identified milky secretion, 92.0% noticed clear veins, 68.0% recognized itching with crusty sores, 86.7% noticed shape changes, 85.3% were aware of breast pain, and 86.7% correctly identified all the symptoms. These changes were

statistically significant ($p = 0.001$ for all items) as presented in Table 2, demonstrating the strong impact of the intervention on knowledge of clinical signs.

Participants' Knowledge of Predisposing Factors of BC

Similarly, Table 3 demonstrates knowledge regarding BC risk factors improved markedly post-intervention. Awareness that advanced age increases risk rose from 2.7% pre-intervention to 85.3% post-intervention. Recognition of nulliparity as a risk factor increased from 0% to 84.0%, while understanding the effect of obesity rose from 9.3% to 53.3%. The intervention significantly enhanced participants' understanding of other risk factors as well, reflecting a comprehensive improvement in knowledge regarding predisposing factors ($p < 0.001$).

Participants' Awareness of Early Detection, Treatment, and Prevention of BC

Participants' awareness regarding BC detection, treatment, and prevention improved significantly following the intervention as seen in Table 4. Awareness of breast self-examination, clinical screening, radiography, and ultrasound as early detection methods increased from single-digit or low percentages pre-intervention to 30–90% post-intervention. Understanding the optimal timing of breast self-examination increased from 2.7% to 90.7%. Awareness of factors reducing BC incidence, including early reporting of changes, regular exercise, proper nutrition, breastfeeding, and maintenance of healthy weight, showed significant improvements. Knowledge regarding treatment modalities, including chemotherapy, surgery, radiotherapy, and hormonal therapy, also improved considerably post-intervention. These findings demonstrate that the intervention effectively enhanced participants' general awareness of BC management and prevention ($p < 0.001$).

Participants' Attitudes Toward BC

The educational program had a marked effect on participants' attitudes. Prior to the intervention, only 30.7% knew the correct methods of breast self-examination, and 41.3% believed that breast examinations were worthwhile. After the intervention, these numbers increased to 97.3% and 93.3%, respectively. Similarly, agreement that all women should perform breast self-examination increased from 10.7% to 93.3%. The practice of performing BSE also rose from 14.7% pre-intervention to 88.0% post-intervention. Participants' comfort in discussing BSE with friends increased from 8.0% to 58.7%, highlighting a significant improvement in attitudes and willingness to engage in preventive behaviors ($p < 0.001$).

Participants' Preventive Practices for BC

Preventive behaviors were also positively influenced by the intervention. Daily exercise for 30 minutes increased from 8.0% pre-intervention to 70.0% post-intervention. Healthy eating habits improved, with daily consumption of healthy food rising from 20.0% to 86.7%. Adequate nighttime sleep increased from 20.0% pre-intervention to 86.7% post-intervention. Other lifestyle practices also showed significant improvements, indicating that the intervention successfully promoted health-enhancing behaviors associated with BC prevention ($p < 0.001$).

Table 1: Demographic characteristics of female participants.

Variables	<i>n</i>	%
Age		
• 18-20 Years	44	58.7%
• 21-23 Years	31	41.3%
Marital Status		
• Married	2	2.7%
• Not Married	73	97.3%
Total	75	100%

(*n*) is used to refer for the number of participants

DISCUSSION

Empowerment-based educational interventions have increasingly been regarded as a fundamental pillar towards the advancement of health, disease prevention, and embracing positive health practice. Health empowerment is defined as making people powerful in order to take responsibility for decisions and actions affecting their own health through enhanced knowledge, capability, and confidence.^[10,15] Globally, empowerment has been successfully implemented in a lot of health areas, including management of chronic conditions, maternal and child health, and infectious disease prevention.^[15,17–20] The instances above establish that education-based empowerment is not disease-specific but is a general method which can be tailored to suit different health conditions. The findings of this study revealed that empowerment-based intervention reflected significant improvement in participants' knowledge, awareness, attitudes, and preventive behavior for BC. Our findings concur with previous studies emphasizing empowerment methods in bridging the disparity between health knowledge and behavioral change.^[21] Recent investigations highlight BC in young women as an emerging concern due to its increasing prevalence, more aggressive subtypes, and poorer prognosis compared to older women.^[22–24] In the same line study recommends empowering young women through encouraging greater awareness for early detection and management of breast cancer.^[25]

Consistent with this trend, all participants in the present study were young and unmarried, a group expected to have minimal baseline awareness of BC. Targeting this population through empowerment-based health education proved valuable, as the intervention significantly improved knowledge of symptoms, risk factors, and early detection methods, reaffirming that awareness is key to timely screening and diagnosis. Moreover, post-intervention, misconceptions such as stigma and contagion declined, while preventive practices, including breast self-examination, regular exercise, and healthy lifestyle choices, increased. These findings highlight that culturally sensitive empowerment programs effectively enhance knowledge, shift attitudes, and promote preventive behaviors, ultimately supporting early detection and improved survival outcomes.

Interventions with an empowerment orientation for young women must go beyond knowledge building to actively promote early detection behaviors like breast self-exams, clinical breast exams, and an awareness of hereditary risks like BRCA mutations. They also can help decrease fear, stigma, and fatalistic attitudes that too commonly dissuade timely care, while promoting confidence in health decisions. In order for interventions to be effective, they must overcome pragmatic hindrances such as

limited access to screening services, expense, and socio-cultural prescriptions of femininity, marriageability, and body image. In addition, reinforcement of lifestyle-related risk factors such as physical inactivity, being obese, and unhealthy diet can enable preventive health behavior. Providing training in long-term survivorship and coping and integrating these programs into overall health policy and community programs provides for sustainability and the potential for maximum impact on early detection and improved outcomes for young women.

Future studies would require more representative groups, assess the sustainability of long-term behavior change, and identify effects on early detection and clinical outcomes. Integrating empowerment programs with healthcare systems, community outreach, and digital platforms, and considering cultural norms and systemic barriers, can enhance accessibility, participation, and effectiveness in promoting breast cancer prevention among young women.

CONCLUSION

Breast cancer stands as a significant and prevalent malignancy impacting women in Saudi Arabi^[26] and empowerment-based educational intervention effectively improved young females' knowledge of BC symptoms and risk factors, increased their awareness of early detection methods and treatment options, enhanced their attitudes toward self-care and prevention, and encouraged the adoption of healthier preventive practices. The results highlight that structured health education initiatives play a vital role in strengthening young women's engagement in BC prevention and promoting overall health literacy. Regular implementation of empowerment programs is recommended, as they can reinforce knowledge, raise awareness, foster positive attitudes, and empower Saudi women to actively participate in early detection. Full adherence to such interventions is crucial to reducing BC incidence, improving management, increasing recovery rates, and minimizing complications among affected individuals.

Financial support and sponsorship

Nil

Acknowledgment

The authors would like to thank the Deanship of Scientific Research, Shaqra University, Saudi Arabia for supporting this work. Furthermore, we thank all the participants who generously contributed their time and insights to this research.

Conflicts of Interest

The author declares no conflict of interest relevant to this article

Authorship Contributions:

Conceptualization, R.S. and W.H.A.; Methodology: R.S. and W.H.A.; Results analysis: W.A.H.E.; Investigation: W.H.A. and S.M.A.; Writing original draft manuscript: R.S.; Reviewing and editing manuscript, R.S., W.H.A., S.M.A. and W.A.H.E.; Visualization: R.S.; Supervision: W.H.A. and S.M.A.; Project administration: W.H.A., All authors have read and agreed to the published version of the manuscript.

REFERENCES

1. Wilkinson L, Gathani T. Understanding breast cancer as a global health concern. *British Journal of Radiology*. 2022; 95(1130):20211033.
2. Kim J, Harper A, McCormack V, Sung H, Houssami N, Morgan E, et al. Global patterns and trends in breast cancer incidence and mortality across 185 countries. *Nat Med*. 2025; 31(4):1154–62.
3. Chaudhri E, Fathi W, Hussain F, Hashmi SK. The Increasing Trends in Cases of the Most Common Cancers in Saudi Arabia. *J Epidemiol Glob Health*. 2020; 10(4):258–62.
4. Asiri S, Asiri A, Ulahannan S, Alanazi M, Humran A, Hummadi A. Incidence Rates of Breast Cancer by Age and Tumor Characteristics Among Saudi Women: Recent Trends. *Cureus*. 2020; 12(1):e6664.
5. Seely JM, Doherty A, Bissell MB. Breast Imaging: what women & healthcare professionals need to know. *Current Problems in Diagnostic Radiology*. 2025; 54(1):51–64.
6. Nindrea RD, Aryandono T, Lazuardi L. Breast Cancer Risk From Modifiable and Non-Modifiable Risk Factors among Women in Southeast Asia: A Meta-Analysis. *Asian Pac J Cancer Prev*. 2017;18(12):3201–6.
7. Alsayer RM, De Vol EB, Almeharish A, Alfattani A, Alghamdi AJ, AlBehlal LB, et al. Ranking of Modifiable Lifestyle Risk Factors for Breast Cancer in Saudi Women: Population Attributable Risk and Nomogram. *Breast Cancer (Dove Med Press)*. 2024;16:545–54.
8. Toan DTT, Son DT, Hung LX, Minh LN, Mai DL, Hoat LN. Knowledge, Attitude, and Practice Regarding Breast Cancer Early Detection Among Women in a Mountainous Area in Northern Vietnam. *Cancer Control*. 2019; 26(1):1073274819863777.
9. Alsaraireh A, Darawad MW. Breast cancer awareness, attitude and practices among female university students: A descriptive study from Jordan. *Health Care Women Int*. 2018; 39(5):571–83.
10. Navarro MD. Patients' empowerment and the role of patients' education. *Medical Research Archives [Internet]*. 2020 Dec 19 [cited 2025 Oct 4];8(12). Available from: <https://esmed.org/MRA/mra/article/view/2306>
11. Bahrami MA, Tabari S, Tahmasebi S, Zangouri V, Ravangard R. Strategies to Promote Empowerment Status of Breast Cancer Women. *Int J Breast Cancer*. 2024; 2024:3305399.
12. Jiang R, Liu H, Jiang X, Wang D, Li X, Shang Y. Impact of Empowerment Theory-Based Nursing Intervention on the Quality of Life and Negative Emotions of Patients Diagnosed with Brain Metastasis Post Breast Cancer Surgery. *J Multidiscip Healthc*. 2024; 17:2303–12.
13. Mahboobighazaani F, Karimi M, Azadbakht M, Ghahremani L. The effectiveness of educational intervention based on the Health Action Model (HAM) in improving breast cancer screening behaviors. *BMC Women's Health*. 2024; 24(1):21.
14. Ruiz-Romeo M, Ciria-Suarez L, Medina JC, Serra-Blasco M, Souto-Sampera A, Flix-Valle A, et al. Empowerment among breast cancer survivors using an online peer support community. *Support Care Cancer*. 2024; 33(1):56.
15. Crawford Shearer NB. Health Empowerment Theory as a Guide for Practice. *Geriatr Nurs*. 2009; 30:4–10.
16. Bharti NR, Gupta S, Jain A, gupta R, Chauhan R. Awareness and Practices Concerning Breast Cancer: A Study on Women's Knowledge and Attitudes. *J Neonatal Surg [Internet]*. 2025 Jun. 10 [cited 2025 Dec. 20];14(31S):702-20. Available from: <https://www.jneonatalurg.com/index.php/jns/article/view/7251>
17. Omrani A, Wakefield-Scurr J, Smith J, Wadey R, Brown N. Breast Education Improves Adolescent Girls' Breast Knowledge, Attitudes to Breasts and Engagement With Positive Breast Habits. *Front Public Health*. 2020; 8:591927.
18. Ștefan AM, Rusu NR, Ovreiu E, Ciuc M. Empowering Healthcare: A Comprehensive Guide to Implementing a Robust Medical Information System—Components, Benefits, Objectives, Evaluation Criteria, and Seamless Deployment Strategies. *Applied System Innovation*. 2024; 7(3):51.
19. Shojaei MS, Tavakoly Sany SB, Ghavami V, Tehrani H. An educational intervention based on family-centered empowerment model to modify high-risk behaviors of brucellosis via mother education. *Sci Rep*. 2022; 12(1):18869.

20. Al Ibrahim I, Al Saif AZ, AlGadeeb R, Al-Quwaidhi AJ. Effect of School-Based Education Intervention on Knowledge and Attitude Regarding Seasonal Influenza Vaccine Uptake Among Secondary Schoolgirl Students in Al-Ahsa, Saudi Arabia: A Quasi-experimental Study. *Cureus*. 2024; 16(8):e68283.
21. Stepanian N, Larsen MH, Mendelsohn JB, Mariussen KL, Heggdal K. Empowerment interventions designed for persons living with chronic disease - a systematic review and meta-analysis of the components and efficacy of format on patient-reported outcomes. *BMC Health Serv Res*. 2023; 23:911.
22. Thompson B, Molina Y, Viswanath K, Warnecke R, Prelip ML. Strategies To Empower Communities To Reduce Health Disparities. *Health Aff (Millwood)*. 2016; 35(8):1424–8.
23. Pujol P, Remontet L, Lapôtre-Ledoux B, Rogel A, Lafay L, Molinié F. Increasing incidence of breast cancer in young women over time. *The Breast*. 2025; 83:104555.
24. Rosenberg SM, Zheng Y, Ruddy K, Poorvu PD, Snow C, Kirkner GJ, et al. Helping ourselves, helping others: the Young Women's Breast Cancer Study (YWS) – a multisite prospective cohort study to advance the understanding of breast cancer diagnosed in women aged 40 years and younger. *BMJ Open*. 2024; 14(6):e081157.
25. Xu S, Murtagh S, Han Y, Wan F, Toriola AT. Breast Cancer Incidence Among US Women Aged 20 to 49 Years by Race, Stage, and Hormone Receptor Status. *JAMA Netw Open*. 2024; 7(1):e2353331.
26. Manatunga P, Kuruppu DC. Breast Cancer Awareness, Attitudes, and Practices among Non-Medical Female Undergraduates in Sri Lanka: Implications for Health Education and Early Detection Strategies. *Asian Pac J Cancer Prev*. 2025 Jul 1;26(7):2445-2454. doi: 10.31557/APJCP.2025.26.7.2445. PMID: 40729066; PMCID: PMC12510122.
27. Alomairy NA (2025) The impact of breast cancer awareness campaigns on the knowledge, attitudes, and practices of breast cancer screening among Saudi female employees. *PLoS One* 20(9): e0331765. <https://doi.org/10.1371/journal.pone.0331765>