

The Effectiveness of Breast Health Promotion Counseling on Breast Cancer Screening Behaviors Among Female Patients

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Abstract: Breast cancer is a major health concern and remains the most common malignancy in women worldwide affecting 1.6%, and in Egypt 37.5%. The aim of the study was to evaluate the effect of the breast health promotion counseling on breast cancer screening behavior among female patients. Three hypotheses were addressed: 1) Increased rates in mammography, Clinical Breast Examination, Breast Self Examination, and Breast Self Examination Proficiency. 2) Increased levels of breast health knowledge perceived susceptibility to breast cancer, benefits of BSE and mammography. 3) Decreased levels of perceived barriers to BSE and mammography. A quasi-experimental design was used. The sample consisted of 84 women who attended the counseling sessions. Data were collected through: 1) A structured interviewing questionnaire for data related to demographic characteristics; 2) pre- posttest sheet to examine the knowledge related to the problem of the breast cancer; 3) Champion's Health Belief Model Scale (CHBMS); 4) Breast Self-Examination Proficiency Rating Instrument (BSEPRI). The counseling phase consisted of 10 sessions, given jointly with a booklet for women. Data were collected twice, at the booking visit and at the post counseling. The main results were: Improvement was observed in knowledge, changes in BSE proficiency (skills & lump detection), breast self-examination, clinical breast examination and mammography and health belief model scales in post counseling. More than half of participants between 40-45 years 34 years, 71.4% were married, 23.8%. The study concluded that the education sessions had a positive impact on knowledge and practice regarding to breast cancer. The study recommended the following that further studies may require BSE training sessions with a focus on the most essential component to achieve criterion levels of BSE skills competency.

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1. Introduction

Breast cancer is one of the most prevalent diseases affecting women. **Althuis et al., (2005)**. According to the World Health Organization (WHO), breast cancer is responsible for 502,000 deaths per year worldwide and represents 1.6% of female deaths worldwide. Breast cancer incidence is an "urgent public health problem" in developing countries and its incidence is increasing up to 5% yearly **Hortobagyi et al., (2005)**. In Egypt, breast cancer is number one among women constituting about 37.5% of female cancer cases. The etiology of breast cancer involves environmental factors, inherited genetic susceptibility, genetic changes during progression and interaction among these factors, with the relative importance of each ranging from strongly genetic or strongly environmental. The most common type in Egyptian patients is ductal carcinomas, which constitute about 85% **Escrcega et al.,(2007)**. In general, most of Egyptian patients (97%) are diagnosed at advanced stage (II & III) and most cases possess positive axillary lymph node metastasis, (70.6%) at the time of diagnosis while only 29.4% are free of metastasis,

which reflects the invasive properties of breast cancer among Egyptian patients **Karin (2008)**. Screening for breast cancer is currently the most effective available method for secondary prevention. The three commonly used methods are mammography, breast self-examination (BSE), and clinical breast examination (CBE) by trained personnel. In the west, large randomized trials demonstrated the benefits of mammographic screening for women during the sixth decade of life. It must be noted, however, that its usefulness during the age period of 40-49 years is disputed because active breast parenchyma with cyclic and sometimes fibrocystic changes decrease the sensitivity of mammography in pre menopausal women (**Lord, et al., 2008 and Russo & Russo 2008**). The BSE is generally considered the least effective of the three modalities above-mentioned (**Russo, J, Balogh, G.A, & Russo, I.H. 2008 and International Institute for Population Sciences (IIPS) and Macro International, 2007**). Evidence suggests that CBE detects many of the breast cancers found by mammograms and also some that mammograms miss, particularly in younger women

(Parkin, et al., 2002 and Singletary et al., 2006).

This makes CBE a good candidate for detecting early breast cancer in communities with limited resources. Early breast cancer detection improves outcome in terms of cost-effectiveness, assuming that treatment is available. However, achieving such an outcome requires public education to foster active patient participation in diagnosis and treatment. Given the lack of a national screening program in Egypt, limited resources, and the special characteristics of breast cancer in Egypt, the researchers sought to examine the applicability of combining CBE and mammography in a pilot cross-sectional study among Egyptian women particularly in rural areas.

Aim of the study.

This study aimed to evaluate the effect of the breast health promotion counseling on breast cancer screening behaviors among female patients.

Research questions:

1. Is there improvement in women's knowledge after counseling?
2. Is there improvement in performance in BSE, and BSE proficiency and its effect on women's health beliefs?
3. What is the relationship between women's health beliefs and their proficiency skills to detect breast cancer post counseling?

Study Design:

A quasi-experimental design was used in the current study (pre/post-test design), a single group is studied.

Setting: The study was conducted at the outpatient clinics (Medical clinics, and the Obstetric & Gynecological out-patient clinics), in Ain Shams University Hospital, Assuit University Hospital, and Maternal and Child Health Center in Port Said.

Subjects

The study population included 90 female patients; 30 from Ain Shams University Hospital, 30 from Assuit University Hospital, and 30 from Port Said Maternal and Child Health Center during their visit to the outpatient clinics, either alone or accompanied by others. They were chosen as stratified random sample over a period of 12 weeks.

The inclusion criteria were

- (1) Being 18-50 years and older.
- (2) Not having a history of breast cancer.
- (3) Not being pregnant or breastfeeding.
- (4) Having the ability to read and write.
- (5) Had not previously performed a mammography

Field work

Data collection for this study was carried out in the period from Jun 2013 until August 2013; the researchers collected the data during the morning at three days/week from 10 am to 11 or 11.30 am in each setting. The subjects (30), in each setting were divided

into 3 groups; each of them consisted of 10 female patients. The researchers met each group three times /week for 60-90 minutes. The period of implementation was 12 weeks for each group.

Ethical considerations:

An approval was obtained from the Ethical Committee of Faculty of Nursing, Assuit, Ain Shams, and Port Said University. All ethical issues of research were mentioned.

1. Verbal permission (informed consent) was obtained from each subject who agreed to participate at their first session.
2. The participants were informed about the purpose of the study.
3. The researchers explained to the participants that no risk or hazards related to the study.
4. Each participant was informed that her participation in the study was voluntary and that she has the right to withdraw from the study at any time without giving any reason.
5. All information was treated confidentially.

Tools used for data collection in this study:

1. **A structured interviewing questionnaire** to collect obtained information about the participants' socio-demographic characteristics (age, current marital status, level of education, employment status, income level, having children, and other medical information factors (having knowledge of breast cancer, BSE, & mammography, having a family history of breast cancer).

2. **Breast Self-Examination Proficiency Rating Instrument (BSEPRI)** to be used to measure BSE proficiency (skills & lump detection). Developed by **Wood (1994)**, it is a checklist with ten items measuring BSE inspection and palpation skills as the subject demonstrates BSE on a simulated breast model embedded with five lumps. The BSE skill scores are formed by summing the number of correct responses then converting that score to 100. For the lump detection skill, participants were asked to identify the number of breast lumps in the model, and a point was given for each lump found during BSE palpation. The BSE proficiency was measured post counseling. The reliability and validity of the scale were tested.

3. **Champion's Health Beliefs Model Scale (CHBMS)** of breast cancer screening. The CHBMS, developed by **Champion (1993)** which used to measure health beliefs of susceptibility (4 items), benefits of BSE (4 items), benefits of mammography (4 items), barriers to BSE (11 items), and barriers to mammography (13 items), by using five-point Likert responses. It was adapted for Egyptian women. Higher scores reflect a higher degree of health beliefs. Health beliefs were assessed at pre-counseling and post counseling. The reliability and validity of the scale were tested.

4. **The Breast Health Knowledge (BHK)** form was used to measure knowledge about breast cancer. The 22- item form was based on common knowledge of breast cancer risk factors, symptoms, and screening practices and composed specifically for this study based on an extensive review of the literature. All the items were true–false. To obtain an overall knowledge score, one point is added for each correct response and with scores ranging from 0 to 22. A high score is associated with greater knowledge. On average, the participants were able to complete the instrument in less than 10 minutes. The BHK was assessed at pre counseling and post–counseling. The reliability and validity of the scale were tested.

Breast health promotion counseling

Implementation of the study passed into three phases: (Pre assessment phase, counseling intervention phase and post assessment phase).

I-Pre assessment phase

A comfortable, private place was chosen for the interview. Orientation was done by the researchers, who first introduced themselves, then explained the purpose, significance, content and procedures of the counseling.

The researchers spoke openly with all participants using simple terms and encouraged them to express their feelings, participants were interviewed individually at the clinics where pre- counseling was done using A structured interviewing questionnaire, Breast Self-Examination Proficiency Rating Instrument, Champion’s Health Belief Model Scale (CHBMS) and The Breast Health Knowledge (BHK) and reassessed by researchers in post counseling.

II-Counseling sessions:

The counseling included 10 sessions distributed as follows:

First session included: Booklet: The booklet entitled “Breast Cancer: Being Healthy is in Your Hands” and includes same contents with the health education that focused on the importance of mammography, CBE, and BSE. All participants were given a booklet as reminders for BSE practice.

Second session

The session included information on breast anatomy, incidence, mortality and risk factors for breast cancer development.

Third session

The session included information on breast changes, BSE, CBE, and mammography,

Fourth session

The session included the importance of early detection of breast cancer and treatment options of breast cancer.

The teaching sessions from second to fourth were followed by a film. A 60 - 90-minutes teaching session was conducted with small groups of eight to ten

women using a flip chart. The flip chart had pages with graphics and the typeface at least 20–24 points. Therefore, the participants could look at the graphics while the educator is reading the written message. At the end of the session, the researchers reviewed the major themes of the session and women were encouraged to ask questions about having mammography and CBE, and practicing BSE. The addresses and telephone numbers of the appropriate breast health resources, where women have a mammography and CBE in the study area, were distributed in Cairo, Assuit and Port Said.

Fifth session

Instructions for Breast Self-Examination provided through BSE instructions were viewed. In the film, the BSE was simplified by diagrams, which highlighted the area of breast to be covered. Simple instructions were given on how to move the fingers over the breast; and which parts of the fingers should be used. The instructor translated all spoken information from English to Arabic.

Sixth session

Card: The BSE card was a one page, colored card entitled “Steps to Breast Self-Examination” and based on the card obtained from **Susan (2007)**. It provides an example of the correct method for performing a BSE and was designed to pictorially depict the procedure for completing the BSE that gave directions for performing BSE in one side.

Seventh, Eighth, and Ninth Session

BSE instructions: The individual BSE instruction (15 min) was held in a separate room that was quiet, private and free from interruption. The content of this session included building confidence to complete all steps of BSE, and observation of the researchers while performing BSE. The researchers demonstrated proper palpation using the breast model. Participants then practiced the skills on the breast model with corrective feedback and reinforcement given from the researchers. Then, each woman was required to demonstrate BSE and asked to find the lumps in the model. The instruction was repeated until all participants demonstrated proficient BSE skills.

Tenth session

Calendar: The calendar entitled “Three Steps for Breast Health” is an educational calendar designed to address key points about BSE, CBE, and mammography. The calendar provides remembering the right days of performing BSE as the women can easily draw attention on the suitable days of practicing BSE.

Post counseling:

The post-counseling assessment was done by reapplying the Breast Self-Examination Proficiency Rating Instrument, Champion’s Health Belief Model

Scale (CHBMS) and The Breast Health Knowledge (BHK).

All participants were provided with drinks and snacks and were not paid for their participation.

Limitations of the study:

Initial contacts were made with 90 women and 5 women were not eligible to participate in the study due to their unwillingness, to participate, problems in transportation, and some of them refused to complete data collection unless they receive money. In addition, one woman was excluded due to having breast cancer after the intervention began. Therefore, 84 eligible participants were successfully recruited.

A pilot study was carried out before starting data collection to estimate the time required for filling in the tools to check the tools clarity and applicability.

3. Results

Table (1) shows that almost three fifths of the studied sample (59.5%) their age ranged from 40-<45 years. Less than three quarters of them were married (71.4%). Regarding to the educational level, the highest percentages were secondary and illiterates representing (23.8% and 22.8%), respectively. Concerning employment status, the highest percentage (76.2%) was employed. Regarding to participation in health insurance, three quarters of sample do not participate in health insurance. More than four fifth of the study sample (86.9%) hadn't family history of breast cancer, while only (11.9 %) of females performed mammogram. As regard, breast feeding the highest percentage of females breast fed their children (85.7%) and females who breast fed their children with duration more than one year represented (45.2%).

Regarding knowledge of breast cancer risk factors, signs and symptoms and screening practices, highly statistically significant differences were detected between participants pre and post counseling (Table 2). Regarding risk factors information (97.6%, and 84.5%), respectively the participants post counseling reported that the no breast feeding and late menopause were risk factors compared to (33.3%and 11.9%), respectively pre counseling.

In relation to screening practice information, there are increasing in knowledge among women post counseling compared to pre counseling. More than three quarters of women (81 %) indicated that they knew when to do BSE post counseling compared to (16.7%) pre counseling. The vast majority (92.9%) knew that performing BSE monthly helps in early detection of breast cancer compared to (21.4%) pre counseling. Most of them (91.7%) post counseling stated that the type of therapy depends on early detection of breast cancer.

Table (1) Socio demographic characteristic of the study sample.

| Variables | No | % |
|--|----|------|
| Age in years | | |
| 40-<45 | 50 | 59.5 |
| 45-<50 | 24 | 28.5 |
| 50+ | 10 | 12 |
| Marital status: | | |
| Single | 6 | 7.1 |
| Married | 60 | 71.4 |
| Divorced | 12 | 14.4 |
| Widow | 6 | 7.1 |
| Educational level: | | |
| Illiterate | 20 | 22.8 |
| Primary | 18 | 21.4 |
| Secondary | 20 | 23.8 |
| High school | 14 | 16.7 |
| University | 12 | 14.3 |
| Employment | | |
| yes | 64 | 76.2 |
| No | 20 | 23.2 |
| Income | | |
| Adequate | 29 | 65.5 |
| Non- adequate | 55 | 34.5 |
| Presence of health insurance: | | |
| Yes | 20 | 23.8 |
| No | 64 | 76.2 |
| Family history of breast cancer | | |
| Yes | 11 | 13.1 |
| No | 73 | 86.9 |
| Presence of children: | | |
| Yes | 72 | 85.7 |
| No | 12 | 14.3 |
| Breast feeding | | |
| Yes | 72 | 85.7 |
| No | 12 | 14.3 |
| Duration of breast feeding | | |
| Not feed | 12 | 14.3 |
| <6 months | 22 | 26.2 |
| 6-12 months | 12 | 14.3 |
| >1 year | 38 | 45.2 |
| Performance of mammogram | | |
| Yes | 10 | 11.9 |
| No | 74 | 88.1 |

Regarding signs and symptoms knowledge of breast cancer, there was increased knowledge among participants post counseling in relation to presence of lump, nipple discharge, pain and change in breast size and shape (78.6%, 83.3%, 77.4% & 21%), in comparison with pre counseling (28.6%, 31%, 21.4% & 19%), respectively with statistically significant differences between pre counseling and post counseling.

As shown in (Table 3), there were increased in mean scores in post counseling compared to pre counseling regarding to perceived susceptibility, benefits of BSE and benefits of mammography. On the other hand there were increased in mean scores in pre counseling in comparison to post counseling regarding to barriers to BSE and mammography with statistically significant differences between both of them.

As regards the breast self-examination proficiency, breast self-examination, clinical breast examination and mammography rate, table (4) shows that the mean score of breast self examination proficiency (skills & lump detection) of the participant women were higher in post counseling compared with pre counseling (56.31 ± 15.51 & $2.79 + 1.08$ respectively), with highly statistically significant differences. Concerning the frequency of practicing breast self examination, the current study result demonstrated that the participant women were over three times likely more to perform regular breast self-examination in post counseling compared with pre counseling with a statistically significant difference. Moreover, the majority of women did not perform clinical breast examination and mammography (91.7%, 86.9%), respectively with no statistically significant differences detected among participants' women.

Table (5) reveals that there were highly statistically significant differences between BSE proficiency skills and perceived susceptibility. At the same time there were statistically significant differences between BSE proficiency lump detection and perceived susceptibility, benefits of BSE and mammography and barriers of BSE and mammography. On the other hand, no statistically significant differences were observed concerning BSE

proficiency skills, benefits and barriers of BSE and mammography.

Table (6) shows that there was a highly statistically significant difference between knowledge of women pre-versus post counseling and their age. That was obvious with the age group (40-<45 years) with statistically significant improvement in their knowledge ($P=0.0001$) post counseling more than age group (50-55 years old) ($P=0.045$).

In relation to family history, there was a highly statistically significant improvement in knowledge among women who had negative family history versus positive family history ($P=0.015$).

Regarding their level of education, all the women had improvement in their knowledge regardless their level of education post counseling, which was obvious among preparatory school group with ($P=0.001$).

Table (7) shows that there were statistically significant differences between patients in their screening practices (BSE & Lump detection) post counseling in relation to their knowledge ($P=0.095$, & $P=0.0001$ respectively), in which improvement in BSE proficiency scale was highly related to improvement in knowledge, while there were no statistically significant differences in the other screening practice methods (mammography and clinical breast examination) ($P=0.898$, & $P=0.93$ respectively) in relation to their knowledge.

Table (2) Distribution of the participants by knowledge pre and post counseling

| Variables | Pre | Post | X ² | P. value |
|--|------|------|----------------|----------|
| | % | % | | |
| (1) Risk factors information: | | | | |
| Age | 21.4 | 82.1 | 62.01 | <0.0001 |
| No breast feeding | 33.3 | 97.6 | 76.75 | <0.0001 |
| Obesity | 21.4 | 73.8 | 44.18 | <0.0001 |
| Smoking | 26.2 | 82.1 | 55.36 | <0.0001 |
| Family history | 28.6 | 73.8 | 36.26 | <0.0001 |
| Early menarche | 16.7 | 47.6 | 18.44 | <0.0001 |
| Nuillparity | 38.1 | 64.3 | 10.51 | <0.001 |
| Oral contraceptive pills | 35.7 | 71.4 | 20.1 | <0.0001 |
| Late menopause | 11.9 | 84.5 | 76.78 | <0.0001 |
| (2) Screening practice information | | | | |
| Time to do clinical exam | 50 | 83.3 | 21 | <0.0001 |
| Time to do B.S.E | 16.7 | 81 | 69.47 | <0.0001 |
| Benefits of B.S.E | 21.4 | 92.9 | 87.7 | <0.0001 |
| Time to do BSE in menopause | 8.3 | 73.8 | 74.39 | <0.0001 |
| Examine under axillaries | 11.9 | 88.1 | 97.52 | <0.0001 |
| Time to do CBE between 30-40years | 10.7 | 78.6 | 77.89 | <0.0001 |
| Time to do mammography between 40-50 years | 14.3 | 67.9 | 50.27 | <0.0001 |
| Time to do mammography after 50 years | 9.5 | 66.7 | 60.25 | <0.0001 |
| Benefits of early detection | 19 | 91.7 | 89.62 | <0.0001 |
| 3.Signs and symptoms knowledge | | | | |
| Lumps | 28.6 | 78.6 | 42.21 | <0.0001 |
| Nipple discharge | 31 | 83.3 | 49.39 | <0.0001 |
| Pain | 21.4 | 77.4 | 52.6 | <0.0001 |
| Change in size and shape | 19 | 21 | 64.38 | <0.0001 |

Table (3): Comparison of the mean scores of the Champion's Health Belief Model Scale pre and post counseling

| Items | Pre counseling | Post counseling | T- Test | p. value |
|--------------------------|----------------|-----------------|---------|----------|
| Perceived susceptibility | 6.74+3.14 | 11.85+4.11 | 9.054 | <0.0001 |
| Benefit of B.S.E | 6.21+1.91 | 12.63+2.16 | 20.401 | <0.0001 |
| Benefit of mammography | 23.69+8.45 | 30.82+9.93 | 5.01 | <0.0001 |
| Barriers of B.S.E | 25.04+9.69 | 14.39+7.05 | 8.143 | <0.001 |
| Barrier of mammography | 20.38+11.31 | 16.19+6.75 | 2.916 | <0.004 |

Table (4) Changes in BSE proficiency (skills & lump detection), breast self-examination, clinical breast examination and mammography.

| Items | Pre | post | X ² | p.value |
|-----------------------------|---------------|-------------|----------------|---------|
| | M±SD % | M±SD % | | |
| B.S.E proficiency | | | | |
| ▪ Skill | 18.2 + 7.14 | 56.31+15.51 | 20.45 | <0.0001 |
| ▪ Lump detection | 0.583 + 0.714 | 2.79 + 1.08 | 15.62 | <0.0001 |
| B.S.E frequency: | | | | |
| ▪ Regular | 6 | 18 | 5.67 | 0.017 |
| ▪ Irregular | 94 | 82 | | |
| Clinical breast examination | | | | |
| ▪ Yes | 5 | 8.3 | 0.876 | 0.349 |
| ▪ No | 95 | 91.7 | | |
| Mammography | | | | |
| ▪ Yes | 5 | 13.1 | 2.487 | 0.115 |
| ▪ No | 95 | 86.9 | | |

BSE: Breast self-examination

CBE: Clinical breast examination

Table 5 Relationship between women's health beliefs and their BSE proficiency (skills & lump detection) to detect breast cancer

| Variables | BSE proficiency skills | P.value | BSE proficiency lump detection | P.value |
|--------------------------|------------------------|---------|--------------------------------|---------|
| Perceived susceptibility | 6.252 | 0.000 | 2.248 | 0.024 |
| Benefits of BSE | 0.586 | 0.559 | 2.113 | 0.038 |
| Benefits of mammography | 1.318 | 0.191 | 2.222 | 0.029 |
| Barriers of BSE | 1.280 | 0.204 | 2.851 | 0.006 |
| Barriers of mammography | 0.243 | 0.808 | 2.843 | 0.006 |

Table 6 Relation between knowledge of the women about breast cancer pre versus post counseling and their socio-demographic characteristics

| Item | Knowledge Pre- post counseling | P value |
|---------------------------|--------------------------------|---------|
| Age | | |
| 40-<45 | X ² =(91.2) | 0.0001 |
| 45-<50 | X ² =(40.53) | 0.0001 |
| 50-55 | X ² =(20) | 0.045 |
| Family History | | |
| Yes | X ² = (22) | 0.015 |
| No | X ² =(119.41) | 0.0001 |
| Level of education | | |
| Illiterate | X ² =(32.53) | 0.002 |
| Primary school | X ² =(34) | 0.002 |
| Preparatory school | X ² =(37.33) | 0.001 |
| High school | X ² =(28) | 0.014 |
| University | X ² =(24) | 0.020 |

Table (7) Relation between screening practices' methods of the women about breast cancer and their knowledge

| Item | Knowledge (Pre counseling) | Knowledge (post counseling) |
|-----------------------------|----------------------------|-----------------------------|
| BSE | $X^2=(44.07)$ P=0.266 | $X^2=(28.62)$ P=0.095 |
| Lump detection | $X^2=(39.64)$ P=0.441 | $X^2=(101.9)$ P=0.0001 |
| Mammography | $X^2=(16.58)$ P=0.206 | $X^2=(4.9)$ P=0.898 |
| Clinical breast examination | $X^2=(18.07)$ P=0.155 | $X^2=(4.34)$ P=0.93 |

4. Discussion

Breast cancer is the most common type of cancer around the world. Early detection and immediate treatment are the most effective ways to reduce the mortality rate in breast cancer and may also extend the patient's life span and improve her quality of life **Facione et al.,(2000), Nystrom (2000), Kilic et al., (2006)**. The early detection methods for breast cancer; breast self-examination (BSE), mammography, and clinical breast examination (CBE) are secondary prevention measures.

Regarding to the socio –demographic characteristics for women the results revealed that the age of the women ranged from 40-55 years, almost three fifths of them were in the age ranges 40-<45 and the majority of them are married. This was in line with **International Institute for Population Sciences (IIPS) and Macro International. (2007) Parkin et al., (2002)**. Which reported that the mean age of Kuwaitis breast cancer patients was 45 years, which was close to that of Egyptian patients? However, the present study disagreed with **Parkin et al.,(2002)** who found that the mean age of women in Victoria, Australia was 56 years for breast cancer.

Concerning the education level, the results of the present study revealed that the highest percentage of the women were secondary education accounting for less than quarter. This explains the lack of knowledge related to breast cancer and methods of early detection. This result was congruent with **Kilic et al., (2006)** who found that the awareness of breast cancer among the respondents could be attributed to the level of education of the respondents who are in tertiary institution and are opportune to obtain information from various sources.

As regards occupation, the current study results showed that more than three quarters of the participants were working and about two thirds of them their income was sufficient. This result may be due to that most of women spend most of time at work and do not have enough time to know anything about breast cancer and its practice. This result is in agreement with number of studies on BSE carried out in Turkey, which showed that women in Turkey have inadequate knowledge about BSE and its practice. Thus, very few women practice BSE and, therefore, they are not making use of a very valuable tool for

protecting their breasts, as well as (**Secginli & Nahcivan 2006 and Smith et al., 2006**).

Regarding the performance of mammogram, the present study results found that the majority of the participant women were not having mammogram done, which may be due to that most of them were working and busy, having low income and not having insurance, are not aware of the importance of mammography, and lack of mammography facilities. These results are incongruent with **Smith et al., (2006)**, on the study in Turkey, which revealed that the rate of women having mammography was around 10.7 to 25 %.

Regarding to knowledge related to breast cancer risk factors, signs and symptoms and screening practices, results of this study indicated that there are highly statistically significant improvements among participants post counseling (Table 2), that was obvious regarding risk factors' information which increased to be for most of women post counseling as reported in relation to breast feeding and late menopause compared to almost one third and less pre counseling. These findings are in accordance with **Selda and Nursen (2011)**, who stated that the intervention was successful and appears to be associated with producing significant increases in breast health knowledge as well. As well knowledge is an important element in the HBM. Although mean pretest scores for breast health knowledge of two groups were similar, the intervention group significantly differed from the control group at all posttests. As well, this finding is consistent with previous studies which revealed that breast health interventions significantly improved the breast health knowledge (**Garza et al., 2005; Lee et al., 2003; Rao et al., 2005 and Wood et al., 2002**)

In a similar study, **Hana et al., (2010)** found that the mean knowledge score increased significantly from 10.9 in the pre-test to 13.5 in the post test ($p<0.001$).

As well, a study conducted by **Hall et al., (2007)** showed that multifaceted culturally sensitive and linguistically appropriate breast cancer educational interventions can improve women breast health knowledge.

In a study carried out by **Valdez et al., (2002)**, a total of 1197 Latina women were randomly assigned

to a control or educational intervention about breast cancer. Women in the intervention group exhibited significantly higher knowledge scores in the post-test than the pre-test with the highest increase among never-screened women. The intervention also increased the likelihood of women seeking information about a mammogram.

One of the study hypotheses was that there will be a significant change in women's health beliefs post counseling. In this study there were a significant improvement in women's health beliefs regarding to perceived susceptibility, benefits of BSE and mammography. At the same time, there were improvements in barriers of BSE and mammography in post counseling, these results are consistent with **Secginli & Nahcivan (2011)**, who found that there was an increase in perceived susceptibility, benefits of BSE and mammography but in contrast to these results no significant changes were seen in perceived barriers to BSE. As well (**Allen and Bazargan Hejazi 2005; Champion et al., 2003; Garza et al., 2005; Hall et al., 2007; Han et al., 2009; Lu 2001; Secginli and Nahcivan 2006; Sohl and Moyer 2007; and Wood et al., 2002**) stated that health beliefs and the breast health knowledge have been shown to correlate significantly with having mammography, clinical breast exam and practicing BSE. As well the increases in perceived susceptibility, benefits of BSE and mammography were similar with past literatures demonstrate that breast education programs influence women's health beliefs (**Avci and Gozum 2009, Hacıhasanoglu and Gozum 2008, Garza et al., 2005, Gursoy et al., 2009, Hall et al., 2007, Han et al., 2009 and Lu 2001**)

Unlike most studies investigating only one of the breast cancer screening measures, the current study investigated the effect of a Breast Health promoting (BHP) counseling to improve mammography, Clinical Breast Examination (CBE), and Breast Self-Examination (BSE). It was designed in a positive manner by systematically modifying specific health beliefs, and increasing breast health knowledge in a sample of Egyptian women aged 40 and older. The BHP counseling significantly improved BSE rates among women. However, it did not have the anticipated effect on CBE and mammography rates.

In the present study, BSE performance was evaluated with both BSE frequency and BSE proficiency (skills & lump detection). Results of the current study showed that teaching BSE significantly improved the BSE performance. Before the BHP counseling, the participants' women were non-performers. Less than fifth of the participants' women performed BSE regularly. This finding was synchronized with a study conducted in Turkey by **Secginli and Nahcivan (2011)**, which revealed that

26% of women performed BSE regularly. Another study carried out in Jordan by **Taha et al., (2010)**, which reported that a total of 73% of the participant women had never performed a BSE. The results were in line with those of several earlier studies reporting that BSE training increases the frequency of BSE and increases women's understanding of the technique (**Lu, 2001, Taylor, 2002, Wood et al., 2002, Coleman et al., 2003, Lee et al., 2003, Luszczynska, 2004, Wood & Duffy, 2004, Sørensen et al., 2005, Keyod, F., 2005, Budakoglu et al., 2007, Funke et al., 2008, Hacıhasanoglu & Gozum, 2008, Avci & Gozum, 2009 and Guleser et al., 2009**).

These results might be attributed to difficulty to learn and requires thoroughness and high level of motivation, lack of knowledge regarding to importance of BSE, they don't know how to perform BSE or don't like to practice it. Further reasons were that they were too busy for getting to do it, BSE made them feels anxious, preference for either own doctor to do it. They did not want to worry about cancer; they did not think they were at risk of breast cancer.

However, this result was contradicting with the study carried out in Jordan by **Abu Salem (2007)** who showed that most of the female nurses practiced BSE, this because they are well aware of this information by virtue of their work as health professionals.

On the other hand, women in **Taylor's study (2002)** did not improve their BSE technique after participation in a BSE education program. In addition to BSE frequency, the woman's ability to perform BSE correctly is at least equally important. In the present study, women who had participated in the BHP counseling were more likely to perform BSE proficiently. These findings of the current study are consistent with the results of studies of several researchers (**Pinto & Fuqua, 1991, Taylor, 2002, Wood & Duffy, 2004, Mitchell et al., 2005, Sørensen et al., 2005, Hall et al., 2007 and Funke et al., 2008**), who found that women who were taught BSE performed BSE proficiently. Further, other studies have stated that the favorable impact of video instruction and return demonstration on enhancing a woman's confidence in performing BSE, thus increasing both frequency and proficiency (**Champion, 1995, Wood, 1996, Janda et al., 2002, Wood et al., 2002, Wood & Duffy, 2004 and Hall et al., 2007**).

Mammography screening is currently considered the "gold standard" to reduce breast cancer mortality and is recommended every one to two years for women aged 40 years and older, can reduce mortality by approximately 20-25% over 10 years, It is considered the suitable convenient breast cancer screening for asymptomatic women (**WHO, 2004 and American Cancer Society, 2010**). Randomized

controlled trials have shown that screening by mammography can significantly reduce mortality from breast cancer by up 40% in those who attend **Bedwani (2001)**.

Findings of the current study revealed that the majority of the participant women did not perform CBE and mammography. These results were synchronized with the study carried out in Egypt by **Fikry et al., (2012)** which stated that 96.9% of women did not mammography. Moreover, these results were in accordance with the study of **Salder and Weldon (2007)**. On the other hand, these findings were consistent with the study conducted in Turkey by (**Secginli and Nahcivan2006, Avic and Kurt 2008, and Secginli and Nahcivan 2011**) which found that the rate of performing mammography and CBE at regularly interval is still low.

The high rate of women who did not perform CBE and mammography may be attributed to culture factors, the waiting times for mammography appointments were too long; and the mammography machine was out of order in one hospital that was in the study area.

The current study result revealed that the age group 40-<45 years had significant improvement in their knowledge ($P = 0.0001$) post counseling more than age group 50-55 years old ($P = 0.045$) with a highly statistically significant difference. The same result was mentioned by **EzzEldin et al.,(2012)** who observed that the middle age of their studied female employees had a higher knowledge than older ones and they are careful about their health. But this result contradicted with that of the study carried out in Nigeria by **Okabia (2006)**, which revealed that the higher knowledge score were among older women

In relation to family history, there was a highly statistically significant improvement in knowledge among women who had negative family history versus positive family history ($P = 0.015$). This finding could be explained because those who hadn't previous family history of tumor were curious to gain information and experience they lack about disease which improved their knowledge. This result was incongruent with that of a study by **Kalantari and Montazeria (2008)** who reported that no significant association was detected between family history and knowledge of breast cancer

Regarding level of education of female patients under study, all the women had improvement in their knowledge regardless their level of education post counseling, which was obvious among preparatory school group with highly statistically significant difference ($P = 0.001$). This study finding is in the same line with the study carried out in Nigeria by (**Akpo 2007 and Ezz EIDin et al., 2012**) who revealed that

knowledge scores were higher among better educated women.

The current study result revealed that there was a positive relation between patients' screening practices (BSE & Lump detection) post counseling in relation to their knowledge and that improvement in BSE proficiency scale was highly related to improvement in knowledge. This finding was in agreement with (**Ezz EIDin et al., 2012 and Akpo 2007**) who found that the women with a higher knowledge were more likely to practice breast self examination. On the other hand, the findings were contradicting with the study carried out in Iran by **Kalantari and Montazeria (2008)** who reported that although the women were had higher knowledge of breast cancer yet, they were not practicing breast self examination.

In contrast, there was no statistically significant difference in the other screening practice methods (mammography & clinical breast examination) in relation to their knowledge. It may be due to that the mammography wasn't available in their areas and they feel embarrassing to that there is no female physician available and also it may be attributed to culture factors, the waiting times for mammography appointments were too long; and the mammography machine was out of order in one hospital that was in the study area.

Conclusion

Based on the results of the current study, it can be concluded that most of the participants' women have poor knowledge about breast cancer regarding risk factors, signs and symptoms, screening practice information before counseling, which improved after counseling. Regarding screening methods, the results revealed that there were improvement in BSE, CBE and mammography after sessions of counseling, and decreased barriers to mammography and BCE.

Recommendations:

According to the results of the current study; the following recommendations are suggested:

- Practitioners must continue to counsel and update women about breast cancer to reinforce their breast cancer screening practices.
- Continuous education and training need to be provided, especially concerning risk factors, and breast cancer estimation.
- Adopting strategies to minimize the perception of barriers related to breast cancer screening methods
- Institutional frameworks and policy guidelines to be developed to empower nurses to play an expanded role in breast cancer care.

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