

## Impact of a health education intervention program about breast self-examination on female employees at Damanhour University

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### Abstract:

**Background:** Breast cancer is a major health concern and remains the most common malignancy in women worldwide comprising 16% of all female cancers. **Aim of the study:** To identify the impact of a health education intervention program about breast self-examination on female employees at Damanhour University. **Subjects & Methods: Research design:** The study was carried out through a quasi-experimental design in three phases; pre intervention phase, intervention phase, and post intervention phase. **Setting:** The study was conducted at the Main Administrative University Building, Faculty of Art, Faculty of Education and Faculty of Commerce. Those settings were affiliated to Damanhour University. **Subjects:** Female employees from the previously mentioned settings were included in the study according to inclusion criteria; the total sample was 120 female employees. **Tools of data collection:** Two tools were used for data collection: 1) A structured interview questionnaire, 2) Observation check list. **Results:** more than two thirds of the studied sample aged 35 years and more, 55% were married and about one tenth of them had previous history of breast problems. Significant improvement was observed in knowledge and practices of female employees regarding breast self-examination. **Conclusion:** The study concluded that the education intervention program had a positive impact on females' knowledge and practices regarding to breast self-examination and breast cancer. **Recommendations:** The study recommended that developing educational program for female students at secondary schools and university about breast cancer and breast self-examination is important issue.

**Keywords:** Breast cancer; Breast self-examination; screening; Health education program; Risk factors

### Introduction:

Breast cancer has an enormous impact on the health of women and remains a major public health concern across the world.<sup>(1)</sup> In spite of technical improvements in surgery, chemotherapy and radiotherapy, the mortality rate due to breast cancer is increasing, because of high cost in treatment.<sup>(2-3)</sup>

Health education and prevention of breast cancer is very important. So, primary prevention should be given the highest priority in the fight against the disease such as avoidance of fatty foods and obesity, practice of physical exercises and intake of soy products. Early detection must be considered the best second choice for reducing mortality through breast self-examination, clinical breast examination, ultrasound and mammography.<sup>(4)</sup> With no clear prevention strategies, early detection of breast cancer can play an important role in reducing the number of deaths from this disease. It is well established

that early detection of abnormalities is associated with better prognosis of breast cancer. It is argued that for women younger than 50 years old, mammography is ineffective, and clinical examination is infrequent. Therefore, breast self-examination is highly significant for these women.<sup>(5)</sup>

Breast self-examination (BSE) is an important, cheap, effective and easy tool to aware women regarding on breast cancer and direct them to consult with a doctor for early diagnosis. It has been defined as a preventive health behavior, i.e. "an activity undertaken by a person, who believes herself to be healthy, for the purpose of preventing disease or detecting disease in an asymptomatic state."<sup>(6-7)</sup> Breast self-examination is a screening method that should be taught at early ages to aware women about the importance of early detection of breast cancer. This screening method can be performed without the assistance of health

professionals and requires no special equipment.<sup>(8)</sup>

It has been demonstrated that educational interventions can enhance women's knowledge regarding the importance of breast cancer and its' screening methods. Also, these education programs could improve the attitudes of individuals regarding breast self-examination and improve the behavior as well.<sup>(9-10)</sup> In other hands, many studies have shown that, lack of knowledge and belief regarding the necessary of regular breast self-examination could affect on not performing this behavior.<sup>(11,12)</sup>

#### **Significance of study:**

Breast cancer is the most common type of cancer among women in all over the world, comprising 16% of all female cancers.<sup>(13)</sup> In 2013, 1.7 million women were diagnosed with breast cancer and there were 6.3 million women alive who had been diagnosed with breast cancer in the previous five years. Since the 2008 estimates, breast cancer incidence has increased by more than 20%, while mortality has increased by 14%. Breast cancer is also the most common cause of cancer death among women 35 years of age or more (522 000 deaths in 2013) and the most frequently diagnosed cancer among women in 140 of 184 countries worldwide. It now represents one in four of all cancers in women.<sup>(14-15)</sup> In Egypt, breast cancer ranked first among cancer affecting females and it constitutes around 29% of all female cancers.<sup>(16-17)</sup>

#### **Aim of the study:**

The aim of the present study was to identify the impact of a health education intervention program about breast self-examination on female employees at Damanhour University.

#### **Research hypothesis:**

There is a positive impact of health education intervention program about breast self-examination on female employees at Damanhour University.

#### **Subjects and Methods:**

##### **Research design:**

A quasi-experimental design was carried out to conduct this study.

##### **Study setting:**

The study was conducted at the Main Administrative University Building, Faculty of Art, Faculty of Education and Faculty of Commerce. Those settings were affiliated to Damanhour University.

##### **Study subjects:**

Female employees were selected from previously mentioned settings to carry out this study according to the following inclusion criteria: -non pregnant females, not currently breastfed, have no mastectomy and satisfied to participate in the study.

##### **Sample size:**

A sample of 120 females were needed to estimate an effect of intervention program about BSE as assuming to be knowledgeable regarding current procedure. Using a power of 80% to detect an effect size of intervention program for BSE = 0.8, assuming prevalence of knowledgeable females = 26%; alpha error = 0.05 and design effect = 2, the minimal required sample size was calculated to be 100 females that will be increased to 120 to avoid loss of follow up effect.

##### **Sampling technique:**

1. By using simple random sampling technique, 4 out of 11 University settings were selected.
2. By using proportion allocation method according to number of female employees in each setting as following :-
  - The Main Administrative University Building (63 out of 126 female employees)
  - Faculty of Commerce (26 out of 56 female employees)
  - Faculty of Art (15 out of 49 female employees)
  - Faculty of Education (17 out of 47 female employees)

##### **Tools of data collection:**

Two tools were used by the researchers in order to collect the

necessary information from the female employees.

**Tool (I): Structured interview questionnaire:** Based on the literature review; a pre designed structured interview questionnaire was used to collect the following data from the female employees.

**Part one:**

- Personal data including their age, marital status, level of education.
- Medical and obstetrical history include data about regular menstrual cycle, history of breast feeding, use of contraceptive methods, previous hormonal therapy, previous history of breast problems and medical disease.
- Family history of breast cancer.

**Part two:** including hearing about breast self-examination and their sources of knowledge.

**Part three:** including knowledge about breast cancer (definition of breast cancer, high risk group, types of breast cancer, risk factors of breast cancer, sign & symptoms of breast cancer, availability of treatment, types of treatment of breast cancer, preventive measures of breast cancer, and early detection methods of breast cancer). Also it includes knowledge about breast self-examination (BSE) definition, properties, importance, frequencies, initial time to perform BSE, proper time for BSE in relation to menstrual period, initial time to perform Pap smear and mammogram.

**Part four: Females' opinion about impact of breast cancer on quality of their life**

**Part five:** including the reported practice of breast self-examination (BSE): frequency; time of BSE; regularity of performing and reasons for performing or not performing BSE.

**Part six: Anthropometric assessment:** Weight in kilograms and height in centimeters were measured for all women included in the study and body mass index (BMI) were calculated.

**Tool (II): Observation check List:** An observational check list for breast self-examination procedure <sup>(18)</sup> was

used by the researcher to assess participants' practices. It considered six steps undertaken during breast self-examination and changes that were likely to be noticed through phases.

**Scoring system:**

**Knowledge scoring system:** The female employee's knowledge about breast cancer and breast self-examination was calculated for each item, which includes 17 items. A score of (2) was given to the complete and correct answer, a score of (1) for correct but incomplete answer and a score of (0) for the wrong or missed answers. Percent of females' total knowledge score was ranged from 0-34 and calculated as follows: Good 100- 75% = 34- 25.5 points, Fair < 75%- 50% = < 25.5- 17 points and Poor <50% = <17 - zero points.

**Practices scoring system:** The female employee's practices about breast self-examination were calculated for each item, it includes 6 steps each one was scored. A score of (2) was given to the complete and correct practice, a score of (1) for correct but incomplete practice and a score of (0) for the wrong or missed practice. Females' total practice score was ranged from 0-12. Then a total score of females' practices was calculated as follows: good 100- 75% = 12- 9 points, satisfactory <75%- 50% = < 12- 6 points and poor <50% = <6 - zero points

**The calculated body mass index (BMI):** was then compared with the reference value to identify their BMI category as following: Less than 18.5 kg/ cm<sup>2</sup> (underweight), 18.5 – 24.9 kg/cm<sup>2</sup> (normal weight), 25.0 – 29.9 kg/cm<sup>2</sup> (overweight) and 30.0 – 34.9 kg/cm<sup>2</sup> (obesity). <sup>(19)</sup>

**Validity and reliability:**

Tools were developed by the researchers after thorough reviewing of recent literature, judged by 5 experts in the related fields as Community Medicine, Obstetric & Gynecological and Community Health Nursing in Alexandria University to assess contents validity. The required

corrections & modifications were carried out. Cronbach Alpha Equation which was 0.78 used to test the tool reliability (internal consistency of the tool items).

**Field work:**

Data was collected from October 2013 till December 2013 to assess practice and knowledge of female employees. The interview questionnaire was conducted with female employees in their work place by using tool I and II at pre-intervention phase. Weight and height were measured and used to estimate body mass index.

Implementation of the program was conducted from March 2014 till May.

**First phase: Preparation and organization of educational program's sessions:**

**Preparation of sessions:** The intervention program was constructed with the following objectives: A health education program was directed to women to improve their knowledge about breast cancer & breast self-examination and to promote their practice and performance technique of BSE as recommended by the American Cancer Society<sup>(20)</sup>. Objectives of the program were settled, the plan of the program was formulated as regard the number of sessions, educational objectives of each session and learning methods. The content of the sessions was based on review of literature and results of women assessment. Educational program includes knowledge as breast cancer importance, its risk factors, its severity, the value of early diagnosis, what breast self-examination is, why it is important, how and when it should be performed and its steps.

**Educational program strategies:**

**A. Educational program methods:**

**Session (1): Educational objectives:** By the end of this session, the participants should be able to:

- Identify importance of breast care.
- Recognize breast diseases/tumors and their prevalence.

- List the main risk factors of breast cancer.
- Recognize the preventable risk factors.

**Learning methods:** lecture, slides data show and brain storming.

**Session (2):** By the end of this session, the participants should be able to:

- Mention the methods of breast cancer's diagnosis.
- Identify value of early diagnosis.
- Understand breast self-examination.
- Recognize time and method to perform the breast self-examination
- Apply the total steps of procedure.

**Learning methods:** lecture/ discussions, slides data show, brain storming, breast model and demonstration.

**B. Teaching aids:** Different aids were used to facilitate and illustrate teaching such as posters, handouts, and breast model.

**Second phase (Implementation of sessions) (intervention phase):** This phase included the implementation of the planned educational program. The studied sample (120 women) was divided into small groups (10 groups). Educational sessions were held in groups of 12 participants at conference center of Damanhour University by the researchers (one group/week) and each session lasted for 2 hour. Therefore, educational program were implemented through two sessions for each group. Firstly, discussion of the session objectives and content were dedicated. Then, time was available for female's participation, interaction and re-demonstration. In each session participants' questions were answered, and the participants practiced breast self-examination under supervision of the researchers. Then handout was distributed to them.

**Third phase (Post intervention phase) (evaluation of the program):**

Evaluation of the impact of the intervention program was done through a post-test structured interview questionnaire. Four to six

weeks after the conduction of the health education program, women were exposed to the same preliminary questions in the pre-test questionnaire. Evaluation of the program was conducted after six weeks of program completion by using tool I (part 3 & 4) and tool II at post-intervention program, from July 2014 till September.

#### **Pilot study:**

A pilot study was carried out on a sample of (12) female employees, who were selected randomly from Faculty of Nursing, Damanhour University. Some modifications were performed related to questions about initial time to perform BSE, proper time for BSE in relation to menstrual period, initial time to perform Pap smear and mammogram.

#### **Administrative and ethical considerations:**

For execution of the study, a written official letter was obtained from the Faculty of Nursing, Damanhour University and directed to University Administration to collect the necessary data after explaining the purpose of the study. Approval was obtained to collect the data from the Main Administrative University Building and Faculties of Damanhour University.

Verbal consent was obtained from the female employees after explanation of the aim of the study. Privacy was maintained during process of data collection. Confidentiality and anonymity of female employees were guaranteed.

#### **Statistical analysis:**

Data was analyzed using PC with Statistical Package for Social Sciences (SPSS) version 16.0. The level of significance selected for this study was  $p$  equal to or less than 0.05. The following statistical measures were used: Descriptive measures included: count, percentage, arithmetic mean, standard deviation for quantitative data. Statistical tests included: McNemar test (matched analysis) was used to test changes at knowledge categories before and after program interventions.

Graphical presentation included pie chart and bar graph. Paired t-test: - was used to compare between sample means for quantitative data with normal distribution before and after program interventions.

#### **Results:**

**Table (1):** Illustrates that of the 120 female employees participated in the study, the mean age was  $34.1 \pm 8.3$  years and ranged from 23 to 55 years. The majority (81.7%) of women were married.

**Table (2):** Shows that more than half (57.5%) of female employees had regular menstrual cycle. The majority of those married women have children; more than three quarters of them (78.8%) were breast fed their children. The table also revealed that, 62.2% of those married were used hormonal contraceptives methods. Moreover, the majority of women (91.7%) had not any previous breast problems compared to 8.3% had breast problem like mastitis, breast abscess and lump. Moreover, from those women had medical condition, the majority of them mentioned hypertension followed by diabetes mellitus (50%), then heart diseases mentioned by more one tenth (14.3%).

**Figure (1):** Presents that nearly one quarter of study sample (23.3%) mentioned that they had a family history of breast cancer.

**Figure (2):** Shows more than half of the sample (54.3%) were obese and 33.5% were overweight. While the female employees who were normal body weight and underweight constituted 11.5% and 0.7% respectively.

It is interesting to note from **Table (3)** that before the program, the highest percent (87.5%) of female employees were aware that lack of exercises was risk factor of breast cancer and lowest percent (3.3%) knew that fatty food consumption is risk factor of breast cancer. A significant improvement in females' knowledge regarding the risk factors of

breast cancer was obtained after the intervention education program.

In relation to females' knowledge about the common site of breast cancer, **table (4)** shows that 70.0% of them did know where malignant tumor is commonly located. After the program, there were statistically significant improvements in females' knowledge in relation to almost all breast cancer signs and symptoms.

**Table (5):** Portrays the impact of education program on total score of knowledge of the female employees. Two thirds of the sample (62.5%) had poor knowledge scores, while 26.7% of them had fair knowledge scores and only 10.8 % had good knowledge scores at pre-intervention phase. It was observed that the mean knowledge scores of studied sample were significantly higher at the post intervention phase ( $84.68 \pm 7.92$ ) than that of the pre-intervention ( $57.16 \pm 13.04$ ), ( $t=20.564$ ,  $p<0.001$ ).

**Figure (3):** Reveals that three quarters of female employees in this study previously heard about breast self-examination (BSE).

As regards sources of information of female employees, **figure (4)** display that, the main resource was the peer group (47.5%). While the Medias (T.V, radio, newspapers and magazines) represented 30.4% and books represented 13.1%. Those who mentioned health team (as nurse & physicians) represented 9.0% which is the least one.

It was observed from **table (6)** that 35% of female employees reported that they had practiced BSE. Of these, 14.3% perform BSE immediately before menstruation and an equal percent perform BSE at any time in month. In addition, exactly half of them stated that they had performed BSE less than four times during the last year, while only 23.8% of them reported that they performed BSE regularly and the majority of them (76.2%) had performed BSE by irregular manner.

**Table (7):** Indicates that, of the women who performed BSE, 66.7%

mentioned that practiced it due to fear from breast cancer, while almost half of them (52.4%) mentioned it gave them a sense of control over their own health by early detection of breast cancer, having a family member with breast cancer (4.8%). Less than third of females (33.3%) felt reassured as announced in media that they may not have breast cancer after practicing the BSE procedure. Finally, 23.8% of them practiced it due to their previous history for breast problems. For those women who did not practicing BSE, more than third reported they don't believe that it is beneficial, other reasons identified for not having time as mentioned by 35.9% and 29.5% of female employees reported that they felt anxiety about the possibility of recognizing a breast mass. Other reasons were due to misbelieves that it is wrong to touch my breast by 14.1% and they also mentioned BSE is embarrasses procedure (21.7%).

**Table (8):** Shows that, before the program, the majority of female employees were stand before a mirror and inspect both breasts for anything unusual such as any discharge from the nipples or puckering, dimpling, or scaling of the skin (step 1), followed by watching closely in the mirror, clasp their hands behind head and press hands forward (step 2) and press their hands firmly on her hips and bow slightly toward mirror as pull their shoulders and elbows forward (step 3) were (78.6%, 61.9% and 61.9%) respectively. In addition, more than half of them was practiced step 4, while step 5 of BSE (Gently squeeze the nipple and look for a discharge) was practiced by only 31.0% and the least practiced one was step 6 (23.8%). After the program, a significant improvement was observed in the study sample practices in relation to all steps of BSE in comparison to pre-program ( $\chi^2_{mc}$   $p=0.001$ ,  $0.001$ ,  $0.001$ ,  $0.001$ ,  $0.003$ , and  $0.002$  respectively).

**Table (9):** Points out that the total mean scores of females' practices breast self-examination at the post-

intervention phase were significantly higher than that of pre-intervention phase ( $73.64 \pm 9.77$  and  $55.43 \pm 12.51$  respectively), ( $t=10.643$ ,  $p<0.001$ ).

Less than two third of women (63.4%) in the pre-program versus 81.6% of them in the post-intervention phase reported that breast cancer affects women's quality of life. Moreover, less than one third (30.8%) could not recognize the impact of BC on women at pre-intervention, changed to nearly one tenth (11.7%) post-intervention (**Figure 5**).

### Discussion:

Globally, about 25 million people are living with cancer. Recent estimates showed that cancer incidence will almost triple by 2030, with 20–26 million new cancer diagnoses and 13–17 million deaths. Cancer is the second leading cause of death in the world. More than 70% of all cancer deaths occurred in low and middle-income countries.<sup>(21)</sup> Breast cancer typically is detected either during a screening examination, before symptoms have developed, or after symptoms have developed, when a woman feels a lump.<sup>(22)</sup>

Early detection of breast cancer plays an important role in decreasing its morbidity and mortality. Breast self-examination (BSE) is one of the screening methods for early detection of breast cancer. However, women in developing countries do not perform breast self-examination for various reasons.<sup>(23)</sup> Therefore, the aim of this study was to identify the impact of health education intervention program about breast self-examination on female employees at Damanhour University.

A number of studies suggest that current use of oral contraceptives (birth control pills) appears to slightly increase the risk of breast cancer, especially among younger women. However, the risk level goes back to normal 10 years or more after discontinuing oral contraceptive use.<sup>(24)</sup> The present study revealed that more than one third of female

employees use hormonal contraceptive as family planning method.

Age is one of the risk factors for breast cancer, woman risk for developing breast cancer increases as she gets older.<sup>(25)</sup> The findings of the present study revealed that, more than one quarter of employees were aged more than 35 years. Several studies had been proposed that after the age of 30, incidence rates of BC begin to rise and the highest rates were among women aged 60 years and over, those who should be targeted as a group that needs assistance with compliance and regular BSE.<sup>(26)</sup> Meanwhile, Benedict et al.<sup>(27)</sup> stated that it was essential that all women should be informed about BSE and be covered by systemic education. Moreover, Person et al.<sup>(28)</sup> recommended that in order to make BSE a habit, education about BSE ought to be started for girls at school age. Almost three quarters of the participants heard about BSE from different information sources. The main source was peer group (47.5%) this could be due to the long time that female employees spent with each other at the workplace discussing different issues, which creates strong relation among each other. This result congruent with World Health Organization<sup>(29)</sup> which reported that family and friends were significant motivators to practice BSE. Meanwhile, it was striking to find that those who mentioned health team (nurse-physicians) as a source of information represented less than one tenth of the sample while they could play a major role in teaching, counseling and convincing women to practice BSE. This result could be attributed to carelessness of the participants in seeking proper medical advice, or due to unavailability of the resource centers, in addition to the existence of multi-barriers to practice BSE according to the participants' responses in the present study.

Family history of breast cancer considered as a convenient and inexpensive indicators for identifying

risk of breast cancer and for promoting the adoption of preventive practices.<sup>(30)</sup> The results of this study revealed that approximately one quarter of the employees had family history of breast cancer which increased their risk for developing the disease. These findings were supported by the study done in Alexandria by Bedwani et al.,<sup>(31)</sup> they revealed that there was strong association between family history of breast cancer and increased risk of breast cancer.

Regarding to personal history of breast problems, the findings of the present study unfortunately claimed that, about one tenth of female employees had history breast problems. This result is expected because about one quarter of studied employees had positive family history of breast cancer.

The risk of breast cancer also increases with obesity. The present study showed that the female employees had body mass index (BMI) ranged between ( $<18.5$  to  $\geq 30$ ) with a mean of ( $31.35 \pm 5.87$ ). The finding showed that the obese female employees constituted more than half of the sample and more than one third of them were overweight. These results could be explained by the employees were having many unhealthy habits such as consuming large amount of carbohydrates and saturated fat. In addition to lack of physical activity and sedentary nature of their work. Other studies were in accordance with this result.<sup>(32)</sup> The association between obesity and increased breast cancer was investigated by the study carried out in USA by Stanford.<sup>(33)</sup> This result was also in congruent with a study done in Egypt by Abdelaal<sup>(34)</sup> showed that overweight/obese was associated with increased risk of breast cancer compared with normal BMI.

Education is one of the most important means of empowering women with the knowledge, skills, awareness and self-confidence necessary to participate fully in the prevention of danger disease. Even

though nearly two thirds of the female employees in the present study had bachelor or post graduate education, in an attempt to assess knowledge of employees about breast cancer and breast self-examination, the results of the current study revealed that less than two third of the sample had poor knowledge score ( $< 50\%$ ) with a mean of  $57.16 \pm 13.04$ . These findings denotes lack of health awareness regarding high risk group, types of breast cancer, sign and symptoms of breast cancer, the availability of breast cancer treatment, types of treatment of breast cancer, preventive measures of breast cancer, early detection methods of breast cancer. This could be explained by the fact that most of female employees included in the study did not like to discuss this topic or to gain information about it because their culture background. But after implementing the intervention program, the participants' knowledge significantly improved in the post-test with a mean of  $84.68 \pm 7.92$ . This result was supported by the study carried out in Saudi Arabia by Dandash<sup>(35)</sup> which studying knowledge, attitudes and practices surrounding breast cancer and screening in female teachers. He found that his studied females had poor knowledge ( $< 50\%$ ) about breast cancer.

The analysis of the present work revealed that there was a highly significant improvement in all knowledge items delivered to the studied sample, from the pre to the post-test. Regarding risk factors, fatty food consumption, late menopause and early menarche as risk factors increased significantly after the intervention program. These results are consistent with those of a study conducted in Turkey.<sup>(36)</sup>

In the present study, although more than one third of the respondents reported that they were performing BSE, only less than quarter (23.8%) of them performing BSE regularly. These findings contradicted with those of a research carried in 2009, on Jordanian



nurses.<sup>(37)</sup> In the present study, more than one third of respondents mentioned that they did not have time, they forgot to perform BSE, and they didn't believe that the BSE is beneficial. In addition, they thought it was wrong to touch their breasts. The present results are similar to that of another study results conducted by Rosvold et al.<sup>(38)</sup> on Norwegian female physicians who stated that they forgot to practice BSE regularly.

Before the intervention, less than three quarters of the respondents mentioned breast tumor only as a warning symptom of BC and almost less than one third of them mentioned palpable nodules or palpable axillary lymph nodes. These percentages were significantly increased after intervention program. It also better than those reported by Montazeri et al.,<sup>(39)</sup> from a population based survey carried out in Iran where 44% of women said that painless lump is a common symptom of BC.

Regarding participants' practices to BSE before intervention program, the findings of the present study showed that less than three quarters of them had poor practices' scores. This result supports the results of Nour and Ragheb<sup>(40)</sup> who stated that women who lacked sufficient knowledge about BSE avoided its practice. After program implementation, findings showed a significant increase in practice of BSE which in turn increased the subject's self-awareness about the value of health and the importance of practicing BSE. This could be attributed to the increase their awareness regarding BSE as a method for early detection of breast cancer. Meanwhile, the present results support those of Smigel<sup>(41)</sup> who assured that correct practice of BSE was positively associated with who had positive family history for breast lump.

Consequently, the improvement in the total score levels of knowledge and practices of the female employees' post-intervention phase were highly statistically significant in comparison to

pre-program results. This result also emphasized the readiness of the working women to gain more information and acquire skill, in addition to the positive effect of the intervention program. These findings are in accordance with Selda and Nursen<sup>(42)</sup> who stated that the intervention was successful and appears to be associated with producing significant increases in breast health knowledge as well.

A goal of this intervention program was to highlight the negative impacts of BC on women's quality of life and life expectancy, which was considerably achieved. Importantly, the intervention appears to improve women's confidence to be aware of changes in their own breasts. Assuming that improved breast cancer awareness will be translated into behavioral changes that encourage early presentation of breast cancer cases; these findings have important implications for reducing delayed presentations of the disease.

To sum up, breast cancer is a serious health problem, which had a serious impact on women health, their children, family and the community. So many efforts should be directed to the prevention of breast cancer, it is the key for reducing the morbidity and mortality of the disease.<sup>(43)</sup>

### Conclusion:

In conclusion, the intervention program has a positive impact on females' knowledge and practices regarding breast self-examination and BC. In addition, it was effective in raising women's awareness about BC and of regular screening procedures (BSE and mammography). Data from this study re-enforce the continuing need for more BC education programs that are intended to attract the attention of women with low literacy skills.

### Recommendations:

The following are the main recommendations:

1. Developing educational program for female students at secondary schools and university about breast self-examination and breast cancer.
2. Raising community awareness especially females about risk factors, signs and symptoms, preventive measures, breast self-examination and early detection methods of breast cancer
3. Reinforce outreach program to females in order to provide them with information, education and communication about breast cancer as well as screening services.
4. All channels of the national mass media could efficiently be utilized to cultivate or disseminate a healthy positive attitude towards BSE by presenting specific programs associated with BSE and women's health.
5. Emphasizing the importance of clinical breast examination by nurses and physicians during routine checkup visits and during premarital care.
6. The Ministry of Health and Population should provide free breast cancer screening services or at an affordable cost to women as high cost represents a barrier to screening participation.

**Table (1): Distribution of female employees according to their personal data**

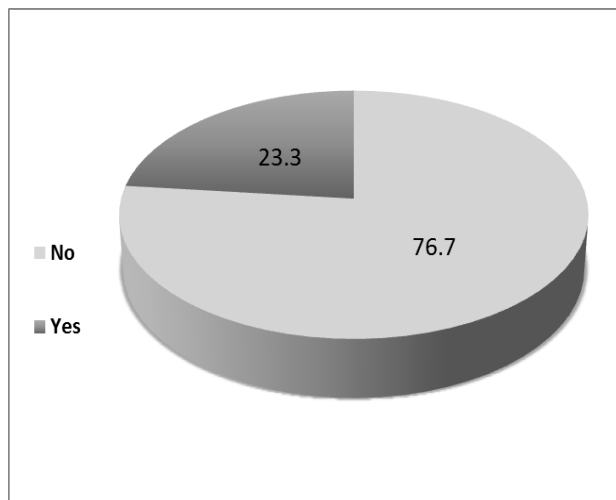
Personal data	Female employees (n=120)	
	No.	%
<b>Age (years):</b>		
▪ ≤ 35	86	71.7
▪ > 35	34	28.3
<b>Mean ± S.D.</b>	34.1±8.3	
<b>Marital status:</b>		
▪ Married	98	81.7
▪ Unmarried	22	18.3
<b>Educational level:</b>		
▪ Above average education	41	34.2
▪ Bachelor & post graduate	79	65.8

**Table (2): Distribution of female employees according to their medical and obstetrical history**

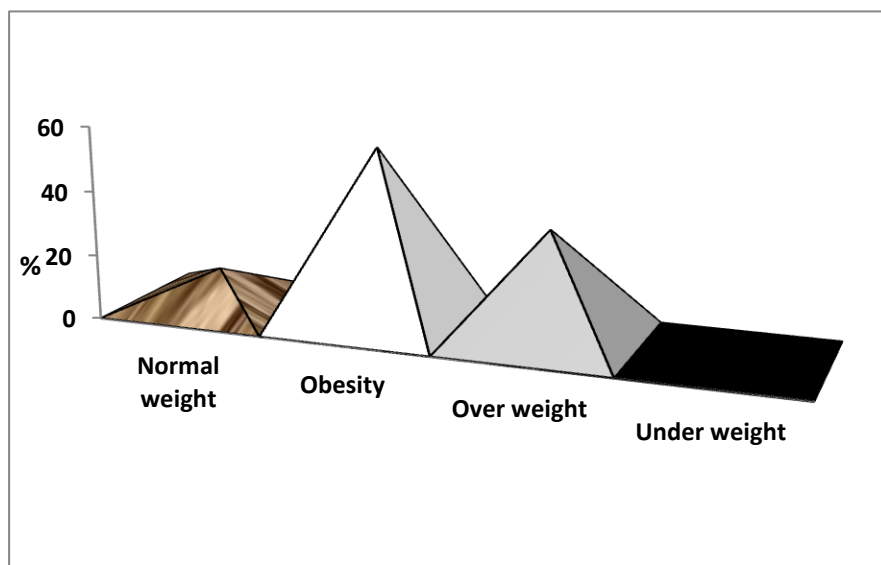
Medical and obstetrical history	Female employees (n=120)	
	No.	%
<b>Regular menstrual cycle:</b>		
▪ Yes	69	57.5
▪ No	51	42.5
<b>For those women have children and previously breastfed them (n=85)</b>		
▪ Yes	67	78.8
▪ No	18	21.2
<b>Use of hormonal contraceptive methods (n=98)</b>		
▪ Yes	61	62.2
▪ No	37	37.8
<b>Previous breast problems</b>		
▪ Yes	10	8.3
▪ No	110	91.7
<b>If yes: Mastitis</b>		
▪ Breast abscess	4	40.0
▪ Breast lump	3	30.0
<b>Previous hormonal therapy</b>		
▪ Yes	38	31.7
▪ No	82	68.3
<b>Medical diseases # (n=70)</b>		
▪ Hypertension	68	97.1
▪ Diabetes mellitus	35	50.0
▪ Heart diseases	10	14.3
▪ Thyroid disorders	1	1.4

# More than one answer was given

N.B: (50 women had no medical diseases)



**Figure (1): Family history for breast cancer**



**Figure (2): Body mass index of female employees**

**Table (3): Distribution of female employees according to their knowledge about breast cancer risk factors at pre and post intervention program**

Risk factors	Pre intervention (n=120)		Post – intervention (n=120)		$\chi^2_{mc}$ (P)
	No	%	No	%	
▪ Lack of exercise	105	87.5	120	100	0.037*
▪ Hormonal therapy	102	85.0	112	93.3	0.085
▪ Never breast feeding	102	85.0	109	90.8	0.524
▪ Obesity	98	81.7	112	93.3	0.020*
▪ Age	95	79.2	112	93.3	0.018*
▪ Low fiber diet	88	73.3	102	85	0.036*
▪ Family history of breast cancer	81	67.5	120	100	0.004*
▪ Null parity	53	44.2	109	90.8	0.001*
▪ Early menarche	35	29.2	105	87.5	0.001*
▪ Late menopause	25	20.8	53	44.2	0.006*
▪ Fatty food consumption	4	3.3	109	90.8	0.001*

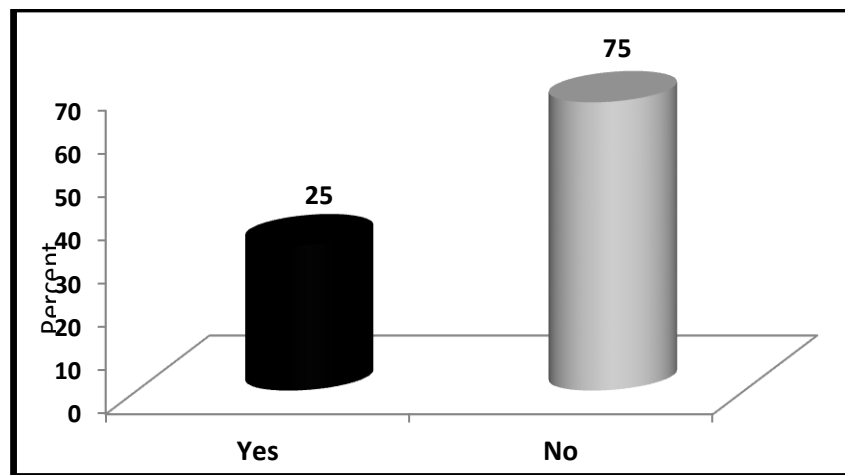
*P: Mc-Nemar test for related groups**\* P < 0.05 (significant)***Table (4): Distribution of female employees according to their knowledge about signs and symptoms of breast cancer at pre and post intervention program**

Breast cancer signs & symptoms		Pre intervention (n=120)				Post intervention (n=120)				$\chi^2_{mc}$ (P)
		No		Yes		No		Yes		
		N	%	N	%	N	%	N	%	
▪	Palpable nodules	88	73.3	32	26.7	71	59.2	49	40.8	0.006*
▪	Common location of malignant tumor	36	30.0	84	70.0	11	9.2	109	90.8	0.036*
▪	Palpable axillary lymph nodes	85	70.8	35	29.2	50	41.7	70	58.3	0.039*
▪	Deviated nipples	78	65.0	42	35.0	92	76.7	28	23.3	0.152

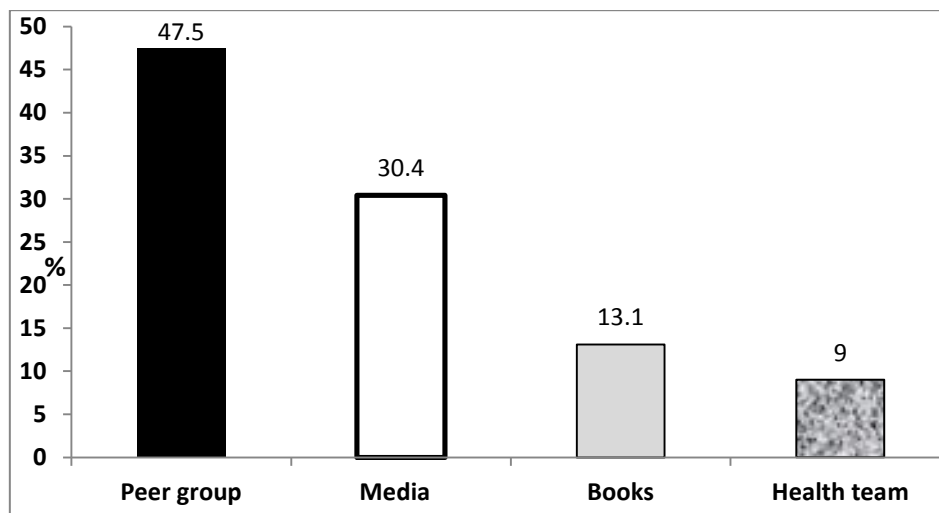
*P: Mc-Nemar test for related groups**\* P < 0.05 (significant)***Table (5): Impact of education program on female employees' total knowledge score**

Total knowledge score	Pre intervention N=120		Post intervention N=120	
	No	%	No	%
Knowledge				
▪ Poor knowledge (<50 %)	75	62.5	10	8.3
▪ Fair (50 - <75%)	32	26.7	17	14.2
▪ Good (>75%)	13	10.8	93	77.5
Mean ± SD	57.16 ± 13.04		84.68 ± 7.92	
t (p)	20.564* (<0.001)			

*t: for Paired t-test**\* Statistically significant at p ≤ 0.05*



**Figure (3): Heard about breast self-examination**



**Figure (4): Sources of information about breast self-examination**

**Table (6): Distribution of female employees according to their reported practices of breast self-examination**

Reported practices	Female employees (n=120)	
	No	%
<b>Practicing of breast self-examination</b>		
▪ Yes	42	35.0
▪ No	78	65.0
<b>Correct regular practices (n= 42)</b>		
▪ Yes	10	23.8
▪ No	32	76.2
<b>Time of practice BSE (n= 42)</b>		
▪ Immediately before menstruation	6	14.3
▪ During menstruation	3	7.1
▪ Day 5 to 7 after menstruation	27	64.3
▪ At any time	6	14.3
<b>Frequency of practice BSE in the last year (n= 42)</b>		
▪ < 4 times	21	50.0
▪ 4 - 6 times	7	16.7
▪ > 6 times	14	33.3

**Table (7): Distribution of female employees according to reasons for performing and not performing breast self-examination**

Reasons	Female employees (n=120)	
	No	%
<b>Reasons for performing BSE ( n= 42) <sup>#</sup></b>		
▪ Fear of breast cancer	28	66.7
▪ Early detection of breast cancer	22	52.4
▪ Breast cancer in my family	2	4.8
▪ Previous breast problems	10	23.8
▪ Encouraged by a friend	9	21.4
▪ Influence of media	14	33.3
<b>Reasons for not performing BSE (n=78) <sup>#</sup></b>		
▪ Not having time/I am too busy	28	35.9
▪ Forgetting	7	9.0
▪ I don't believe that it is beneficial	28	35.9
▪ think it is wrong to touch my breast	11	14.1
▪ Anxiety about the possibility of recognizing a breast mass	23	29.5
▪ BSE embarrassing procedure	17	21.7

*# Not mutually exclusive*

**Table (8): Distribution of female employees according to their practices of breast self-examination at pre and post intervention program**

Steps / technique	Pre-intervention (n=42)		Post- intervention (n=120)		$\chi^2_{mc}$ (P)
	No	%	No	%	
<b>1. Stand before a mirror. Inspect both breasts for anything unusual such as any discharge from the nipples or puckering, dimpling, or scaling of the skin. (step 1)</b>	33	78.6	116	96.7	0.001*
The next two steps are designed to emphasize any change in the shape or contour of your breasts. As you do them, you should be able to feel your chest muscles tighten.					
<b>2. Watching closely in the mirror, clasp your hands behind your head and press your hands forward. (step 2)</b>	26	61.9	110	91.7	0.001*
<b>3. Press your hands firmly on your hips and bow slightly toward your mirror as you pull your shoulders and elbows forward. (step 3)</b>	26	61.9	96	80.0	0.001*
Some women do the next part of the exam in the shower because fingers glide over soapy skin, making it easy to concentrate on the texture underneath.					
<b>4. Raise your left arm. Use three or four fingers of your right hand to explore your left breast firmly, carefully, and thoroughly. Beginning at the outer edge, press the flat part of your fingers in small circles, moving the circles slowly around the breast. Gradually work toward the nipple. Be sure to cover the entire breast. Pay special attention to the area between the breast and the underarm, including the underarm itself. Feel for any unusual lump or mass under the skin. (step 4)</b>	24	57.1	99	82.5	0.001*
<b>5. Gently squeeze the nipple and look for a discharge. (step 5)</b>	13	31.0	100	83.3	0.003*
<b>6. Steps 4 and 5 should be repeated lying down. Lie flat on your back with your left arm over your head and a pillow or folded towel under your left shoulder. This position flattens the breast and makes it easier to examine. Use the same circular motion described earlier. (step 6)</b>	10	23.8	108	90.0	0.002*

*P: Mc-Nemar test for related groups \* P < 0.05 (significant) N.B: (78 women not practicing BSE at all at pre-intervention phase)*

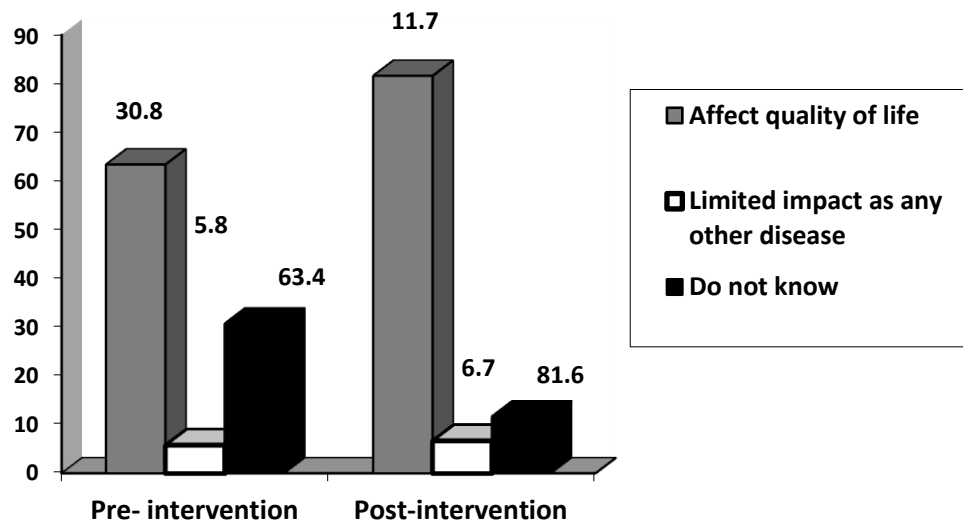


**Table (9): Impact of education program on the total mean scores of females' Practices of breast self-examination at pre and post intervention program**

Steps / technique	Pre- intervention (N=120)		Post- intervention (N=120)	
Total practice scores	No	%	No	%
▪ Poor practice (<50%)	85	70.8	21	17.5
▪ Satisfactory practice (50% -)	21	17.5	35	29.2
▪ Good practice (≥75%)	14	11.7	64	53.3
Mean ± SD	55.43 ± 12.51		73.64 ± 9.77	
t (p)	(10.643) <0.001			

t: for Paired t-test

\* Statistically significant at  $p \leq 0.05$



**Figure (5): Females' opinion about impact of breast cancer on quality of their life at pre and post intervention program**

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## تأثير البرنامج التدخلي التعليمي الصحي عن الفحص الذاتي للثدي على الموظفات في جامعة دمنهور

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### مقدمة:

سرطان الثدي هو النوع الأكثر شيوعاً من السرطان بين النساء في جميع أنحاء العالم، ويمثل ١٦٪ من جميع سرطانات الإناث. وهو له تأثير هائل على صحة النساء ويبقى مصدر قلق كبيراً على الصحة العامة في جميع أنحاء العالم. وعلى الرغم من التحسينات التقنية في الجراحة، والعلاج الكيميائي والعلاج الإشعاعي، فمازال معدل الوفيات بسبب سرطان الثدي في تزايد مستمر، بسبب التكلفة العالية في العلاج.

التثقيف الصحي والوقاية من سرطان الثدي مهم جداً، لذا، ينبغي إعطاء الوقاية الأولية الأولوية القصوى في مكافحة المرض مثل تجنب الأطعمة الدهنية والسمنة، وممارسة التمارين الرياضية وتناول منتجات الصويا. يجب اعتبار الكشف المبكر كأفضل خيار ثاني للحد من وفيات سرطان الثدي من خلال الفحص الذاتي، فحص الثدي السريري والموجات فوق الصوتية والتصوير الشعاعي للثدي. الكشف المبكر عن سرطان الثدي يمكن أن يلعب دوراً هاماً في الحد من عدد الوفيات الناجمة عن هذا المرض. فحص الثدي الذاتي هو أداة رخيصة وفعالة وسهلة ومهمة لتوعية المرأة فيما يتعلق بسرطان الثدي وتوجيهها للتشاور مع الطبيب للتشخيص المبكر.

### الهدف من الدراسة:

هدفت الدراسة الحالية إلى التعرف على أثر برنامج التدخلات الصحية عن الفحص الذاتي للثدي على الموظفات في جامعة دمنهور.

### التصميم البحثي:

تم استخدام التصميم شبه التجريبي لإجراء هذه الدراسة.

### مكان الدراسة:

وقد أجريت الدراسة في المبنى الإداري الرئيسي للجامعة، كلية الآداب، كلية التربية وكلية التجارة التابعة لجامعة دمنهور. وقد تم اختيار الموظفات من الأماكن المذكورة سابقاً للقيام بهذه الدراسة وفقاً لمعايير.

### عينة الدراسة:

اشتملت العينة على ١٢٠ من الإناث لتقدير تأثير برنامج التدخلات الصحية عن الفحص الذاتي للثدي على الموظفات في جامعة دمنهور. وتم

انتقاء العينات بالطريقة العشوائية البسيطة، حيث تم اختيار ٤ من أصل ١١ مكان بالجامعة. وتم حساب عدد الموظفات باستخدام طريقة تخصيص النسبة وفقاً لعدد الموظفات في كل موقع.

### أدوات جمع البيانات:

كانت الأدوات المستخدمة في البحث كما يلي:

- **الأداة الأولى (الجزء ١) :** هي استمارة اشتملت على البيانات الشخصية والخصائص الاجتماعية وبيانات خاصة بالصحة والتاريخ الصحي للأسرة.
- **الأداة الأولى (الجزء ٢):** وبيانات عن مصدر معلوماتهم عن الفحص الذاتي للثدي.
- **الأداة الأولى (الجزء ٣):** لتقييم معلومات المشاركين بالبحث عن الفحص الذاتي للثدي.
- **الأداة الأولى (الجزء ٤) :** وتشمل رأي الإناث حول تأثير سرطان الثدي على نوعية حياتهم.
- **الأداة الأولى (الجزء ٥):** - ويشمل ممارسة المبلغة من المشاركات عن فحص الثدي الذاتي.
- **الأداة الأولى (الجزء ٦):** التقييم الأنثروبومتري وحساب مؤشر كتلة الجسم.
- **الأداة الثانية:** هي استمارة للملاحظة لتقييم الإجراء الفعلي للفحص الذاتي للثدي.

تم تقسيم المشاركات في البحث (١٢٠ موظفة) إلى ١٠ مجموعات وكل مجموعة ١٢ مشاركة وتم تنفيذ برنامج التدخلات الصحية بعمل عدد ٢ جلسة لكل مجموعة والتي أجريت على مدار ١٠ أسابيع. وتستغرق الجلسة ١٢٠ دقيقة. وفي النهاية تم تقييم البرنامج بعد ٦ أسابيع من تنفيذ البرنامج.

### النتائج:

كانت النتائج الرئيسية للدراسة كالاتي:

- متوسط العمر  $34.1 \pm 8.3$  سنوات، وتراوح ٢٣-٥٥ عاماً. و الغالبية العظمى (٨١.٧٪) من النساء متزوجات.
- أن ٦٢.٢٪ من المتزوجات استخدمن أساليب منع الحمل الهرمونية. وعلاوة على ذلك، كانت غالبية النساء (٩١.٧٪) لم تعاني سابقاً من مشاكل الثدي مقارنة مع ٨.٣٪ كان مشكلة في الثدي مثل التهاب الثدي، خراج الثدي.

**التوصيات:**

على ضوء نتائج هذه الدراسة فإنه يمكن التوصية بالآتي:

- تطوير برنامج تعليمي للطالبات في المدارس الثانوية والجامعات حول الفحص الذاتي للثدي وسرطان الثدي.
- رفع الوعي المجتمعي وخصوصاً للإناث حول عوامل الخطر، وعلامات وأعراض، والتدابير الوقائية، والفحص الذاتي للثدي وطرق الكشف المبكر عن سرطان الثدي
- تدعيم برنامج توعية للإناث من أجل تزويدهم بالمعلومات والتثقيف حول سرطان الثدي.
- التأكيد على أهمية فحص الثدي السريري من قبل الممرضات والأطباء خلال الزيارات الروتينية فحص ما قبل الزواج وأثناء الرعاية .

- إن ما يقرب من ربع عينة الدراسة (٢٣.٣٪) ذكر أن لديهم تاريخ عائلي للإصابة بسرطان الثدي.
- أكثر من نصف العينة (٥٤.٣٪) كن يعانين من السمنة المفرطة وزيادة الوزن ٣٣.٥٪ منهم. في حين أن الموظفين اللاتي وزن الجسم الطبيعي ونقص الوزن يشكل ١١.٥٪ و ٠.٧٪ على التوالي.
- قبل البرنامج، كانت أعلى نسبة (٨٧.٥٪) من الموظفين تدرك أن عدم ممارسة الرياضة هو عامل خطر يعرض للإصابة بسرطان الثدي وأدنى نسبة (٣.٣٪) كانت لاستهلاك الأغذية الدهنية. تم الحصول على تحسن كبير في معرفة الإناث فيما يتعلق عوامل الخطر لسرطان الثدي بعد البرنامج.
- ٧٠.٠٪ منهم لم يعرفن أين يقع الورم الخبيث عادة. بعد البرنامج، كانت هناك تحسينات ذات دلالة إحصائية في معرفة الإناث فيما يتعلق علامات سرطان الثدي وتقريباً جميع الأعراض.
- أن درجات المعرفة متوسط لدى العينة المدروسة وكانت أعلى بكثير في مرحلة ما بعد التدخل (٨٤.٦٨ ± ٧.٩٢) من ذلك من قبل التدخل.
- وفيما يتعلق بمصادر المعلومات من الموظفين، كان المصدر الرئيسي للمعلومات من الأقران (٤٧.٥٪). في حين أن الإعلام (التلفزيون والإذاعة والصحف والمجلات) تمثل ٣٠.٤٪ ومثلت الكتب ١٣.١٪.
- ٦٦.٧٪ ذكروا أنهم يمارسون الفحص الذاتي للثدي بسبب الخوف من سرطان الثدي، في حين أن نصفهم تقريباً (٥٢.٤٪) ذكروا أنه أعطاهم شعوراً من السيطرة على صحتهم، وجود المرض بالأسرة (٤.٨٪). وأخيراً، ٢٣.٨٪ منهم يمارسون ذلك بسبب تاريخهم السابق لمشاكل الثدي.
- أن إجمالي متوسطات درجات الإناث في ممارسات الفحص الذاتي للثدي في مرحلة ما بعد التدخل كانت أعلى بكثير من مرحلة ما قبل التدخل.

**الخلاصة:**

تبين أن البرنامج له تأثير إيجابي على المعارف والممارسات المتعلقة بالفحص الذاتي للثدي للإناث. وبالإضافة إلى ذلك، فإنه كان فعالاً في توعية المرأة حول سرطان الثدي وإجراءات الفحص الذاتي المنتظم للثدي.