Effect of Instructional Module on Knowledge, Attitudes and Practices of Women Undergoing Breast Cancer Screening Mammography

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ABSTRACT

Worldwide, breast cancer is the most widespread type of cancer and the second cause of death among women. Mammography is an effective tool for screening women to early detect breast cancer. **Aim:** Was to determine the effect of instructional module on knowledge, attitudes and practices of women undergoing breast cancer screening mammography. **Subjects and method: Design:** A quasi experimental research design was used. **Setting:** Outpatient Gynecological Clinic and Mammogram unit (Comprehensive Clinic of Tanta Main University Hospital), and Mammogram Unit (Tanta International Hospital for University Education) affiliated to Ministry of High Education and Scientific Research, Outpatient Gynecological Clinic (El-Menshawy General Hospital), and Early Detection Unit (Oncology Institute in Tanta) affiliated to Ministry of Health and Population. **Subjects:** A convenient sample of 100 women (study and control groups) who fulfilled the inclusion criteria. **Tools: (I):** Women's knowledge regarding breast cancer and mammography, **(II):** Attitudes **(III):** Self-efficacy and **(IV):** Practices regarding mammography. **Results:** There was a significant relation between knowledge, attitudes, and practices of women undergoing breast cancer screening mammography (p<0.001)**,** as well as between age and self-efficacy (r= 0.346, p= 0.014). There was no relation between knowledge, attitudes, practices, age, education, income, gravidity, and parity (p>0.5). **Conclusion:** Implementation of the instructional module improved women's knowledge, attitudes, self-efficacy, and practices of women undergoing breast cancer screening mammography. **Recommendations:** Mammography is a significant technique to early detect breast cancer. It should be made available for all women at all health care settings to decrease mortality and morbidity rates related to breast cancer.

Key words: Mammography, Instructional Module, Knowledge, Attitude, Self-Efficacy, Practice

Introduction

Breast cancer (BC) is the greatest widespread most common malignant cancer in women. It is a major complex disease negatively affects physical, emotional, and psychological wellbeing, and quality of women's life both in developed and developing countries; due to the challenges related to its diagnosis, lengthy treatments and family and work problems (**American Cancer Society, Key Statistics for Breast Cancer 2023, American Cancer Society, Breast Cancer Facts and Figures 2019, Harbeck et al. 2019, & WHO 2021).**

Worldwide, breast cancer is the most common type of cancer and the second main cause of death among women (**Chen et al. 2023)**. Worldwide, breast cancer accounts for 31% of cancer among women, and contributing to about 2.5% (1 in 39) of their death. Internationally, there are 2,261,419 new diagnosed cases in 2020 through the world (**The American Cancer Society Breast Cancer Facts and Statistics, 2023, & American Society of Clinical Oncology, 2023**). In Egypt, breast cancer is the most common type of women's cancer, and the first cause of their death. It represents 33% of females' cancer and more than 22,000 new cases each year (**Abdelaziz et al. 2021, & Alorabi et al. 2021**).

Causes of breast cancer are not clearly identified, but many risk factors contribute to occurrence of the disease. These include; being a woman, middle age, family history, type 2 diabetes, dense breast tissue, hormonal therapy and contraceptives, and life style factors as obesity, alcohol addiction and exposure to radiation (**Chen et al. 2023, Division et al. 2022, & Sun et al. 2017).** Symptoms and signs of women's breast cancer include presence lump or thickening, change in the size, shape or appearance of the breast, orange-peel skin, a newly inverted nipple, cracking, scaling, crusty pigmented areola, skin redness (**Azuero et al. 2018, & Ikhuoria et al. 2018)**.

Methods used to diagnose breast cancer in women include monthly breast self-examination, annual, semiannual clinical breast examination, ultra sound, breast Magnetic Resonant Imaging (MRI), annual mammography, or combination of these methods. These methods can help to early detect the disease and reduce mortality rate by about one third percent. (**Moodley et al. 2018, DeSantis et al. 2017, Luleci et al. 2022, & Hamshari et al. 2021).**

Early diagnosis and treatment of breast cancer can increase survival rate of affected women to 90% or higher (**WHO 2021, &**

Schrager 2020). Breast cancer survival rate in Egypt ranges from 28% to 68%, because most women search for diagnoses of breast cancer at a late stage after progression of the disease with consequent poor outcomes **(Abdelaziz et al. 2021, & Alorabi et al. 2021)**. Treatment of breast cancer includes surgery, radiation, and anti-cancer medicines as hormones, chemotherapy and antibodies (**National Cancer Institute 2017).**

Egypt national cancer committee improved the national population-based, and the hospital-based cancer registries, established a national plan to control breast; decrease exposure to risk factors, ensure effective treatment, provide guidelines for diagnosis and treatment, and enhance screening for early detection of breast cancer **(Alorabi et al. 2021, & Zaghloul et al. 2018**). In this regard, mammography is a main component of the comprehensive breast cancer surveillance plan **(Reeves RA. & Theresa Kaufman 2023, & Moghaddam et al. 2018).** Breast cancer screening mammography is an effective tool and excellent technique for screening of asymptomatic women to early detect, and manage breast cancer; consequently, reduces mortality rate **(DeSantis et al. 2017, Yik et al. 2022, & Luleci et al. 2022**).

A previous studies stated that women lacked knowledge, and practice regarding perform mammography. Only 2% of Egyptian women who surveyed breast cancer had performed breast cancer screening mammography **(Abdelaziz et al. 2021, Almanie et al. 2017, Hamshari et al. 2021, & Alorabi et al. 2021).** Additionally, women's ability to perform the breast cancer screening mammography can be affected by lack of knowledge and awareness regarding breast cancer and the importance of early diagnosis and management, social, cultural, and financial factors, poor attitudes and misconceptions regarding breast cancer screening, fear of the disease, fear of potential side effects of radiation, and false-positive results that lead to additional assessment. Other factors include low self-efficacy which is a strong predictor of women's intention to perform mammography and unsatisfactory practices before, during and after the breast cancer screening mammography that can lead to false positive results **(Alenezi et al. 2022, Abdullah et al. 2022, Rehman et al. 2022, Luleci et al. 2022, AWHONN 2017, Kushwaha et al. 2021, Heena et al. 2019, & Almanie et al. 2017**).

The maternity and gynecological nurses have an essential role in this regard. They are the first line health care providers

who come in contact with women during their different stages of life, conducting assessment, examinations, investigations, care plans, and giving medications. They can provide information to women regarding breast cancer; definition, incidence causes, risk factors, signs and symptoms, diagnosis, and treatment options. They can coordinate care from diagnoses to treatment and follow up of women who have breast cancer (**Alenezi et al. 2022, Kushwaha et al. 2021, AWHONN 2017, Dandash et al. 2017, Almanie et al. 2017, & Brevik et al. 2021).**

The maternity and gynecological nurses can also give physical and emotional support, answer questions, refer to other services, act as a link with all members of the treatment and diagnostic team, and provide health education to women undergoing breast cancer screening mammography, and support women and their families or care givers who have fear to be diagnosed with breast cancer (**Alenezi et al. 2022, Dandash et al. 2017, El Asmar et al. 2018, Al-Mousa et al. 2020, & Saad et al. 2022**).

Significance of the problem:

Although breast cancer is a fatal disease, its seriousness can be reduced by early detection and management to reduce maternal mortality from the disease. Globally, previous studies confirmed that breast cancer screening mammography can help in early detection and management of breast cancer (**The American Cancer Society medical and editorial content team, 2022**). In Egyptian Only 2% of women who surveyed breast cancer had performed breast cancer screening mammography (**Abdelaziz et al. 2021).** The maternity and gynecological nurses can cooperate with mammography specialists to improve knowledge, attitudes, and practices of women undergoing breast cancer screening mammography (before, during, and after mammography) to prevent false positive diagnosis of breast cancer via implementation of instructional modules and use of educational brochures or booklets. Scarce researches exist regarding the effect of instructional module on knowledge, attitudes and practices of women undergoing breast cancer screening mammography (**Almanie et al. 2017, Alenezi et al. 2022, Brevik, et al. 2021, AWHONN 2017, Abdelaziz et al. 2021, Alorabi et al. 2021, & Rakhshani et al. 2022).**

Aim:

The aim of this study was to evaluate the effect of instructional module on

knowledge, attitudes and practices of women undergoing breast cancer screening mammography.

Research hypothesis: Knowledge, attitudes and practices of women undergoing breast cancer screening mammography are expected to be improved after implementation of the instructional module.

Subjects and method:

Design: A quasi experimental research design was used to conduct this study. Quasi-experimental design is used to assess interventions that do not use random sample with the aim to determine connection between the interference and the resulted effect (**Thomas, 2022**).

Setting: The study was conducted at Outpatient Gynecological Clinic and Mammogram Unit (Comprehensive Clinic of Tanta Main University Hospital), and Mammogram Unit (Tanta International Hospital for University Education) that are affiliated to Ministry of High Education and Scientific Research, Outpatient Gynecological Clinic (El-Menshawy General Hospital), and Early Detection Unit (Oncology Institute in Tanta) that are affiliated to Ministry of Health and Population.

Subjects: A convenient sample of 100 women who fulfilled the following **inclusion criteria** was included in the study**:** Aged 25 years and more, can read and write, and available at the previously mentioned settings during the time of data collection.

They were divided into two groups (study and control). The sample size and power analysis were calculated using Epi-Info software statistical package created by World Health Organization and Center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002. Calculation of the sample size was estimated at 95% confidence limit. So, the sample size was determined to be (n= 85) women, increased to (n=100) to improve quality of the data.

Tools of data collection:

Four tools were developed and used.

Tool (I): Women's knowledge regarding breast cancer and mammography: It was developed by the researchers after reviewing recent related literatures (**Abda et al. 2017, Mansur et al. 2021, Al-Mousa et al. 2020, Alameer et al. 2019, Majed et al. 2019, & Al-Zalabani et al. 2018).** It included the following three parts as follows:

Part (A): It included 15 items as follows:

Socio-economic characteristics of the studied women 6 items; age, marital status, residence, education, occupation and monthly income), medical history one item; presence of chronic disease, Obstetrics and Gynecological history 8 items; menstrual regularity, gravidity, parity, breast feeding of the babies, presence of gynecological diseases, and breast cancer, family history of breast cancer, and breast self-examination).

Part (B): It included 10 items of knowledge regarding breast and breast cancer as follows: Anatomy and function of the breast, definition, incidence, etiology, risk factors, manifestation, management, complications and prevention of breast cancer. The total score ranged from 0 to 20.

Part (C): It included 7 items of knowledge regarding breast cancer screening mammography as follows: Definition, uses, importance, age when mammography should be started, monthly best time for performing mammography, complications, and factors affecting mammography results. The total score ranged from 0 to 14. **The scoring system of women's knowledge was as follows:** Correct and complete answers scored (2), Correct and incomplete answers scored (1), Incorrect answers and didn't know scored (0). **The total score level of woman's**

knowledge was as follows: High level of knowledge ≥75%, Moderate level of knowledge 50 - <75%, Low level of knowledge <50%

Tool (II): Women's attitudes regarding breast cancer screening mammography: It was adapted by the researchers from relevant literatures (**Abda et al. 2017, Mansur et al. 2021, Al-Mousa et al. 2020), Alameer et al. 2019, Majed et al. 2019, Al-Zalabani et al. 2018, & Dandash et al., 2017**). It included 7 statements; four assessed negative attitudes and three assessed positive attitudes of women. The negative items are as follows: Nobody wants mammography; I am terrified of the radiation I get during mammography; a mammography is painful; and mammography causes feelings of shame. The positive items are as follows: It is necessary to have information about mammography; it is necessary to know the mammography procedures (before, during and after); and it is important to plan a mammography. The questions were answered using "yes" and "no". The total attitudes score ranged from 0 to 7. **The scoring system of women's attitudes was categorized as follows:** Yes, scored (1) and no scored (0) and the scores were inverted for negative statements. **The total score level of woman's attitudes was calculated**

as follows: Positive attitudes ≥50%, Negative attitudes <50%)

Tool (III): Women's Self-efficacy regarding breast cancer screening mammography: It was adapted by the researchers from relevant literatures (**Alyami et al. 2021, Moshki et al. 2017, & Che et al. 2019**). It included the following 10 statements: I can arrange transportation for a mammography, I can arrange my housework for a mammography, I can talk to people at the radiology center about my concerns about having a mammography, I can do a mammography even if I'm worried, I can get a mammography even if I don't know what to expect, I can find a way to pay for the mammography, I can schedule a mammography, I can get a mammography if I really want to, I know how to start getting a mammography, and I can find a place for a mammography. Women's self-efficacy was measured in a unipolar Likert Scale. The total score was calculated by finding the sum of the all items. It ranged between 10 and 40, with a higher score indicating more self-efficacy. For the nature of this study, "not at all true" choices were added to "hardly true", and "moderately true" choices were added to "exactly true". **The scoring system of women's self-efficacy was categorized as follows:** Not at all true= 1, hardly true= 2,

moderately true= 3, exactly true= 4. **The total score level of woman's self-efficacy was calculated as follows:** High self-efficacy ≥75%, Moderate self-efficacy 50 - <75%, low self-efficacy <50%.

Tool (IV): An observational checklist of women practices regarding the breast cancer screening mammography: It was developed by the researchers after reviewing recent related literature (**Abda et al. 2017, Saei et al. 2018, El Asmar et al. 2018, & Dandash et al. 2017**). It included the following three parts:

Part (A): Women's practices before the breast cancer screening mammography: It included the following 8 statements: Scheduled mammography at a time when the feeling of pain in the breast is low, knew that the mammography takes about 30 minutes, told her companions that they are not allowed to enter the examination room for fear of exposure to radiation, avoid using deodorant or powder under the armpits on the day of the examination, take painkillers prescribed by the doctor one hour before the examination in order to overcome the pain that may occur during the mammography, take off clothes and remove jewelry and ornaments from the upper body, wear a dress that opens in the front before starting the

examination, and notify the mammogram technologist if she has (cosmetic) breast implants.

Part (B): Women's practices during the breast cancer screening mammography: It included 7 statements describing what is the woman doing during the mammography (implementing the technicians / radiologists instructions) as follows; Stand in front of the mammography machine used for examination, place the breast on the hard surface of the mammogram machine close to another surface to press together on the breast until its area is expanded and the tissues are sufficiently distributed, notify the radiologist if the pain is unbearable, place the woman's arms outside the area to be photographed, standing still during the mammography procedure because the movement leads to unreliable results, holding breath during a mammography, after photographing the first breast from all directions, and repeated the same steps with the other breast.

Part (C): Women's practices after the breast cancer screening mammography: It included the following 2 statements: The woman scheduled a date for receiving the mammography results and for follow up with the specialist doctor.

The scoring system of women's practices was categorized as follows: Done scored (1), Not done (0). **The total score of women's practices was calculated as follows:** Satisfactory practice ≥ 50 %, Unsatisfactory practice 0 < 50%.

Method

Approval: An official letter clarifying the purpose of the study was obtained from the Faculty of Nursing Tanta University and submitted to the responsible authorities of the selected setting for permission to carry out the study.

Ethical and legal consideration: Approval of the ethical committee at Faculty of Nursing Tanta University was taken, an informed consent was taken from each the entire study subjects, all participants were informed about the purpose of the study, the right to withdraw at any time, the nature of the study did not cause any harm or pain, confidentiality and privacy was taken into consideration regarding data collection, and the data was used only for the purpose of this study.

Tools development: Tools (I), and **(IV)** were developed by the researchers after extensive review of recent related literature, and **tools (II) and (III)** were adapted from relevant literatures. The four tools were tested for content and construct

validity by a jury of five Maternal and Neonatal Health Nursing experts. Cronbach's Alpha coefficient was used to measure the internal consistency / reliability of the study tools.

Pilot study: After development of the tools, a pilot study was carried out on 10% of women (10 women) 2 women from each setting to test the clarity, feasibility and applicability of the tools. Then, the tools were made ready for use and the women who participated in the pilot study were excluded from the actual study sample.

The actual study field: The study is composed of the following: Knowledge regarding anatomy and physiology of the breasts, knowledge regarding breast cancer definition, incidence, etiology, risk factors, manifestation, diagnoses, complications, prevention, and management. It also included knowledge regarding breast self-examination, and regarding breast cancer screening mammography; definition, importance, types, and woman's practices before, during and after mammography examination.

Study goal and objectives: The study **goal** was to improve women's knowledge, attitudes, self-efficacy and practices regarding the breast cancer screening mammography to encourage early detection

and management, and to reduce mortality rate due to breast cancer.

The study **objectives** were to improve knowledge regarding breast anatomy, breast cancer, and breast cancer screening mammography, to establish communication to improve rapport and an awareness of the women's needs, and to provide reassurance, support, and practical information to improve their attitudes regarding breast cancer screening mammography for early detection and management of breast cancer. The study objectives also were to enhance women's self-efficacy and correct practice before, during, and after the breast cancer screening mammography, to avoid falls positive results of the exam, and to ensure that women and her family or those who take care for her are more aware of the breast cancer screening mammography for early detection and management of breast cancer and improve breast care nursing.

To attain the study goal and objectives, the instructional module was conducted through the following four phases **(Assessment, planning, implementation and evaluation):**

Phase I: Assessment phase (Pretest):

Tool (I) part (A) was used by the researchers one time for both the control and the study groups before implementation

of the instructional module to assess socioeconomic, medical, Obstetrics and Gynecological history of the studied women**.**

Tool (I) part (B) and (C) were used by the researchers three times (before, immediately, and in the day of performing the mammography) post implementation of the instructional module to assess knowledge of the study and control groups regarding breast anatomy, breast cancer, and breast cancer screening mammography. **Tools (II)** and **(III)** were used by the researchers one time for the control group before the module implementation and two times for the study group (before, and in the day of performing the mammography) post implementation of the instructional module to assess attitudes and self-efficacy of women undergoing breast cancer screening mammography.

Tool (IV) was used by the researchers one time for both the control and the study groups post implementation of the instructional module (in the day of performing the mammography). The researchers observed the women performance during the screening mammography from the windows of the mammography rooms where the technicians / radiologists stand to assess practices of women undergoing breast cancer screening

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mammography (before, during, and after the mammography).

Phase II: Planning phase: The **goal** of the instructional module was to enhance knowledge, attitudes, and practices of women undergoing breast cancer screening mammography. Its **objectives** were to explain knowledge regarding breast anatomy, breast cancer, and breast cancer screening mammography, to evaluate attitudes, self-efficacy, and practices of women undergoing breast cancer screening mammography.

The researchers developed and **prepared the information contents** of both theoretical and practical sessions based on the goal and objectives, assessment of women's knowledge, attitudes, and self-efficacy, and practices in the assessment phase before conducting the instructional module's sessions, and based on relevant literatures.

The researchers also **developed an educational booklet** guided by relevant literatures, and based on assessment of women's knowledge regarding breast anatomy, breast cancer, and breast cancer screening mammography to improve knowledge, attitudes, self-efficacy, and practices of the studied women.

The researchers also **prepared different teaching and learning methods and materials** included group discussion, demonstration, re-demonstration, role play, video, poster, and power point presentation, real breast self-examination model, deodorant, powder, adornments, cosmetics, painkillers, jewelry, clothes, and dress opens in the front to improve women′s knowledge, attitudes and practices regarding mammography.

Phase III: Implementation phase: This phase was carried out by the researchers at the pre-mentioned study settings. The studied women were divided into two groups (study and control); 50 women in each group. Women in the control group were interviewed in the assessment phase of the instructional module; to evaluate their knowledge, attitudes, and practices regarding breast cancer screening mammography.

The instructional **module composed of five sessions**; three theoretical sessions with duration ranged from 30-45 minutes for each session, and two practical sessions with duration ranged from 45-60 minutes for each session. Women in the study group were further divided into 10 subgroups; 5 women in each group. Each subgroup was interviewed separately during the morning shifts. **The instructional module was**

conducted in the following order: The researchers' first interview with the women undergoing breast screening mammography was in the day they came to have physical examination. The researchers invited them, and had their informed consent to participate in the study. Then, the researchers gave the pre designed booklet to each participant in the study, and conducted the first and the second theoretical sessions and the first practical session of the instructional module.

The **first theoretical session** included orientation of the instructional module goal and objectives, and knowledge regarding breast anatomy. The **second theoretical session** included knowledge regarding breast cancer (definition, incidence, manifestation, risk factors, etiology, prevention, diagnoses complications, and management. The **first practical session** included demonstration and re-demonstration of the steps and methods of breast self-examination by the woman. The researchers conducted the third theoretical session and the second practical session in the day that the studied women came to have a time schedule for the breast cancer screening mammography.

The **third theoretical session** included knowledge regarding breast cancer screening mammography. **The second**

practical session included practices before, during, and after) performance of the breast cancer screening mammography. **The previously mentioned teaching methods and learning methods were used** by the researchers to enhance women's knowledge, attitudes, self-efficacy, and practices of women undergoing the breast cancer screening mammography. Each session started with feedback and re demonstration of the previous session and the introduction to the new session's objectives. At the end of each session, the researchers informed the women about the next session's objectives and allowed them to ask questions and provided a period of discussion. The study data were collected from January to August 2022.

Phase IV: Evaluation phase. The effect of the instructional module was evaluated by the researchers to determine the extent to which the module achieved improvement of knowledge, attitudes, and practices of women undergoing breast cancer screening mammography; in terms of the difference between pre and post-test levels of knowledge, attitudes and practices measured by this study tools. Women's knowledge regarding breast anatomy, breast cancer, and breast cancer screening mammography were assessed three times by using **Tool (I) parts (B) and (C)**

(before, immediately and in the day of performing the mammography) post implementation of the instructional module. Women's attitudes regarding mammography were assessed two times by using **Tool (II)** (before, and in the day of performing the mammography) post implementation of the instructional module. Women's self-efficacy was assessed two times by using **Tool (III)** before, and in the day of performing the mammography) post implementation of the instructional module. Women's practices regarding mammography were assessed one time by using **Tool (IV)** (before, and in the day of performing the mammography) post implementation of the instructional module.

Data collection: Data of this study were collected from January to August 2022.

Statistical analysis: The collected data were organized, tabulated and statistically analyzed using SPSS version 19 (Statistical Package for Social Studies) created by IBM, Illinois, Chicago, USA. For numerical values the range mean and standard deviations were calculated. The differences between two mean values were calculated using student's t test. When numerical data were not following the normal distribution Mann-Whitney test was used to compare between cases and control. Differences between before and after intervention in the

same group were tested by Wilcoxon singed rank test. For categorical variables; the number and percentage were calculated and differences between subcategories were tested by chi square and Monte Carlo Exact Test (MCET) when Chi square was not applicable. The correlation between two variables was calculated using Pearson's correlation coefficient (r) for normally distributed variables and Spearman's correlation coefficient (rho) for variables not normally distributed based on types of variables whether numerical or ordinal. The level of significant was adopted at p<0.05, and a highly significance was adopted at P<0.01 for interpretation of results of tests significance (**) to find out the study outcome.

Results:

The results of the present study are demonstrated in 8 tables and 3 figures as follows:

Table (1): Indicates socio-economic characteristics of the studied women. It illustrates that concerning age in years of the study group; 46% of them were between 40 and 49 years and the range of their age was 25-62, and mean + SD (45.98+9.18); compared to 42% of the control group and the range of their age was 26-64, and mean + SD (45.72+9.94); with no significant statistically difference between both groups (p=0.892). The table also presents

that (66.0%, 66.0%, 80.0%, 68.0%, and 66.0% respectively) of the study group were married, urban, secondary school educated, working, and had insufficient family income; compared to (62.0%, 58.0%, 76.0%, 56.0%, and 72.0% respectively) of the control group with no statistically significant difference between both groups (p>0.05).

Table (2): Shows medical, obstetrics and gynecological history of the studied women. The table clarifies that that concerning medical and reproductive history of the studied women, (28.0%, 64.0%, 50.0%, 40.0%, 40.0%, 40.0%, 36.0%, 52.0%, and 30.0% respectively) of the study group had chronic diseases, regular menstruation, more than two pregnancies, and deliveries, breastfed their babies, gynecological diseases, breast cancer, family history of breast cancer, and performed breast self-examination; compared to (38.0%, 54.0%, 46.0%, 44.0%, 34.0%, 34.0%, 30%, 62.0%, and 40.0% respectively) of the control group with no significant statistical difference between both groups (p>0.05).

Table (3): Displays total score level of knowledge of the studied women regarding breast and breast cancer, and breast cancer screening mammography pre immediately post, and in the day of performing the mammography after implementation of the instructional module. It identifies that both the study and the control groups had low levels of knowledge regarding breast cancer (100% and 100% respectively); and regarding mammography (98% and 98% respectively) before

implementation of the instructional module. The table also clarifies that (86%, and 98% respectively) of the study group had high level of knowledge regarding breast cancer and breast cancer screening mammography immediately post and 96% had moderate level of knowledge in the day of performance of the mammography after implementation of the instructional module; compared to 98% of the control group had low level of knowledge with a high significant statistical difference between both groups (p=0.001).

Table (4): Indicates attitudes of the studied women regarding breast cancer screening mammography pre and post implementation of the instructional module. It illustrates that (70.0%, 66.0%, 72.0%, and 58.0% respectively) of women in the study group had negative attitudes toward the mammography and (22.0%, 30.0%, and 22.0% respectively) had positive attitudes before implementation of the instructional module; compared to (24.0%, 24.0%, 24.0% and 18.0% respectively) had negative attitudes and (78.0%, 70.0%, and 80.0% respectively) had positive attitudes post implementation of the module in the day of performance of the mammography with a highly statistical significant difference between pre and post implementation of the instructional module among the study group (p=0.001). This table also confirms that (64.0%, 60.0%, 62.0%, 52.0% respectively) of the control group had negative attitudes and (36.0%, 34.0%, and 30.0% respectively) had positive attitudes with no statistical significant

difference between the study and the control groups before implementation of the instructional module (p>0.05).

Table (5): Specifies self-efficacy of the studied women regarding breast cancer screening mammography pre and post implementation of the instructional module. It proves that the majority (94.0%, 84.0%, 84.0%, 82.0%, 86.0%, 84.0%, 94.0%, 84.0%, 86.0%, and 80.0% respectively) of women in the study group reported "not at all true" for the self-efficacy items regarding mammography: before implementation of the instructional module; compared to (86.0%, 96.0%, 90.0%, 88.0%, 90.0%, 98.0%, 94.0%, 96.0%, 94.0%, and 80.0% respectively) reported "exactly true" post implementation of the instructional module in the day of performance of the mammography with a highly statistical significant difference between pre and post implementation of the instructional module among the study group (p=0.001). This table also reveals that (84.0%, 88.0%, 82.0%, 84.0%, 84.0%, 86.0%, 86.0%, 84.0%, 94.0%, and 94.0% respectively) of the control group reported "not at all true" with no statistical significant difference between the study and the control groups before implementation of the instructional module (p>0.05).

Table (6): Declares practices of the studied women (before, during and after performing the breast cancer screening mammography) post implementation of the instructional module. It announces that the majority of women in the study group who had the instructional module (80.0%, 84.0%, 80%, 88.0%, 76.0%, 82%, 88.0% and 78.0%, respectively) had done the necessary preparation / practices before performance of the mammography, compared to (40.0%, 44.0%, 36.0%, 46.0%, 46.0%, 46.0, 44.0%, and 32.0% respectively) in the control group with a highly statistical significant difference (p=0.001). Moreover, (90.0%, 86.0%, 74.0%, 84.0%, 100.0% 76.0%, and 82.0% respectively) of the study group had done the necessary practices during performance of the mammography, compared to (48.0%, 38.0%, 42.0%, 36.0%, 32.0% 36.0%, and 40.0% respectively) of the control group, with a highly statistical significant difference (p=0.001). Furthermore, (100.0%, 90.0%, and 74.0% respectively) of the study group had done the necessary practices after performance of the mammography, compared to (100.0%, 42.0% and 34.0% respectively) of the control group with a highly statistical significant difference (p=0.001); except for the item: Getting dressed, there was no statistical significant difference between both groups (p=1.000). The total practice score of the study group ranged between 11 and 18 with a mean + SD (15.12+1.64), compared to a range between 4 and 12 with a mean + SD (7.82+2.18) for control group.

Figures (1): Demonstrates total score level of attitudes of the studied women regarding breast cancer screening mammography. It confirms that most of the study and the control groups (92.0% and 80.0% respectively) had negative attitudes before implementation of the instructional module, compared to (94.0%, and 20.0% respectively) of the study and the control groups had positive attitudes post implementation of the instructional module.

Figures (2): Shows total score level of self-efficacy of the studied women regarding breast cancer screening mammography. It identifies that most of the study and the control groups (96.0% and 98.0% respectively) had low self-efficacy before implementation of the instructional module, compared to (98.0%, and 0.0% respectively) of the study and the control groups post implementation of the instructional module.

Figures (3): Displays total score level of practices of the studied women regarding breast cancer screening mammography. It

verifies that almost the entire study group (98.0%) had satisfactory practices regarding breast cancer screening mammography, compared to two fifths (40%) of the control group.

Table (7): Demonstrations the correlation between the studied women's knowledge, attitudes, self-efficacy, and practices regarding breast cancer screening mammography post implementation of the instructional module. It displays that there was a statistically significant relation between knowledge regarding breast cancer and knowledge, attitudes, self-efficacy and practices regarding mammography (p<0.001). There was also a significant relation between knowledge regarding mammography and attitudes, self-efficacy and practices (p<0.001), as well as between attitudes, and self-efficacy and practices (p<0.001), and between self-efficacy and practices (p= <0.001).

Table (8): Shows the correlation between the studied women's knowledge, attitudes, self-efficacy, practices, specific socioeconomic (age, education, monthly income), and Obstetrics (gravidity parity) characteristics. It reveals that there was no statistically significant relation (p>0.05) between these variables, except between age in years and self-efficacy (p<0.014).

Table (1): Socio-economic characteristics of the studied women (study and control groups) (n= 100).

Socio-economic characteristics	Study		Control		X^2	p
	n	%	n	%		
Age in years:						
<40	11	22.0	13	26.0		
40-49	23	46.0	21	42.0		
50-59	13	26.0	12	24.0		
60-69	3	6.0	4	8.0		
Range	25-62		26-64			
Mean ± SD	45.98±9.18		45.72±9.94		0.136#	0.892
Marital status:						0.151
Single	10	20.0	7	14.0	(MCET)	
Married	33	66.0	31	62.0		
Widow	7	14.0	7	14.0		
Divorced	0	0.0	5	10.0		
Residence:					0.679	0.410
Rural	17	34.0	21	42.0		
Urban	33	66.0	29	58.0		
Education:						0.052
Primary	5	10.0	7	14.0	(MCET)	
Secondary	40	80.0	38	76.0		
University	5	10.0	5	10.0		
Job:					1.528	0.216
Not working	16	32.0	22	44.0		
Primary Working	34	68.0	28	56.0		
Monthly income:					0.430	0.807
Not enough	33	66.0	36	72.0		
Enough	10	20.0	8	16.0		
Enough and saving	7	14.0	6	12.0		

Chi square test X^2 # t test   MCET= Monte Carlo Exact test

Table (2): Medical, Obstetrics and Gynecological history of the studied women (study and control groups) (n= 100).

Medical and reproductive history	Study n	Study %	Control n	Control %	X²	p
Chronic diseases	14	28.0	19	38.0	1.131	0.288
Regular menses	32	64.0	27	54.0	1.033	0.309
Number of pregnancies (gravidity):					3.869	0.144
None	15	30.0	9	18.0		
1-2	10	20.0	18	36.0		
>2	25	50.0	23	46.0		
Number of labor (parity):					4.676	0.097
None	18	36.0	9	18.0		
1-2	12	24.0	19	38.0		
>2	20	40.0	22	44.0		
Breast fed babies:					1.847	0.397
Yes	16	32.0	17	34.0		
Sometimes	20	40.0	14	28.0		
No	14	28.0	19	38.0		
Gynecological diseases:	20	40.0	17	34.0	0.386	0.534
Breast cancer:	18	36.0	15	30.0	0.407	0.523
Family history of breast cancer:	26	52.0	31	62.0	1.020	0.313
Breast self-examination: Yes	15	30.0	20	40.0	2.248	0.325
Sometimes	21	42.0	14	28.0		
No	14	28.0	16	32.0		

Chi Square test= X^2

Table (3): Total score level of knowledge of the studied women regarding breast and breast cancer, and breast cancer screening mammography pre immediately post, and in the day of performing the mammography after implementation of the instructional module (n=100).

Total knowledge	Before the module N	Before the module %	Immediately post the module N	Immediately post the module %	In the day of performing the mammography post the module n	In the day of performing the mammography post the module %
Total knowledge of the study group regarding breast and breast cancer						
Low	50	100	0	0.0	1	2.0
Moderate	0	0.0	7	14.0	48	96
High	0	0.0	43	86.0	1	2.0
Total knowledge of the control group regarding breast cancer						
Low	50	100	50	100	50	100
Moderate	0	0.0	0	0.0	0	0.0
High	0	0.0	0	0.0	0	0.0
P	1.000		<0.001		<0.001	
Total knowledge of the study group regarding mammography						
Low	49	98.0	0	0.0	1	2.0
Moderate	1	2.0	1	2.0	48	96.0
High	0	0.0	49	98.0	1	2.0
Total knowledge of the control group regarding mammography						
Low	49	98.0	49	98.0	49	98.0
Moderate	1	2.0	1	2.0	1	2.0
High	0	0.0	0	0.0	0	0.0
P			<0.001		<0.001	

Table (4): Attitudes of the studied women regarding breast cancer screening mammography pre and post implementation of the instructional module (n=100).

Women's attitudes items	Study group before the instructional module				Study group post the instructional module				Before vs. post among the study group		Control group				Study group before vs. control group	
	yes		no		yes		No		Z	p	yes		no		MCET	P
	n	%	N	%	N	%	n	%			n	%	n	%		
1. Nobody wants mammography	35	70.0	15	30.0	9	18.0	41	82.0	4.459	<0.001	32	64.0	18	36.0	0.407	0.523
2. I am terrified of the radiation I get during mammography	33	66.0	17	34.0	12	24.0	38	76.0	4.041	<0.001	30	60.0	20	40	0.386	0.534
3. A mammography is painful.	36	72.0	14	28.0	12	24.0	38	76.0	4.536	<0.001	31	62.0	19	38.0	1.131	0.288
4. Mammography causes feelings of shame.	29	58.0	21	42.0	12	24.0	38	76.0	4.123	<0.001	26	52.0	24	48.0	0.364	0.546
5. It is necessary to have information about mammography.	11	22.0	39	78.0	39	78.0	11	22.0	4.802	<0.001	18	36.0	32	64.0	2.380	0.123
6. It is necessary to know the mammography procedures (before, during and after).	15	30.0	35	70.0	35	70.0	15	30.0	3.536	<0.001	17	34.0	33	66.0	0.184	0.668
7. It is important to plan a mammography.	11	22.0	39	78.0	40	80.0	10	20.0	5.209	<0.001	15	30.0	35	70.0	0.832	0.362

Z= Wilcoxon singed ranks test
MCET= Monte Carlo Exact Test

Table (5): Self-efficacy of the studied women regarding breast cancer screening mammography pre and post implementation of the instructional module (n=100).

Self-efficacy items of the studied women Women's attitudes items	Study group before the instructional module				Study group post the instructional module				Before vs. post among the study group		Control group				Study group before vs. control group	
	Not at all true		Exactly True		Not at all true		Exactly True		Z	p	Not at all true		Exactly True		MCET	p
	n	%	n	%	n	%	n	%			N	%	n	%		
1. I can arrange transportation for a mammography.	47	94.0	3	6.0	7	14.0	43	86.0	6.058	<0.001	42	84.0	8	16.0	0.307	0.423
2. I can arrange my housework for a mammography.	42	84.0	8	16.0	2	4.0	48	96.0	6.159	<0.001	44	88.0	6	12.0	0.453	0.523
3. I can talk to people at the radiology center about my concerns about having a mammography.	42	84.0	8	16.0	5	10.0	45	90.0	5.966	<0.001	41	82.0	9	18.0	1.161	0.279
4. I can do a mammography even if I'm worried.	41	82.0	9	18.0	6	12.0	44	88.0	5.972	<0.001	42	84.0	8	16.0	0.354	0.537
5. I can get a mammography even if I don't know what to expect.	43	86.0	7	14.0	5	10.0	45	90.0	5.827	<0.001	42	84.0	8	16.0	2.380	0.123
6. I can find a way to pay for the mammography.	42	84.0	8	16.0	1	2.0	49	98.0	6.092	<0.001	43	86.0	7	14.0	0.183	0.677
7. I can schedule a mammography.	47	94.0	3	6.0	3	6.0	47	94.0	6.148	<0.001	43	86.0	7	14.0	0.792	0.352
8. I can get a mammography if I really want to.	42	84.0	8	16.0	2	4.0	48	96.0	5.884	<0.001	42	84.0	8	16.0	0.408	0.525
9. I know how to start getting a mammography.	43	86.0	7	14.0	3	6.0	47	94.0	6.310	<0.001	47	94.0	3	6.0	0.476	0.524
10. I can find a place for a mammography.	40	80.0	10	20.0	46	92.0	4	8.00	6.361	<0.001	47	94.0	3	6.0	1.231	0.188

Z= Wilcoxon singed ranks test   MCET= Monte Carlo Exact Test

Table (6): Practices of the studied women (before, during and after performing the breast cancer screening mammography) post implementation of the instructional module (n=100).
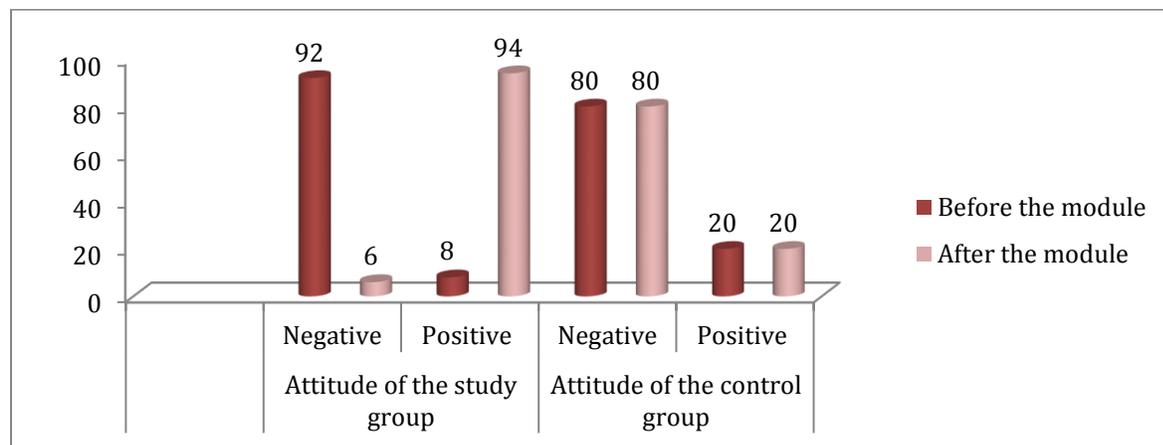
| Women's practices items	Study group		Control group		X^2	P
	N	%	N	%		
Before mammography						
1. Scheduled mammography at a time when the feeling of pain in the breast is low to avoid further sensation of pain and false negative results.	40	80.0	20	40.0	16.667	<0.001
2. Knew that the mammography takes about 30 minutes.	42	84.0	22	44.0	17.361	<0.001
3. Told her companions that they are not allowed to enter the examination room for fear of exposure to radiation.	40	80.0	18	36.0	19.869	<0.001
4. Avoid using deodorant or powder under the armpits on the day of the mammography examination.	44	88.0	23	46.0	19.946	<0.001
5. Take painkillers prescribed by the doctor one hour before the examination in order to overcome the pain that may occur during the examination.	38	76.0	23	46.0	9.458	0.002
6. Take off clothes and remove jewelry and ornaments from the upper body before starting the examination.	41	82.0	23	46.0	14.036	<0.001
7. Wear a dress that opens in the front.	44	88.0	22	44.0	21.569	<0.001
8. Notify the mammogram technologist if she has (cosmetic) breast implants.	39	78.0	16	32.0	21.374	<0.001

Chi square test X^2

Table (6) continues: Practices of the studied women (study and control groups) regarding breast cancer screening mammography after implementation of the instructional module (before, during and after performing the mammography) in the day of performing the mammography (n=100).

| Women's practices items	Study group n	Study group %	Control group n	Control group %	X^2	P
During mammography						
1. Stand in front of the mammography machine used for examinations.	45	90.0	24	48.0	20.617	<0.001
2. Place the breast on the hard surface of the mammogram machine close to another surface to press together on the breast until its area is expanded and the tissues are sufficiently distributed.	43	86.0	19	38.0	24.448	<0.001
3. Notify the radiologist if the pain is unbearable.	37	74.0	21	42.0	10.509	<0.001
4. Place her arms outside the area to be photographed.	42	84.0	18	36.0	24.000	<0.001
5. Standing still during mammography procedure because the movement leads to unreliable results.	50	100.0	16	32.0	51.515	<0.001
6. Holding breath during mammography.	38	76.0	18	36.0	16.234	<0.001
7. Repeat the same steps with the other breast after photographing the first breast from all directions.	41	82.0	20	40.0	18.537	<0.001
Post mammography						
1. Getting dressed.	50	100.0	50	100.0	0.000	1.000
2. Have a time schedule to receive the test results.	45	90.0	21	42.0	25.668	<0.001
3. Follow up with the specialist doctor.	37	74.0	17	34.0	16.103	<0.001
Total practice score: Range		11-18		4-12	# t test	<0.001
Mean ± SD		15.12±1.64		7.82±2.18	18.922#	

Chi square test X^2

Figure (1): Total score level of attitudes of the studied women regarding breast cancer screening mammography (n=100).
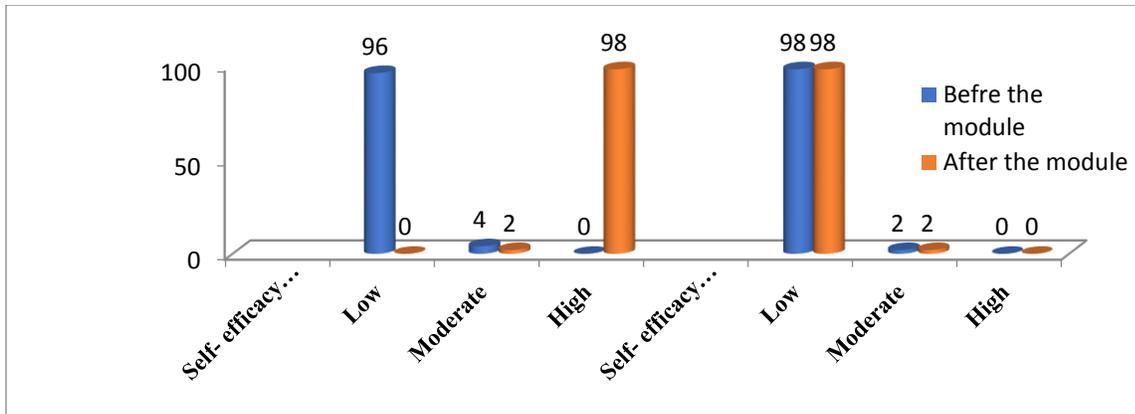
Figure (2): Total score level of self-efficacy of the studied women regarding breast cancer screening mammography (n=100).
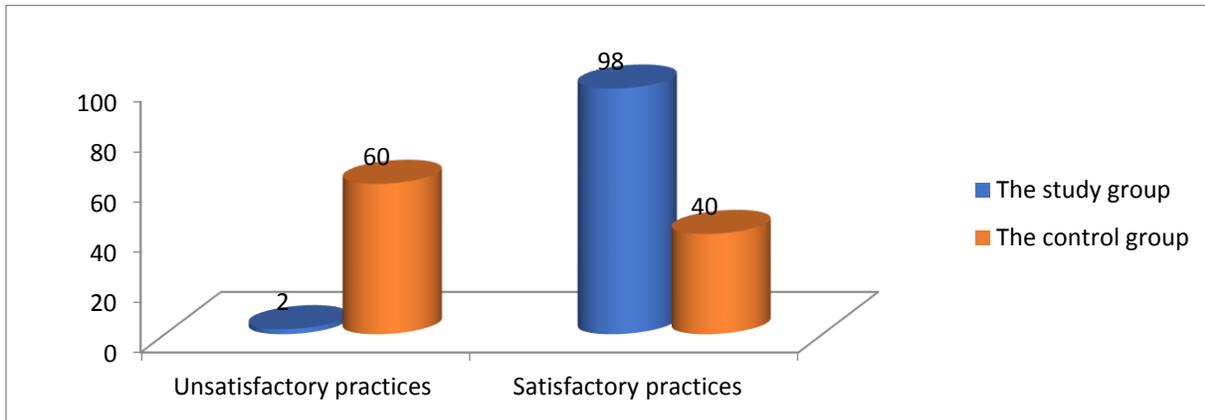
Figure (3): Total score level of practices of the studied women regarding breast cancer screening mammography (n=100).

Table (7): Correlation between the studied women's knowledge, attitudes, self-efficacy, and practices regarding breast cancer screening mammography post implementation of the instructional module (n=100).

Variables	Knowledge of breast cancer		knowledge of mammography		Attitude		Self-efficacy	
	r	p	r	p	r	p	r	P
Knowledge regarding mammography	0.792	<0.001	-----	-----				
Attitudes	0.736	<0.001	0.656	<0.001	-----	-----		
Self-efficacy	0.864	<0.001	0.854	<0.001	0.763	<0.001	-----	-----
Practices	0.766	<0.001	0.829	<0.001	0.663	<0.001	0.875	<0.001

r= Pearson's correlation coefficient   *Significant

Table (8): Correlation between the studied women's knowledge, attitudes, self-efficacy, practices, specific socioeconomic, and Obstetrics characteristics post implementation of the instructional module (n- 100).

Variables	Knowledge regarding breast cancer		Knowledge regarding mammography		Attitude regarding mammography		Self-efficacy		Practice regarding mammography	
	r/rho	P	r/rho	P	r/rho	p	r/rho	p	r/rho	P
Age in years	0.081	0.574	0.047	0.747	-0.024	0.867	0.346	0.014*	0.041	0.687
Education	0.240	0.093	-0.050	0.730	0.078	0.589	-0.015	0.920	0.072	0.476
Monthly income	0.156	0.279	0.117	0.418	-0.061	0.671	-0.077	0.594	0.103	0.309
Gravidity (Number of pregnancies)	-0.003	0.983	-0.117	0.418	-0.153	0.288	0.189	0.189	0.036	0.720
Parity (Number of deliveries)	-0.028	0.845	-0.060	0.679	-0.090	0.533	0.045	0.756	-0.018	0.863
Knowledge of breast cancer	-----	-----	0.161	0.263	-0.026	0.857	-0.196	0.172	0.037	0.797
Knowledge of mammography	-----	-----	-----	-----	-0.223	0.120	-0.088	0.546	0.263	0.065

*Significant   Spearman's correlation coefficient (rho)

Discussion:

Breast cancer treatment is greatly progressed, but the number of deaths is still high. Therefore, efforts should be made to early detect and treatment BC. Mammography is a gold standard screening modality for detecting BC at early stages before any signs and symptoms appear; to decrease morbidity and mortality rates. Women are in great need for education and instructions about breast cancer screening mammography **(Alyami et al. 2021)**. Thus, this study was done to evaluate the effect of instructional module on knowledge, attitudes and practices of women undergoing breast cancer screening mammography.

As regards to **socioeconomic characteristics** of the studied women, the present study declared that the mean age of both the study and the control groups was mean $\pm$ SD (45.98$\pm$9.18 and 45.72+9.94 respectively), the majority were married, urban residents, had secondary school education, working, and had insufficient family income; with no statistically significant difference between both groups.

These findings go in line with **(Abdelaziz et al. 2021)** who stated that the majority of the participants in their study were aged from 36 to 45 years old, married, living in urban area, had higher degree education, and employees. On the other hand, the findings of this study disagreed

with (**Al-Mousa et al. 2020**) who reported that about one half of the study sample was 35 years or younger, most participants had university educated, not employed and they were from the rural area. Moreover, based on the data of the present study, more than one half of both groups (study and control) had family history of breast cancer, which is in congruence with (**El Asmar et al. 2018 & AL-Mousa et al. 2020**) who reported that, less than one fifth of their participants had a family history of breast cancer.

As regard to the total score level of **knowledge** of the studied women regarding breast, breast cancer and breast cancer screening mammography before implementation of the instructional module, this study noticed that both the study and the control groups had low levels of knowledge with no statistical significant difference. This may be attributed to the lack of knowledge sources, instructional modules, booklets, posters, and health education related to breast cancer screening mammography. This result is in line with (**Al-Zalabanim et al. 2018, Majed 2019 & Mansur et al. 2021**) who presented that most of the respondents had inadequate knowledge about breast cancer and mammography screening. The levels of knowledge regarding breast cancer definition, clinical manifestation; causes, risk factors, diagnostic methods, treatment, and regarding breast self-examination and mammography were insufficient among their study subjects.

The present study also clarifies that the majority of the study group had high level of knowledge regarding breast cancer and regarding breast cancer screening mammography immediately post implementation of the instructional module with a high significant statistical difference between the study and the control groups. This result is similar to (**Alameer et al. 2019**) mentioned that there was a statistically significant increase in knowledge' levels about breast cancer screening tools, and practice of breast self-examination, clinical breast examination, and mammography practices among the intervention group post the educational program, compared to the control group.

Additionally, (**El Asmar et al. 2018**) reported that the majority of the participant had extra knowledge about the breast cancer, and mammogram (**AL-Mousa et al. 2020, & Alshahrani et al. 2019**) also specified that the majority of Jordanian women had an acceptable intermediate level of knowledge regarding breast cancer, a small proportion had a good to excellent knowledge level, and only (3.9%) of the study sample had a poor level of knowledge, bur the screening rates for mammography were low and proposed that there is a need to provide extra awareness programs. From the researchers' point of view, this result may be due to high level of education of their participants.

Concerning the studied women attitudes regarding breast cancer screening mammography, this study noticed that the majority of women in the study group had positive attitudes in the day of performing the mammography after implementation of the instructional module. From the researchers' point of view, the improvement in women's attitudes is attributed to the effect of the

instructional module. This result is consistent with **(Mansur et al. 2021)** who conveyed that the majority of their subjects had positive attitudes and described their preparedness for mammography screening as a useful technique for detection of breast cancer, their ability to cope with the physical discomforts or pain during mammography, and that these sensations will not hinder their performance of the mammography. From the researchers' point of view, this could be that the study subjects of their survey were female health workers.

On the other hand, the present study confirmed that both the study and the control groups had negative attitudes toward the breast cancer screening mammography pre implementation of the instructional module. This result agrees with **(AL-Mousa et al. 2020, Alshahrani et al. 2019, & Al-Zalabani et al. 2018)** who illustrated that most of the study participants had negative attitudes toward mammography for screening the breast cancer; two fifth of them thought that there is no need to do a mammogram if they had a previous breast examination, one third reported that they do not have any idea about mammography, almost one quarter reported sadness and fear from its results (diagnoses of breast cancer), one fifth reported their embarrassment, and 13.9% reported that performance of mammography requires high cost. From the researchers' point of view, it is very important to implement instructional modules and programs to improve breast cancer knowledge attitudes, and practices of women undergoing

mammography and to eliminate their fear and negative concerns.

Concerning the studied women self-efficacy regarding breast cancer screening mammography, the current study illustrated that majority of the women had low self-efficacy before implementation of the instructional module while post the module the study group had high self-efficacy in comparison to their pre-test; with a highly statistical significant difference between their pre and post-tests. In this connection, **(Ezema et al. 2021)** proved that women in their study had a moderate level of self-efficacy for breast cancer screening. In addition, they emphasized the need for health educational and psychosocial interventions to improve women's self- efficacy and promote regular BC screening. Furthermore, **(Ivanova & Kvalem 2021)** suggested that the women can employ cognitive strategies to select behaviors that prevent or danger called danger control processes or emotion-based strategies to control fear that leads to defensive avoidance or denial (fear control processes). Therefore, they can improve their self-efficacy toward mammography screening.

Regarding the practices of the studied women (before, during and immediately after performing the mammography) after implementation of the instructional module, this study announces that the majority of the study group had satisfactory practice, compared to less than one half of the control group, with a highly statistical significant difference between both groups. This result contradicts with **(Al-Zalaban et al. 2018)** who determined that the majority of

the participants had never being checked for breast cancer or admitted for mammography examination.

Moreover, the present study displayed that there was a statistically significant relation between the studied women's knowledge, attitudes, self-efficacy and practices regarding breast cancer screening mammography post implementation of the instructional module. In this connection, **(Heena et al. 2019)** stated that the participants who had low level of knowledge, had negative attitudes, and inappropriate practices related to breast cancer screening mammography. Furthermore**, Marmarà (2018)** who examined the relation between guideline changes and women's beliefs about how they behave during mammography screening exams, and found a relation between the guideline and psychological status, beliefs, and practices during mammography **(Saei et al. 2018 & Elshami et al. 2022)** also revealed that the educational model-based interventions enhanced self-care and created a foundation for improving breast cancer mammography screening behavior among women in their study. As regard to correlation between knowledge, attitudes, self-efficacy, practices and age in years, educational level, monthly income, gravidity, and parity after implementation of the instructional module. This study discovered that there was a statistical significant relationship between age in years and self-efficacy, while there was no statistical significant relationship between all other mentioned variables. This result is in line with **(Ezema et al. 2021 & Kolade et al. 2021)** who mentioned that women aged 40-49 years with

a high level of self-efficacy were more likely to use mammographic screening than those with low self-efficacy.

From the researchers' point of view, the instructional modules and the educational programs are important tools for improvement of knowledge, attitudes, self-efficacy and practices of women undergoing breast cancer screening mammography. This is supported by **(Brevik et al. 2021 & Mubin et al. 2021) who detailed that** personalized education can increase knowledge, correct attitudes, and enhance performance of mammography screening among women. **(Emami et al. 2021)** added that health policymakers should implement health promotion programs in different community places to improve women's intention to undergo breast cancer screening mammography, and to reduce barriers to access of breast cancer screening mammography, which is also supported by the researchers.

Conclusion:

The present study positively affected / improved women's knowledge, attitudes, self-efficacy and practices regarding the breast cancer screening mammography, the instructional module accomplished its goal and objectives and the research hypothesis is attained. This is proved by the change in posttest compared to their pretest. The present study also confirmed a significant relation between knowledge, attitudes, and practices of the studied women regarding breast cancer screening mammography ($p<0.001$), as well as between age and self-efficacy ($r= 0.346$, $p= 0.014$). So,

Recommendations:

Instructional modules, health education programs, and nursing curricula should highlight the importance of breast cancer screening mammography as a significant technique to early detect breast cancer. Several sources of information related to breast cancer screening mammography should be made available for all women during their different stages of life to improve their knowledge, attitudes, self-efficacy and practices. Services related to breast cancer screening mammography should be saved for all women at all health care settings, to early detect and manage breast cancer in order to decrease mortality and morbidity rates related to breast cancer. Maternity and gynecological nurses should share in further research related to women's intention and preparedness to perform breast cancer screening mammography, and determinants for its use.

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