AUCTORES
Globalize your Research

Journal of Clinical and Laboratory Research
Hanan Elzeblawy Hassan *

Open Access

Research Article

Preventive Measures of Breast Cancer Female Workers' Knowledge

Sahar Gamal Zaki [1], Fatma Saber Nady [2], Hanan Elzeblawy Hassan [3]*

[1]Demonstrator of Maternal & Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt.

[2]Lecturer 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.

***Corresponding Author:** Hanan Elzeblawy Hassan, Professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt.

Received Date: 01 May 2025 | **Accepted Date:** 20 May 2025 | **Published Date:** 30 May 2025

Citation: Sahar G. Zaki, Fatma S. Nady, Hanan E. Hassan, (2025), Preventive Measures of Breast Cancer Female Workers' Knowledge, *Journal of Clinical and Laboratory Research*, 8(2); **DOI:10.31579/2768-0487/169**

Abstract

Background: Breast cancer is the most common cancer globally, and prevention is crucial due to rising incidence rates in the West. Lifestyle modifications, lifestyle interventions, and regular screenings are essential. Obesity is linked to increased risk of breast cancer, particularly triple-negative and premenopausal TNBC. A balanced diet, including fruits, vegetables, whole grains, and fiber-rich legumes, is essential for cancer prevention.

Aim: assess female workers' general knowledge regarding preventive measures of breast cancer. Methods: Design: A descriptive design was utilized. Subjects and Settings: 323 working women from Beni-Suef University were chosen as a deliberate sample. Tools: Structured Interviewing Questionnaire Sheet and women's general knowledge about preventive measures of breast cancer. Results: 75.9% of the female participants in the study were married and 84.2% had enough income. Also, 72.4% of them had poor knowledge, 20.4% had average knowledge, and only 7.1% had strong knowledge. The highest percentages of correct knowledge were 47.1% for the item of primary recommendation regarding physical activity to reduce BC risk.

Conclusion: Based on the findings of the present study, it can be concluded that poor knowledge was more prevalent among married women that had enough family income. Women's knowledge about breast cancer, breast self-examination and breast cancer preventive measures are significantly affected by their marital status.

Recommendations: Implement an educational program to enhance women's knowledge of breast cancer preventive measures; including general measures, breast self-examination, and preventive measures.

Key words: preventive measures; breast cancer; knowledge

Introduction

Breast cancer is the most common cancer globally, and prevention is crucial due to rising incidence rates in the West. Lifestyle modifications, lifestyle interventions, limiting hormone therapy, early childbearing, pregnancy, breastfeeding, avoiding tobacco, and regular screenings are essential [1-5]. Obesity is linked to increased risk of breast cancer, particularly triple-negative breast cancer (TNBC) and premenopausal estrogen receptor-negative breast cancer (premenopausal TNBC). Studies show that obese premenopausal women have a higher risk of TNBC development. Researchers hypothesize that the menopausal state may modify this relationship [6-9]. A healthy diet rich in fruits and vegetables can prevent cancer and lower mortality rates. However, there is insufficient evidence to suggest high post-diagnosis consumption for breast cancer survival. A balanced diet should include a variety of fruits, whole grains, vegetables, and fiber-rich legumes. Limiting red and processed meats, sugar-sweetened beverages, and refined grains is crucial. Fatty fish, such as mackerel, sardines, and salmon, may also be beneficial for cancer prevention [10-14]. Engaging in regular physical activity for at least 30 minutes a day has long been investigated and acknowledged as a cancer preventive measure, and there is abundant research supporting its use. The World Health Organization (WHO) recommends 150–300 minutes of moderate-intensity physical activity weekly, 75–150 minutes of vigorous-intensity physical activity, or

an equivalent combination of both for health. Unfortunately, 25% of adults fail to meet these recommendations on a global scale [15].

In comparison to no activity, women who engaged in three days a week of physical activity during their premenopausal and postmenopausal stages had a 38 percent lower incidence of malignant disease. Because physical activity lowers the levels of estrogen and androgen hormones in the bloodstream, it is thought to lower the risk of breast cancer. As a result, public health experts advise engaging in physical activity for 60 to 75 minutes per week at a high level or at least 150 minutes per week at a moderate intensity, which equates to roughly 30 minutes per day, five days a week [16-17]. Breast cancer has been strongly linked to hormonal imbalances, namely progesterone and estrogen. The hormone estrogen, which is mostly produced by the ovaries, is essential for the growth and development of breast tissue. It encourages cell division and controls gene expression during the development of the cell cycle and apoptosis. A critical hormone that is mostly produced in the ovaries, progesterone is vital for controlling an individual's menstrual cycle and breast growth [18]. Early childbearing before the age of 30 years, women's excessive exposure to the hormone estrogen causes breast cancer, and girls are more likely to get this sort of cancer because of the excess estrogen in their systems when marriage is delayed. The researchers clarified that a woman is not immune to breast cancer by having children at a young age. Furthermore, a woman who becomes pregnant at a later age does not automatically acquire breast cancer; the study merely identifies a few risk variables and the connection between the first pregnancy and breast cancer [19]. The results of observational research on nursing, nursing duration, and the risk of premenopausal breast cancer have been conflicting. The length of lactation did not correlate with risk. A subset analysis revealed that the impact of breastfeeding on the risk of premenopausal breast cancer was restricted to women who had a first-degree relative with breast cancer, which elevated their risk of developing the disease. For women at normal risk, there was no correlation found between breast cancer risk and breastfeeding [20]. In the general population, there is a well-established correlation between reproductive factors and the risk of breast cancer. Pregnancy in particular may have two possible implications for the mother's breast cancer. It is well acknowledged that parity can reduce the risk of breast cancer by as much as 30%. In the first few years after giving birth, women's risk of developing cancer temporarily increases. The duration of this increased risk is a topic of much controversy, but the generally accepted range is between two and fifteen years [21-24]. Avoid tobacco and alcohol intake; one of the main risk factors for cancer incidence and mortality is tobacco smoking. Research examining a potential link between tobacco use and breast cancer has produced contradictory findings. Alcohol usage may be the cause of this confusion. According to most reports, drinking alcohol raises the risk of breast cancer as alcohol intake can raise estrogen levels. Alcohol may specifically increase the activity of the aromatase enzyme, which is in charge of converting testosterone to estrogen [25]. Limit exposure to environmental toxins; a woman's risk of developing breast cancer increases with ionizing radiation. It is conceivable that women who have a genetic predisposition that they inherited could be more vulnerable to the harmful consequences of radiation exposure. There has been an attempt to evaluate the radiation-induced risk from therapeutic and diagnostic applications forbearers of the BRCA mutation; any diagnostic radiation exposure before the age of 30 has been linked to an elevated risk of breast cancer [26-36].

Aim Of the Study

The current study was conducted to assess female workers' general knowledge regarding preventive measures of breast cancer.

Subject And Method

Research design:

To accomplish its goals, the study used a descriptive research design including a pretest and a posttest.

Subjects and Settings:

323 working women from Beni-Suef University were chosen as a deliberate sample.

Tools of data collection:

Tool I: A Structured Interviewing Questionnaire Sheet

Among other personal details, it concentrated on the female subjects' marital status, family income, and history of breast issues.

Tool II: women's general knowledge about breast cancer

The study investigates women's awareness of breast cancer prevention strategies, such as dietary modifications, the length of breastfeeding, physical activity, hormonal therapy, alcohol use, healthy body weight, genetic testing, lifestyle modifications, early detection through an early cancer prevention screening tool, and physical activity…… etc (18 items). The scoring system involved degrees, with correct responses earning points and incorrect ones gaining zero points, with categories including good, average, average, and poor scores.

Statistical Design:

In order to compare women's knowledge and application of preventative behaviors, the data was analyzed using SPSS version 20, which employed mean, standard deviation, number, and percentage distribution.

Results

More than three quarters (75.9%) of the female participants in the study were married, as seen in Figure 1.

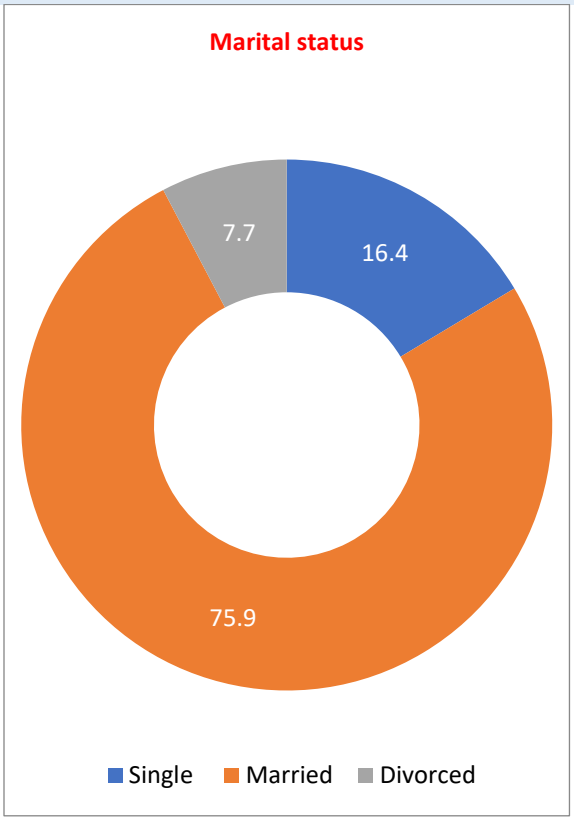

Figure 1: Marital status of the studied female workers.

According to Figure (2), the majority of the female participants in the study (84.2%) earned enough money each month to support their families.

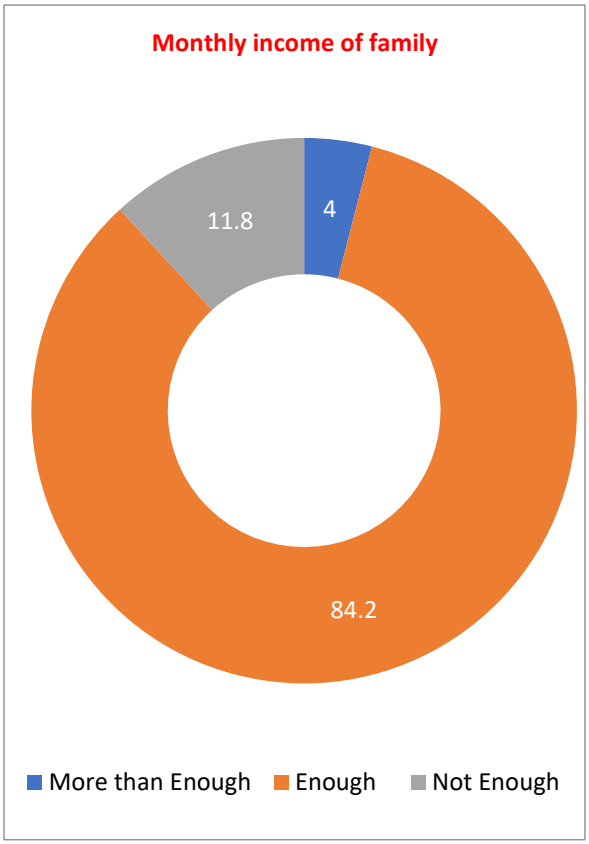

Figure 2: Monthly family income of the studied female.

Figure (3) presents distribution of the studied female workers' knowledge regarding preventive measures of breast cancer. It reveals that most of participants had incorrect knowledge regarding all items preventive measures of breast cancer. The highest percentages of correct knowledge were 47.1% for the item of primary recommendation regarding physical activity to reduce BC risk and 46.1% for the item of the primary recommendation regarding alcohol consumption to reduce BC risk

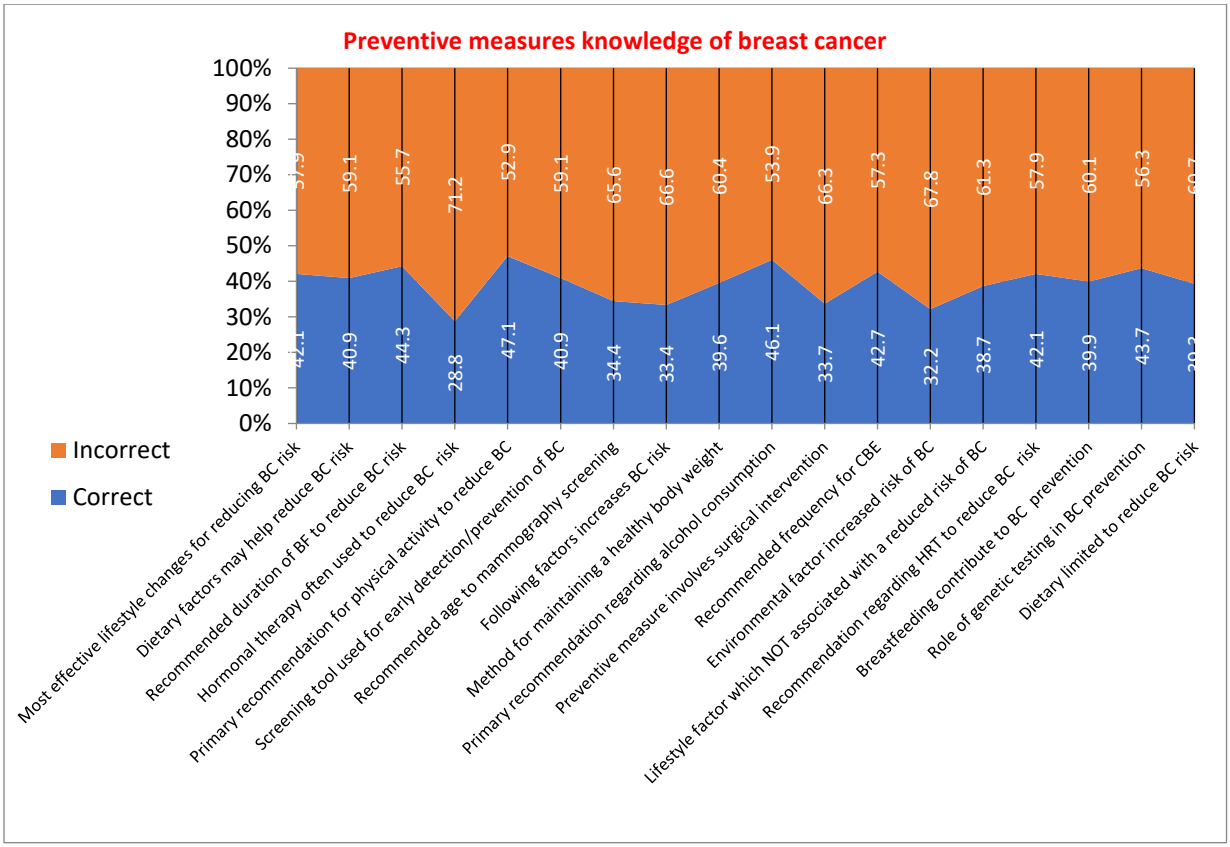

Figure 3: Percentage distribution of the studied female workers' knowledge regarding preventive measures of breast cancer (n=323).

Figure (4) displays the percentage distribution of the female employees' general breast cancer knowledge. According to the data, 72.4% of them had poor knowledge, 20.4% had average knowledge, and only 7.1% had strong knowledge.

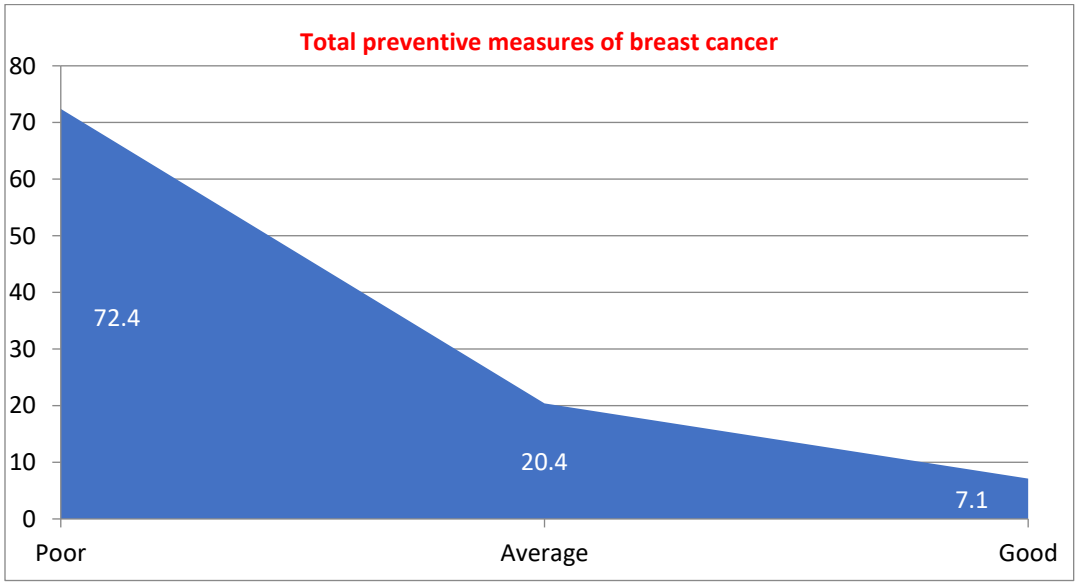

Figure 4: Women's knowledge about breast cancer, breast self-examination and breast cancer preventive measures.

Table (1) reveals that 10.8% of single females had poor knowledge compared to 0.3% had good knowledge. A statistically significant relation with their marital status (P-value = 0.040). Moreover, In relation to the monthly income of the family, there is no statistically significant relationship with the total knowledge score (P-value=0.070). 4.0% of female workers who had enough monthly income for their family had good knowledge.

Items	No	Poor (n=232)	Average (n=78)	Good (n=13)	X^2 (p value)
		%	%	%	
Marital Status					
Single	53	10.8	5.3	0.3	9.997 (0.040*)
Married	245	53.6	18.6	3.7	
Divorced	25	7.4	0.3	0.0	
Monthly income					
Enough & increases	13	3.4	0.6	0.0	8.680 (0.070)
Enough	272	57.8	22.3	4.0	
Not enough	38	10.6	1.3	0.0	

Table 1: Relation between the studied female workers data and their total knowledge about breast cancer, breast self –examination and breast cancer preventive measures (n=323).

Discussion

Breast cancer is the most common cancer globally, and prevention is crucial due to rising incidence rates in the West. Lifestyle modifications, lifestyle interventions, limiting hormone therapy, early childbearing, pregnancy, breastfeeding, avoiding tobacco, and regular screenings are essential. Obesity, a balanced diet, limiting red and processed meats, and regular physical activity can help reduce cancer risk. Hormonal imbalances, early childbearing, pregnancy, and avoiding tobacco and alcohol can also help reduce the risk of breast cancer [37-43]. The aim of the study was assess female workers' general knowledge regarding preventive measures of breast cancer. Regarding the marital status and place of residence, the present study revealed that more than three-quarters of them were married and more than two-thirds of them were urban residents. This finding was in agreement with Kamberi et al. (2017), who studied "breast cancer health beliefs and the use of mammography among women randomly selected in Vlora, Albania" and found that the majority of women were married [44]. This finding was different from Marmarà et al. (2017), who assessed "health beliefs, illness perceptions, and determinants of breast screening uptake in Malta," and Masoudiyekta et al. (2015) [45-46]. They stated that more than three-quarters of studied women lived in rural areas. From the researcher's point of view, this finding may be due to the current study focused on female workers at Beni-Suef University. Related to monthly income of family, the present study presented that the majority of female workers had enough monthly income from their point of view. This finding was disagreed with by Abd-Elaziz et al. (2021), who investigated the "effect of breast self-examination programs on women's awareness for early detection of breast cancer in Minia, Egypt" and proved that one-fifth of the participants had sufficient income [47]. From the researcher's point of view, this may be due to different community socio-economic levels. As regards prevention and early detection of breast cancer, the current study presented that incorrect knowledge was more prevalent among female workers' about breast cancer preventive measures. This finding was supported by Alameer et al. (2018) [48]. The current study demonstrated that poor total knowledge was more common among the female workers under study with regard to breast cancer, breast self-examination, and preventive measures. Approximately one-tenth of the female workers had a good level of knowledge, while approximately three-quarters had poor knowledge. This result was consistent with Elbasuony et al. (2020); however, Nema Ram (2020) challenged the findings [49-50]. Additionally, there was a statistically significant relationship between the studied female workers total preventive measures level against breast cancer score and their marital status level. In which the minority of married women had good knowledge regarding preventive measures. This result agreed with Osborne et al. (2005), who studied "the influence of marital status on the stage at diagnosis, treatment, and survival of older women with breast cancer" and revealed that there was a significant association between marital status and breast cancer prevention [51]. This may be due to most breast cancer preventive measures being considered daily habits that can be followed and applied easily. Additionally, there was no statistically significant relationship between the studied female workers total preventive measures score and their monthly income of family. In which the minority of females who had enough monthly income from family had good knowledge regarding preventive measures. This finding agreed with Shakor et al. (2019), who investigated "determinants of breast self-examination practice amongst Iraqi/Sulaimani women using the champion health belief model and breast computer-aided manufacturing" and proved that there was a statistically significant relationship between place of residence and breast cancer prevention methods [52]. This may be attributed to females who live in urban areas have greater chances and means that help them in following preventive measures of breast cancer, which help them to maintain health.

Conclusion

Based on the findings of the present study, it can be concluded that poor knowledge was more prevalent among married women that had enough family income. Women's knowledge about breast cancer, breast self-examination and breast cancer preventive measures are significantly affected by their marital status.

Recommendation

Implement an educational program to enhance women's knowledge of breast cancer preventive measures; including general measures, breast self-examination, and preventive measures.

Reference

1. Britt, K. L., Cuzick, J., & Phillips, K. A. (2020). Key steps for effective breast cancer prevention. *Nature Reviews Cancer*; 20(8): 417-436.
2. Qalawa, Sh., Eldeeb, A., & Hassan, H. (2015). Young Adult Women's intention regarding breast and cervical cancer screening in Beni-Suef. *Scientific Research Journal*, 3(3): 11-24.

3. Hassan, H., Bayoumi, M., & Atwa, A. (2016). Emotional Distress Associated with Gynecologic and Breast Cancer in Beni-Suef City. *International Journal of Science and Research*, 5(2): 1118-1129.
4. Nady F., Said M., Youness E., Hassan H. (2017). Impact of Tailored Educational Program of Quality-of-Life Improvement on Women Undergoing Breast Cancer Treatment at El-Minia Region, Egypt. *American Research Journal of Gynaecology*.; 1(1): 1-17.
5. Nady F., El-Sherbiny M., Youness E., Hassan H. (2018). Effectiveness of Quality-of-Life Planned Teaching Program on Women Undergoing Gynecologic Cancer Treatment. *American Research Journal of Oncology*.; 1(1): 1-17.
6. Torres-de la Roche, L. A., Steljes, I., Janni, W., Friedl, T. W., & De Wilde, R. L. (2020). The association between obesity and premenopausal breast cancer according to intrinsic subtypes–a systematic review. *Geburtshilfe und Frauenheilkunde*,; 80(06): 601-610.
7. Mohammed F., Shahin M., Youness E., Hassan H. (2018). Survivorship in Women Undergoing Gynecological and Breast Cancer Treatment in Upper Egypt: The Impact of Quality-of-Life Improvement Educational Program". *American Research Journal of Gynaecology*.; 2(1): 1-28.
8. Said S., Hassan H., Sarhan A. (2018). Effect of an Educational Intervention on Women's Knowledge and Attitude Regarding Cervical Cancer. *American Journal of Nursing Research*.; 6(2): 59-66.
9. Park, J. W., Han, K., Shin, D. W., Yeo, Y., Chang, J. W., et al. (2021). Obesity and breast cancer risk for pre-and postmenopausal women among over 6 million Korean women. *Breast cancer research and treatment*, 185: 495-506.
10. Farvid, M. S., Holmes, M. D., Chen, W. Y., Rosner, B. A., Tamimi, R. M., et al. (2020). Postdiagnostic fruit and vegetable consumption and breast cancer survival: prospective analyses in the nurses' health studies. *Cancer research*, 80(22): 5134- 5140
11. Hassan H., Zahran K., Youness E., Nady F. (2015). 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 Journal of Nursing and Midwifery*, , 1(3): 13-26.
12. Nady F., Zahran K., Youness E., Hassan H. (2014). 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 Scientific Nursing Journal*, 2(3): 1-13.
13. Modak, B. (2020). Anti-Cancer Diet: Eat Well To Live Longer. *Int. J. Res. Rev*, 7: 2237-2454.
14. Rock, C. L., Thomson, C., Gansler, T., Gapstur, S. M., McCullough, M. L., et al. (2020). American Cancer Society guideline for diet and physical activity for cancer prevention. *CA: a cancer journal for clinicians*; 70(4): 245-271.
15. Ortega, M. A., Fraile-Martínez, O., García-Montero, C., Pekarek, L., Guijarro, L. G., et al. (2020). Physical activity as an imperative support in breast cancer management. *Cancers*, 13(1): 55.
16. Hassan H., Ahmed W., Ahmed Arafa A. (2019). Physical Activity and Menstrual Disorders Among School Girls in Southern Egypt. *International Journal of Studies in Nursing*, 4(3): 54-59.
17. D'Ascenzi, F., Anselmi, F., Fiorentini, C., Mannucci, R., Bonifazi, M., & Mondillo, S. The benefits of exercise in cancer patients and the criteria for exercise prescription in cardio-oncology. European journal of preventive cardiology, 2021; 28(7): 725-735.
18. Satpathi, S., Gaurkar, S. S., Potdukhe, A., Wanjari, M. B., & Wanjari, M. (2023). Unveiling the role of hormonal imbalance in breast cancer development: A comprehensive review. *Cureus*,; 15(7): 1-25
19. Shamshirian, A., Heydari, K., Shams, Z., Aref, A. R., Shamshirian, D., et al. (2020). Breast cancer risk factors in Iran: a systematic review & meta-analysis. *Hormone Molecular Biology and Clinical Investigation*, 41(4): 7-25
20. El Sharif, N., & Khatib, I. (2023). Healthy Lifestyle and Breast Cancer Risk in Palestinian Women: A Case-Control Study. *Nutrition and Cancer*, 75(3): 901-911.
21. Springer, T. (2021). The Role of Reproductive Risk Factors in Hereditary Breast Cancer Within BRCA Mutation Carriers: Systematic Review and Meta-Analysis. *Georgetown University*.
22. Nady F., Said M., Youness E., Hassan H. (2018). Effect of Nursing Intervention Program on Quality-of-Life Improvement for Women Undergoing Gynecological and Breast Cancer Treatment. *Assuit Scientific Nursing Journal*; 6(15): 62-77.
23. Atwa A., Hassan H., Ahmed S. (2019). The impact of a hospital-based awareness program on the knowledge of patients about breast cancer and cancer cervix. *International Journal of Studies in Nursing*.; 4(1): 20-29.
24. Mohamed A., Hassan H., Gamel W., Arafa A. (2019). Awareness about breast and cervical cancers among nursing students in Beni-Suef University. *Journal of Nursing Education and Practice*, 9(5): 44-51.
25. Zeinomar, N., Qin, B., Amin, S., Lin, Y., Xu, B., et al. (2023). Association of cigarette smoking and alcohol consumption with subsequent mortality among black breast cancer survivors in New Jersey. *JAMA network open*, 6(1): e2252371-e2252371.
26. Zagloul M., Naser E., Hassan H. (2020). Cervical Cancer Knowledge, Attitude, and Practices: Educational Program Management for Female Workers at Port Said University. *International Journal of Studies in Nursing*; 5(3): 1-16.
27. Eidemüller, M., Holmberg, E., Lundell, M., & Karlsson, P. (2021). Evidence for increased susceptibility to breast cancer from exposure to ionizing radiation due to a familial history of breast cancer: results from the Swedish Hemangioma Cohort. *American Journal of Epidemiology*, 190(1): 76-84.
28. Mohamed S., Fatma Saber Nady F., Hassan H. (2025). Breast Cancer Preventive Measures among Female Workers at Beni-Suef University: Educational Program Based on Health Belief Model. *Egyptian Journal of Health Care*, 16 (1): 117-142.
29. Hassan H. (2020). Early-Stage Cervical Cancer: Survivorship and Fertility preservation. *American Research Journal of Oncology*, 2(1): 1-3.
30. Farag D., Mohamed S., Malk R., Hassan H. (2024). Effectiveness of Educational Intervention Program about Cervical Cancer on Working Women's Knowledge, Attitude, and Practice at Beni-Suef University. *Egyptian Journal of Health Care*; 15 (1): 1-16.
31. Nady F, Zaki S, Hassan H. (2025). Female workers' knowledge about breast cancer preventive measures at Beni-Suef

University. *Nursing & Care Open Access Journal*.; 11(1): 16–20.

32. Zaki S., Hassan H., Nady F. Female Workers' Knowledge about Breast Cancer at Beni-Suef University: Effect Socio-demographic characteristics. American Journal of Public Health Research, 2025; 13(1)
33. Nady F., Zaki S., Hassan H. (2025). Study Relation between Female Workers' History and Their Knowledge About Breast Cancer, Breast-Self-Examination and Preventive Measures. *Journal of Pediatric Advance Research*, 4(1):1-9.
34. Zaki S., Nady F., Hassan H. (2025). Female Workers' Total Practices Regarding Breast Self-Examination at Beni-Suef University. *Journal of Clinical and Laboratory Research*, 8(2): 1-12.
35. Hassan H., Zaki S., Nady F. (2025). Relation between Female Workers' History and Their Knowledge About Breast Cancer, Breast-Self-Examination and Preventive: Effect Of An Educational Program. *Journal of Community Medicine and Public Health Reports*,; 6(2)
36. Zaki S., HassanH., Nady F. (2025). Breast Self-Examination Practices: An Educational Program for Female Workers' at Beni-Suef University. *Journal of Community Medicine and Public Health Reports*, 6(2).
37. Elzeblawy H., Kamal H., Abd El Salam S., Ali R. (2021). Survivors from Cervical Cancer: Impact of an Educational Program on Self-Knowledge and body-Image. *Public Health Open Access*, 5(2):1-9.
38. Hassan H., Mohammed R., Ramadan S., Masaud H. (2021). Call for Alleviating Sexual Issues among Cervical Cancer Survivors' Women in Northern Upper Egypt. *Journal of Obstetrics Gynecology and Reproductive Sciences*, 5(3): 1-11.
39. Hassan H., Ramadan S., Ali R., Kamal H. (2021). Sexual Issues among Cervical Cancer Survivors' Women in Northern Upper Egypt. *Journal of Advanced Trends in Basic and Applied Science*, 1(1): 1-11.
40. Ali R., Abd El Salam S., Kamal H., Hassan H. (2021). Women with Cervical Cancer: Impact of an Educational Program their knowledge. Journal of Obstetrics Gynecology and Reproductive Sciences, 5(2): 1-8.
41. Hassan H., Zaki S., Nady F. (2025). Effect of an Educational Program on Female Workers' Knowledge about Breast Cancer Preventive Measures at Beni-Suef University. *American Journal of Nursing Research*.; 13(1):1-10.
42. Hassan H., Zaki S., Nady F. (2025). Female Workers' Socio-demographic characteristics and Their Total Knowledge about Breast Cancer: Effect of an Educational program at Beni-Suef University, *International Journal of Nursing Science*, 15(1):1-8.
43. Hassan H., Nady F., Zaki S. (2025). Northern Upper Egyptian Female Workers' Beliefs Regarding Breast Cancer according to Health Belief Model: Effect of an Educational Program, *Public Health Open Access*, 9(1)
44. Kamberi, F., Lalo, R., & Sinaj, E. (2017). Breast cancer health beliefs and the use of mammography among women randomly selected in Vlora, Albania. *EC Gynaecology*, 4(6): 204-211.
45. Marmarà, D., Marmarà, V., & Hubbard, G. (2017). Health beliefs, illness perceptions, and determinants of breast screening uptake in Malta: A cross-sectional survey. *BMC Public Health*, 17: 416: 2-19.
46. Masoudiyekta, L., Dashtbozorgi, B., Gheibizadeh, M., Saki, A., & Moradi, M. (2015). Applying the health belief model in predicting breast cancer screening behavior of women in Dezfu health centers. *Jundishapur J Chronic Dis Care*; 4(4), 26.
47. Abd-Elaziz,N., Kamal,H & Abd-Elhady,H. (2021). Effect of Breast Self-Examination Programme on Women's Awareness for Early Detection of Breast Cancer: *Minia Scientific Nursing Journal*, 10 (1): 132-140.
48. Alameer, Mahfouz, Alamir, Ali, & Darraj. (2018). Effect of Health Education on Female Teachers' Knowledge and Practices Regarding Early Breast Cancer Detection and Screening in the Jazan Area: A Quasi-Experimental Study. *Journal of Cancer Education*, 34(5): 865-870.
49. Elbasuony, R. A. A., Fadel, E. A., & El-Nemer, A. M. R. (2020). Effect of a Preventive Breast Cancer Guideline on Knowledge of Healthy *Women with Family History*, 7(3): 553-566.
50. Nema Ram,G. (2020). Impact of an Educational Programme on Knowledge on Breast Cancer and Practice of Breast Self-Examination among Women: *Indian Journal of Continuing Nursing Education*, 21(2): 155-158.
51. Osborne, C., Ostir, G. V., Du, X., Peek, M. K., & Goodwin, J. S. (2005). The influence of marital status on the stage at diagnosis, treatment, and survival of older women with breast cancer. *Breast cancer research and treatment*, 93, 41-47.
52. Shakor, J. K., Mohammed, A. K., & Karotia, D. (2019). Determinants of breast self-examination practice amongst Iraqi/Sulaimani Women using Champion Health belief model and breast CAM. *International Journal of Medical Research & Health Sciences*, 8(9): 51-59.

DOI:10.31579/2768-0487/169