

Female workers' knowledge about breast cancer preventive measures at Beni-Suef University

Abstract

Background: Global estimates reveal striking inequities in the breast cancer burden according to human development. The best cancer therapy is prevention. Primary prevention involves health promotion and risk reduction in the general population so that invasive cancers do not develop.

Aim: assess female workers' knowledge about breast cancer preventive measures at Beni-Suef University.

Subjects and Methods: A purposeful sample of 323 Beni-Suef University working women was chosen.

Tools:

- Women's knowledge of breast cancer, breast self-examination, and breast cancer prevention strategies is evaluated using a structured interviewing questionnaire sheet.
- Questionnaire on Health Belief Models.
- Checklist of Preventive Measures for Breast Cancer.

Results: illustrated that 71.8% of studied sample had poor levels of knowledge regarding breast cancer. Moreover, 52.3% had negative beliefs based on health belief model regarding breast cancer, breast self-examination, and breast cancer preventive measures, 81.4% of the female workers have inadequate practice preventive measures. Also, 90.1% of the female workers have inadequate practice for breast self-examination. The main source of information was social media (44.9%).

Conclusion: most of the studied female workers had poor knowledge and negative attitude toward all sub-items of health belief model regarding breast cancer, breast self-examination, and breast cancer preventive measures. Moreover, most of them had inadequate practice regarding preventive measures and breast self-examination.

Recommendations: Implement an educational program to enhance women's knowledge regarding breast cancer and its preventive measures

Keywords: workers' knowledge, breast cancer

Volume 11 Issue 1 - 2025

Fatma Saber Nady,¹ Sahar Gamal Zaki,²
Hanan Elzeblawy Hassan³

¹ Lecturer of Maternal & Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

² Demonstrator of Maternal & Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

³ Professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

Correspondence: Hanan Elzeblawy Hassan, Professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt
K

Received: January 6, 2025 | **Published:** February 4, 2025

Introduction

Breast cancer is a disease that originates from the breast and emerges mostly from the epithelial cells lining the milk ducts.¹⁻⁶ Although carcinomas are cancerous by definition, benign tumors of the breast contained inside the basement membrane are described as ductal carcinoma in situ (DCIS) and lobular carcinoma in situ (LCIS).⁷⁻¹¹ The illness known as breast cancer is caused by aberrant breast cells that proliferate and develop into tumors. Tumors have the potential to grow throughout the body and become lethal if ignored. The milk ducts and/or the breast's milk-producing lobules are where breast cancer cells first proliferate. There is no risk to life from the early form (in situ). Cancer cells can invade neighboring breast tissue. Tumors produced by this result in thickening or lumps. Metastasis is the process by which invasive tumors move to neighboring lymph nodes or other organs. One can die from metastasis.¹²⁻¹⁶ Global estimates reveal striking inequities in the breast cancer burden according to human development. For instance, in countries with a very high Human Development Index (HDI), 1 in 12 women will be diagnosed with breast cancer in their lifetime, and 1 in 71 women die of it. In contrast, in countries with a low HDI, while only 1 in 27 women are diagnosed with breast cancer in their lifetime, 1 in 48 women will die from it.¹⁷⁻¹⁹

The best cancer therapy is prevention. Primary prevention involves health promotion and risk reduction in the general population so that invasive cancers do not develop. These primary preventive measures include the cessation of smoking, lifestyle and diet modification, and vitamin and micronutrient supplementation. Identification of genetic risk, understanding of carcinogenesis, development of effective screening tools, avoiding risk factors, and effective chemoprevention can lead to decreased morbidity and mortality of cancers in general and, more importantly, breast cancer.²⁰⁻²² The Health Belief Model was created by behavioral scientists employed by the United States Public Health Service in the 1950s, and health educators, other medical professionals, and psychologists continue to utilize it as one of the most popular conceptual frameworks for health behavior.²³ The Health Belief Model is a cognitive paradigm that views people as rational beings who use a variety of techniques to decide whether or not to participate in an activity connected to their health. Created to help explain the poor participation rates in disease prevention initiatives, the Health Belief Model looked into factors that can promote or hinder participation. The two main factors that have influenced the development of the Health Belief Model are the belief that a specific behavior will either prevent or improve health and the desire to avoid illness.²⁴⁻²⁸

Aim of the study

The current study was conducted to assess female workers' knowledge about breast cancer preventive measures at Beni-Suef University.

Subject and method

a) Subjects and settings: A purposeful sample of 323 Beni-Suef University working women was chosen at the following mentioned Faculties; Literature, Education, Nursing, Engineering, Educational Technology, of Social Service, College of Science for People with Special Needs, and Technical Institute of Nursing. Data collection of the study was started at the beginning of December 2023 and completed by the end of May 2024.

b) Tools of data collection

Tool I: women's knowledge about breast cancer, breast self-examination, and breast cancer preventive measures. The study assessed women's knowledge about breast cancer, self-examination, and preventive measures using 55 closed-ended questions. The scores were categorized into good ($\geq 75\%$), average (50-74%), and poor ($< 50\%$), with each question scoring one point for correct answers and zero for incorrect ones.

Tool II: Health belief model questionnaire: The study measures pregnant women's psychological readiness to take positive action about breast cancer prevention. It includes six subscales for health belief, with responses scored on a five-point Likert scale. The attitude score is divided into three categories: positive belief (75%), neutral belief (55%-74%), and negative belief ($< 50\%$).

Tool III: Breast cancer preventive measures checklist: It consisted of two parts:

Part 1: Talks about changing one's lifestyle to prevent breast cancer. With a total score of 13 degrees, each step was given a zero point for improper execution and a point for proper execution. Two groups were created by calculating the overall practical scores:

1. Adequate or satisfactory practice was indicated by a score of at least 60%.
2. Inadequate or unsatisfactory practice was indicated by a score below 60%.

Part 2: Observational checklist for breast self-examination it was used as a pre- and post-educational model implementation and consisted of useful procedures to assess and monitor women's performance in breast self-examination. With a total score of 35 degrees, each step received a zero if it was not completed and a one if it was completed. Two groups were created from the total practical scores:

1. Adequate or satisfactory practice was indicated by a score of at least 60%.
2. Inadequate or unsatisfactory practice was indicated by a score below 60%.

c) Tools validity and reliability: The study tools' content validity was evaluated by a jury group of five experts at Beni-Suef University, while their reliability was measured using the Cronbach's Alpha test to ensure consistent results over time.

d) Ethical consideration: The study received ethical approval from Beni-Suef University's Faculty of Medicine's Research Ethics Committee.

e) Pilot study: A pilot research was conducted on 32 women, or 10% of the entire study sample, to assess the tools' usefulness, effectiveness, and intelligibility.

f) Statistical Design: The Statistical Package for Social Science (SPSS) version 20 was used to do statistical analysis on the updated, coded, and computer-entered data. Data were presented in tables using number, percentage distribution.

Results

Figure 1 presents the percentage distribution of the studied female workers' regarding sub-items of knowledge about breast cancer. It illustrates most of the studied female workers (72.1%, 76.8%, and 72.4%), respectively, had poor knowledge level about breast cancer, breast self-examination, and breast cancer preventive measures. Figure 2 presents the percentage distribution of the studied female workers' total knowledge about breast cancer. It illustrates that 71.8% & 4% of studied sample had poor and good levels of knowledge, respectively. Table 1 illustrates that more two-thirds (68.1% & 66.3%) of the studied female workers have a negative attitude toward (susceptibility & cues to action) sub-items of health belief model. Moreover, more than half (62.2% & 53.3% & 51.4%) of them have a negative attitude toward (Self-efficacy & Barriers & Benefits) sub-items of HBM regarding breast cancer, breast self-examination, and breast cancer preventive measures.

Figure 1 Percentage distribution of the studied female workers regarding sub-items of knowledge about breast cancer, breast self-examination and breast cancer preventive measures (n=323).

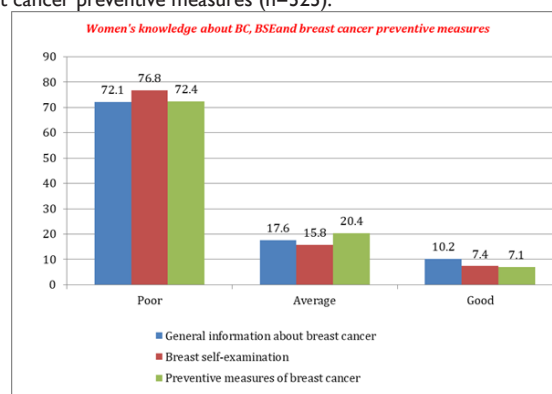


Figure 2 Percentage distribution of the studied female workers' regarding their total knowledge level about breast cancer (n=323).

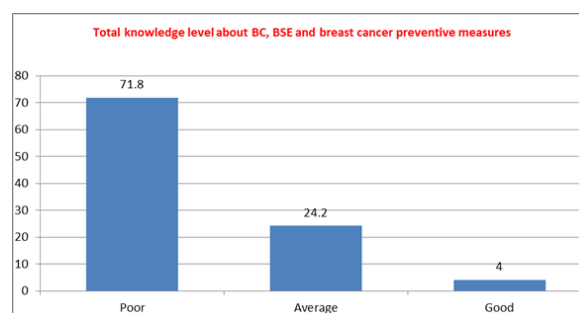


Table 1 Percentage distribution of the studied female workers' beliefs regarding sub-items of health belief model (n=323)

Sub-items of health belief model	Negative %	Neutral %	Positive %
Susceptibility	68.1	31	0.9
Seriousness	37.2	55.7	7.1
The benefits	51.4	43	5.6
The barriers	53.3	39.3	7.4
Cues to action	66.3	27.2	6.5
Self-efficacy	62.2	30.3	7.4

Figure 3 illustrates the female worker's beliefs regarding breast cancer and its preventive measures based on HBM. It shows that 52.3% of them had negative beliefs while only 0.6% of them had positive beliefs regarding breast cancer, breast self-examination, and breast cancer preventive measures. Figure 4 shows distribution of the studied female workers' total preventive measures level. It reveals that 81.4% of the female workers have inadequate practice compared to 18.6% adequate practice. Table 2 summarizes the percentage distribution of the studied female workers' practices regarding sub-items of breast self-examination. It shows that most of the studied women (76.2%, 88.2%, 90.4%, 91.6%) have inadequate knowledge regarding all sub-items of breast self-examination (examination preparation, examination by consideration, symmetry in the nipple, areola, or breast, and tactile examination), respectively. Figure 5 illustrates the percentage distribution of the studied female workers' total practice level regarding breast self-examination. It presents that the majority 90.1% of the female workers have inadequate practice. Figure 6 shows sources of information about breast cancer and illustrates that 44.9% of females get information about breast cancer from social media.

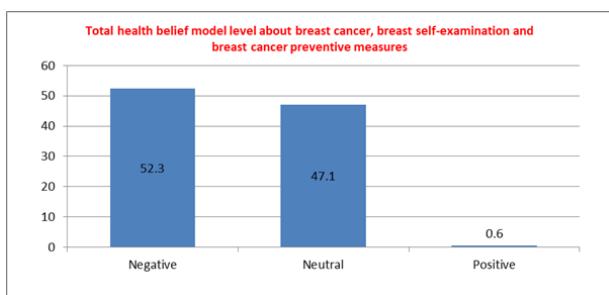


Figure 3 Percentage distribution of the studied female workers' regarding to their total health belief model level about breast cancer, breast self-examination and breast cancer preventive measures (n=323).

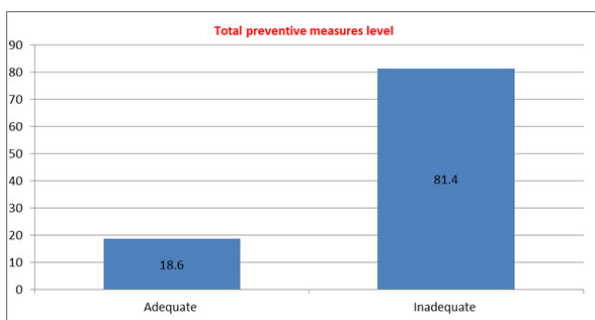


Figure 4 Percentage distribution of the studied female workers' total preventive measures level (n=323).

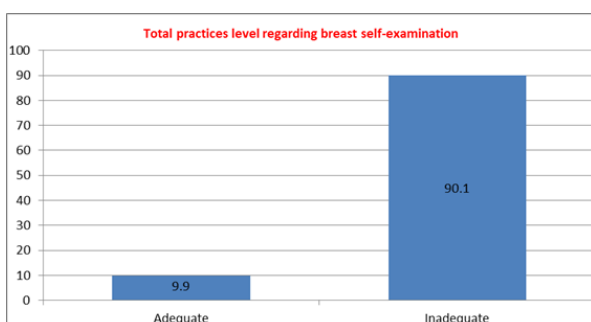


Figure 5 Percentage distribution of the studied female workers' total practices level regarding breast self-examination (n=323).

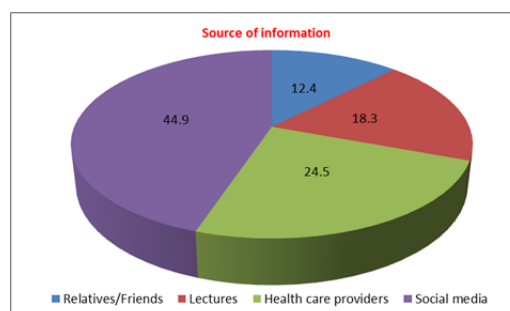


Figure 6 Sources of information about breast cancer.

Table 2 Percentage distribution of the studied female workers' practices regarding sub-items of breast self-examination (n=323)

Sub-items of breast self-examination	Adequate %	Inadequate %
Examination preparations	23.8	76.2
Examination by consideration	11.8	88.2
Make sure that there is asymmetry in the nipple, areola or breast	9.6	90.4
Tactile examination (palpation)	8.4	91.6

Discussion

Breast cancer (BC) is the most frequent cancer among women, and the rate of death is increasing day by day. Furthermore, because of the increase in aging, 19.3 million new cases of cancer are estimated to occur in 2025, and more than half of cancer deaths are expected to be seen in less developed regions around the world. Increased BC incidence leads to more health spending and high death rates. On the other hand, maintaining effective cancer screening is one of the most important factors to assess the outcomes of diagnosis and treatment. Due to this reason, BC should be controlled and prevented through early diagnosis and screening programs. Mammography, clinical breast examination (CBE), and breast self-examination (BSE) are crucial for early diagnosis of BC.²⁹ The aim of the study was conducted to assess female workers' knowledge about breast cancer preventive measures at Beni-Suef University. Concerning general knowledge of breast cancer, the current study revealed that most of the female workers' had poor knowledge level about General information about breast cancer, Breast self-examination, Preventive measures of breast cancer, compared to few ones who had good knowledge. Moreover, In relation to the studied female worker's total knowledge regarding breast cancer, breast self-examination, and preventive measures, the current study illustrated that most of the female workers' had poor knowledge level, compared to few ones who had good knowledge. This finding was contradicted by Nema Ram, who investigated the impact of an educational program on knowledge of breast cancer and practice of breast self-examination among women in India.³⁰

Concerning female workers' beliefs regarding breast cancer and its preventive measures as measured by the health belief model, the current study revealed that most of the female workers' had negative beliefs for the perceived Susceptibility, Seriousness, Benefits, Barriers, Cues to Action, and Self-Efficacy. Moreover, the minority of the studied female workers' had positive total health belief model level about breast cancer, breast self-examination and breast cancer preventive measures. This finding parallels Khorsandi et al, who investigated "self-efficacy of the first-degree relatives of patients with breast cancer in the prevention of cancer: using the health belief model. Regarding the studied female workers' total preventive measures

level, the current study revealed that less than one-fifth of the female workers had adequate practice compared inadequate practice. This finding is similar to Pereira et al.³¹ Additionally, regarding the practice of BSE, the current study announced that the majority of the studied female workers' had inadequate knowledge of total and all sub-items of breast self-examination (Examination preparations, Examination by consideration, Make sure that there is asymmetry in the nipple, areola or breast, and Tactile examination (palpation) compared with the adequate one. The finding was in the same line with Akarsu & Andsoy, who investigated the evaluation of breast self-examination training in Turkish women living in northwestern Turkey.²⁹ Regarding the source of information about breast cancer, the current study illustrated that less than half of female workers get information from social media. This finding is in accordance with Mahmoud et al, who investigated the "effect of the health belief model-based education on preventive behaviors of breast cancer" and revealed that less than half of the studied women acquired their information about breast cancer from social media and the minority of them from the health care provider.³²

Conclusion

Based on the findings of the present study, it can be concluded most of the studied female workers had poor knowledge and negative attitude toward all sub-items of health belief model regarding breast cancer, breast self-examination, and breast cancer preventive measures. Moreover, most of them had inadequate practice regarding preventive measures and breast self-examination.

Recommendations

- Implement an educational program to enhance women's knowledge regarding breast cancer and its preventive measures
- Demonstrate procedures of breast self-examination for worker women at Beni-Suef University to improve their practices that enhance early detection of any abnormality.
- Stress that not all knowledge published on social media is true, so spot that medical knowledge should be taken from health care providers.

Acknowledgements

None.

Conflicts of interest

The authors declare that they have no conflicts of interest.

References

- Mohammed F, Shahin M, Youness E, et al. Survivorship in women undergoing gynecological and breast cancer treatment in upper Egypt: the impact of quality of life improvement educational program. *Am Res J Gynaecol*. 2018;2(1):1–28.
- Nady F, Said M, Youness E, et al. Effect of nursing intervention program on quality of life improvement for women undergoing gynecological and breast cancer treatment. *Assuit Sci Nurs J*. 2018;6(15):62–77.
- Qalawa Sh, Eldeeb A, Hassan H. Young adult women's intention regarding breast and cervical cancer screening in Beni-Suef. *Sci Res J*. 2015;3(3):11–24.
- Hassan H, Bayoumi M, Atwa A. Emotional distress associated with gynecologic and breast cancer in Beni-Suef City. *Int J Sci Res*. 2016;5(2):1118–1129.
- Nady F, Said M, Youness E, et al. Impact of tailored educational program of quality of life improvement on women undergoing breast cancer treatment at El-Minia region, Egypt. *Am Res J Gynaecol*. 2017;1(1):1–17.
- Nady F, El-Sherbiny M, Youness E, et al. Effectiveness of quality of life planned teaching program on women undergoing gynecologic cancer treatment. *Am Res J Oncol*. 2018;1(1):1–17.
- Testa U, Castelli G, Pelosi E. Breast cancer: a molecularly heterogeneous disease needing subtype-specific treatments. *Med Sci*. 2020;8(1):18.
- Said S, Hassan H, Sarhan A. Effect of an educational intervention on women's knowledge and attitude regarding cervical cancer. *Am J Nurs Res*. 2018;6(2):59–66.
- Atwa A, Hassan H, Ahmed S. The impact of a hospital-based awareness program on the knowledge of patients about breast cancer and cancer cervix. *Int J Stud Nurs*. 2019;4(1):20–29.
- Mohamed A, Hassan H, Gamel W, et al. Awareness about breast and cervical cancers among nursing students in Beni-Suef University. *J Nurs Educ Pract*. 2019;9(5):44–51.
- Zagloul M, Naser E, Hassan H. Cervical cancer knowledge, attitude, and practices: educational program management for female workers at Port Said University. *Int J Stud Nurs*. 2020;5(3):1–16.
- Alhasani AT, Alkattan H, Subhi AA, et al. A comparative analysis of methods for detecting and diagnosing breast cancer based on data mining. *Methods*. 2023;7(9):1–10.
- Ali R, Salam S, Kamal H, et al. Women with cervical cancer: impact of an educational program on their knowledge. *J Obstet Gynaecol Reprod Sci*. 2021;5(2):1–8.
- Masaud H, Hassan H, Mohammed R, et al. Women's sexual distress associated with cervical cancer. *Sumerianz J Med Health Care*. 2021;4(1):28–34.
- Ramadan S, Hassan H, Masaud H, et al. Women's body image distress associated with cervical cancer. *J Obstet Gynaecol Reprod Sci*. 2021;5(3):1–6.
- Elzeblawy H, Kamal H, Salam S, et al. Survivors from cervical cancer: impact of an educational program on self-knowledge and body-image. *Public Health Open Access*. 2021;5(2):1–9.
- Ali Salman R. Prevalence of women breast cancer. *Cell Mol Biomed Rep*. 2023;3(4):185–196.
- Hassan H, Mohammed R, Ramadan S, et al. Call for alleviating sexual issues among cervical cancer survivors' women in northern Upper Egypt. *J Obstet Gynaecol Reprod Sci*. 2021;5(3):1–11.
- Farag D, Mohamed S, Malk R, et al. Effectiveness of educational intervention program about cervical cancer on working women's knowledge, attitude, and practice at Beni-Suef University. *Egypt J Health Care*. 2024;15(1):1–16.
- Pashayan N, Antoniou AC, Ivanus U, et al. Personalized early detection and prevention of breast cancer: ENVISION consensus statement. *Nat Rev Clin Oncol*. 2020;17(11):687–705.
- Mohamed S, Nady FS, Hassan H. Breast cancer preventive measures among female workers at Beni-Suef University: educational program based on health belief model. *Egypt J Health Care*. 2025;16(1):117–142.
- Hassan H. Early stage cervical cancer: survivorship and fertility preservation. *Am Res J Oncol*. 2020;2(1):1–3.
- Anuar H, Shah SA, Gafor H, et al. Usage of Health Belief Model (HBM) in health behavior: a systematic review. *Malays J Med Health Sci*. 2020;16(11):2636–9346.
- Hassan H, Zahran K, Youness E, Nady F. Pregnant women's awareness, intention and compliance regarding folic acid usage for prevention of neural tube defects according to Health Belief Model in Beni-Suef City. *Pyrex J Nurs Midwifery*. 2015;1(3):13–26.

25. Nady F, Zahran K, Youness E, Hassan H. Women's knowledge and perception about benefits of folic acid intake before and during pregnancy according to Health Belief Model in Beni-Suef City. *Assuit Sci Nurs J*. 2014;2(3):1–13.
26. Ritchie D, Broucke S, Van Hal G. The health belief model and theory of planned behavior applied to mammography screening: a systematic review and meta-analysis. *Public Health Nurs*. 2021;38(3):482–492.
27. Hassan H, Nady F, Youness E, et al. Call for change level of knowledge, awareness and attitude to follow a high folate diet among pregnant women. *IOSR J Nurs Health Sci*. 2016;5(1):93–100.
28. Mohamed S, Nady FS, Hassan H. Breast cancer preventive measures among female workers at Beni-Suef University: educational program based on health belief model. *Egypt J Health Care*. 2025;16(1):117–142.
29. Akarsu NK, Andsoy II. Evaluation of breast self-examination training in Turkish women living in Northwestern Turkey. *J Prev Med Hyg*. 2022;63(1):E76-E82.
30. Ram G. Impact of an educational programme on knowledge on breast cancer and practice of breast self-examination among women. *Indian J Contin Nurs Educ*. 2020;21(2):155–158.
31. Pereira AAC, Destro JR, Bernuci MP, et al. Effects of a WhatsApp-delivered education intervention to enhance breast cancer knowledge in women: mixed-methods study. *JMIR mHealth uHealth*. 2020;8(7):e17430.
32. Mahmoud A, Abosree T, Aliem R. Effect of the health belief model-based education on preventive behaviors of breast cancer. *Evid Based Nurs Res*. 2020;2(4):11.