Effect of Tailored Breast Cancer Screening Web-Based Educational Program on Women Experience and Satisfaction

Doaa Abd El Salam Amin Yacout [(1)], Neama Yousef Mohamed[(2)]

(1) Assistant professor, Community Health Nursing, Faculty of Nursing, Damanhour University, Egypt
(2) Assistant professor, Community Health Nursing, Faculty of Nursing, Alexandria University, Egypt

Abstract

Background: Breast cancer is the leading cause of cancer-related deaths in women, and mammography is proven to detect breast cancer at its earliest stage; raising women's awareness regarding this service is highly beneficial. The level of women's satisfaction and their knowledge, and breast self-examination (BSE) practices plays an important role in adherence to such public service and help to reach the aim of health for all including women. **Aims of study**: to assess the effect of tailored breast cancer screening (BCS) web-based educational program on women's knowledge and practice level regarding breast cancer and Measure the level of women's satisfaction with the tailored breast cancer screening web-based educational program received. **Study Design:** A quasi-experimental pretest - posttest research design was used. **Study Settings:** The current study held in 5 primary health care settings in Alexandria governorate . **Study Subjects**: the study was carried out on one hundred women who were selected randomly. **Data collection tools:** Four tools were used to collect the required data to assess women demographic data, health profile and lifestyle pattern, women's knowledge and BSE practices and their level of satisfaction with the tailored web site and the training received. **Results**: there is a statistically significant improvement of the total knowledge score of the studied women after the training implementation, where the mean score percent pre the training was 33.8±23.3which increased to 78.8±19.3 after the training There is a statistically significant improvement of the total BSE score of the studied women after the training implementation, where the mean score percent pre the training was 24.8±29.6 which increased to 85.0±24.5after the training., the overall satisfaction level of the studied women portrayed that slightly more than seventy percent of them were satisfied with the 100 million Seha-supporting women health web site interface and the training program applied. **Conclusion:** There is a statistically significant improvement in women's knowledge and BSE practice scores after the training implementation. There are statistically significant association between the studied women's satisfaction with the 100 million Seha - supporting women health web site interface and their knowledge scores. **Recommendations**: Disseminate the tailored breast cancer screening web-based educational program link in a wider-base. Encouraging the mass media to highlight this link for wider distribution.

Keywords: Tailored Breast Cancer Screening, Web-Based Educational,

Introduction

Breast cancer is the leading cause of cancer deaths in women worldwide. It is the main cause of women cancer-related deaths in developing countries, and it is the second-leading cause in developed countries **(Seely, and Alhassan, 2018).** These findings shed the light on the strong need to take a step-in stoppage of these alarming state. Screening is a way of finding out if the women are at higher risk of developing cancer, consequently early treatment can be offered, or information given to help them make informed decisions **(Udoh et al, 2020)**. Most national screening guidelines suggest that there is value in mammography screening for women in their 40s. Attending screening mammography has the benefit of reducing breast cancer mortality by 40% in average-risk women **(Oeffinger et al., 2015, Siu , 2016, IARC, 2016).**

Other benefits to screening include the reduction in costs associated with treatment, especially for individuals who diagnosed at an earlier stage which is less invasive and costly, might reduce patient anxiety and improve

prognosis **(Webb, Kopans, and Cady, 2014)**. The American Cancer Society (ACS) recommends annual screening for women 45–54 years of age; women 55 years of age and older should then transition to biennial screening (American Cancer Society Guidelines for the Early Detection of Cancer (ACS), 2020).

In this regard, in October 2018, WHO teamed up with the Ministry of Health and Population (MoHP) to develop a nationwide screening program: "100 Million Seha campaign", for mass screening and treating HCV infections and NCDs. The campaign's objective to leave no one behind meant that it extended to expatriates, refugees and asylum seekers. This campaign also focused on diagnosing NCDs and risk factors (hypertension, raised blood sugar and obesity) - conditions that typically remain undiagnosed in much of the population **(WHO, 2019, WHO, 2020a)**. Furthermore, President Abdel-Fattah Al-Sisi launched numerous healthcare initiatives to upgrade healthcare services presented to people of all ages. One of these initiatives is targeting women health "The Egyptian Women are Egypt's Well-being initiative" This initiative is part of the 100 Million Health initiative, focusing on the detection of breast cancer. The initiative benefits about 28 million Egyptian women and aims, besides treating patients, at raising the awareness of women about the causes of breast cancer and ways to conduct self-examination for women above the age of 18. The initiative was launched in nine governorates: Alexandria, Port Said, Beheira, Fayoum, Assiut, Qalioubiya, Matrouh, South Sinai, and Damietta (Egyptian Center for Strategic Studies, 2020).

Currently there is no sufficient knowledge on the causes of breast cancer, therefore, early detection of the disease remains the cornerstone of breast cancer control. When breast cancer is detected early, and if adequate diagnosis and treatment are available, there is a good chance that breast cancer can be cured. If there is delayed in detection, the curative treatment may be is no longer an option. In such cases, palliative care to relief the suffering of patients and their families is needed. According to WHO statistics (2020), the majority of deaths (269 000) occur in low- and middle-income countries, where among women with breast cancer who are diagnosed in late stages due mainly to lack of awareness on early detection and barriers to health services **(WHO, 2020a)**.

WHO promotes comprehensive breast cancer control programs as part of national cancer control plans **(WHO, 2020b).** The recommended early detection strategies for low- and middle-income countries are the awareness of early signs and symptoms and screening by clinical breast examination in demonstration areas. Mammography screening is very costly and is feasible only in countries with good health infrastructure that can afford a long-term program **(Schonberg et al, 2020, WHO, 2020b)**. Helping women make choices to reduce cancer risk and to improve breast health behaviors is important, but the best ways to reach more people with the assistive intervention is not known **(Doshi et al, 2012,Maggie et al, 2015).** Although, the breast cancer awareness month, marked in countries across the world every October (Pink month) helps to increase attention and support for the awareness, early detection, and treatment as well as palliative care of this disease **(WHO, 2020c)** this seems not enough. Now day in the era of the e-learning or online ways of getting the information. a web-based tailored educational intervention will help to achieve the proposed aims to raise women awareness regarding breast cancer. (**Bowen, et.al. 2017)** where these activities will be achieved at anytime and anywhere, so the women can reach it if they in need for help, assistance, and guidance and be satisfied with such practices **(Ahmed et al, 2018, Suleiman, 2014).**

Community health workers (CHWs) including community health nurses play an important role in breast cancer screening process and provide different roles in early detection and prevention of cancer. The most common role of the community health workers is awareness raising and education. Activities included CHWs conducting door-to-door home outreach visits in the community to raise awareness about breast cancer, providing educational talks at community health centers and communal areas (such as youth centers, and schools), handing out pamphlets and information leaflets, showing motivational videos on mobile phone and teaching women how to perform their own BSE **(O'Donovan, et.al., 2020, Chowdhury, et al, 2015).**

To sum up, CHWs have a positive role in breast cancer detection, diagnosis and treatment involve a complex pathway with multiple stages from the initial point of referral following a potential abnormality to timely diagnosis and staging, treatment planning and access and through to follow-up. (**Figure 1**) (O'Donovan et al,2020, **Ginsburg, et al, 2014, Abuidris, et al, 2013**).
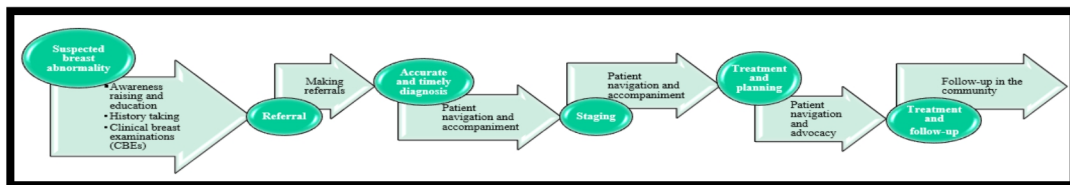
Figure (1): A proposed model for CHWs in the early detection of breast cancer: Roles for CHWs at each stage in a patient's breast cancer journey (O'Donovan et al., 2020)

Significance of the study:

Breast cancer has become increasingly prevalent in women, especially in younger women. Unfortunately, early breast cancer detection may be hampered by women's knowledge about breast cancer, risk factors, mammography, and breast self-examination practice. The Internet is rapidly becoming an accepted standard for disseminating and obtaining health information. However, health information presented on the Web frequently is neither tailored to clients' needs nor theoretically driven. So tailored breast cancer screening web-based educational program must be examined to satisfy women's needs and to ensure its benefits in raising their awareness regarding early detection practice for cancers.

Aims of the study

The current study aimed to

1. Assess the effect of tailored breast cancer screening web-based educational program on women's knowledge level regarding breast cancer.
2. Evaluate the effect of tailored breast cancer screening web-based educational program on women's practice level regarding breast self-examination.
3. Measure the level of women's satisfaction with the tailored breast cancer screening web-based educational program received.

Research hypotheses:

- Women who trained to use the tailored breast cancer screening web-based educational program launched by 100 million Seha initiative and received the educational program regarding breast cancer will exhibit higher level of knowledge, practices and satisfaction post the program.

Operational definition:

Tailored breast cancer screening (BCS) web-based educational program in this study is defined as the Internet-based breast cancer screening health education tools that theoretically driven from certified references (100 million Seha initiative link) , presented on the Web, and tailored to meet patients' needs which adopted by researcher

Subjects and Method

Materials:

Study Design:

A quasi-experimental research - a pretest-posttest design was used to carry out the current study.

Study Setting:

The 100 Million Seha Initiative in Alexandria planned to provide its services for early detection of breast cancer and maintain women health through 20 screening primary health care setting; each one of these setting provide the screening services for those who nearby these settings. The current study held in one primary health care setting affiliated to the ministry of health (constitute 25% of these screening settings and harvesting the highest number of attendees) namely Semoha Family Health Center, Sidi Bishr family health center,

Algomrok Health Center, Almanshia Health Office, and Alattarin Health Office.

Study Subjects:

- The G* Power Program (Version 3.1.9.7) was used to estimate the effect size of the sample in experimental research design using the following parameters: Effect size w (0.50) that will provide a large effect size convention, α error probability/significance level (0.05), 1-β error probability /power (0.95). The minimum acceptable sample size is 80 women. The selection of the studied women was done according the following steps: **the first step:** A 125 women were selected to be included in the study using equal allocation method (25 women) attending each of the previously mentioned settings using a systematic random sampling selection method. Accordingly, among every 3 women attending the health office for screening, one woman was selected till reach the total required number of subjects. These women were followed till they finished the screening and received the results of the mammogram. **The second step: recruitment of women based on inclusion criteria:** After interpreting the breast examination findings, then those who have normal findings or just benign changes were recruited and welcomed to participate in the study. **The inclusion criteria** "Have normal mammogram finding, have a smart phone connected with internet, and willing to participate in the study." Their phone number and names were listed and recorded in order to track them by WhatsApp, Facebook, or any social media they prefer during the period of training, for further program evaluation and after for any questions.

A 105 women who have normal breast examination findings or just benign changes were invited to join in the training. Five women were dropped out during the training process, so the final number of women included in the study was 100 women who attend the training till its end.

Tools of the study:

In order to collect the necessary data for the study, the following tools were used, the tools were developed by the researchers after reviewing recent and available literatures.(**Egyptian 100 million Seha Initiative. (2020)., Hibler L. (2014).**)

Tool I: Women's sociodemographic data and health profile assessment questionnaire:

This tool was used to assess women's sociodemographic data and health profile including the following parts.

Part I: Demographic data which include (Age (chronological age)**,** Marital status**,** Occupation**,** Income**,** and Level of education)

Part II: Reproductive History which include (No of gravida, No of Parity, Contraceptive use history, History of hormonal replacement therapy, Breast feeding experience, and Family history of cancer)

Part III: Health History and lifestyle pattern which include (BMI**,** Practicing of exercises**,** Periodic checkup**,** Smoking experience**,** and women assessment of their diet either healthy or unhealthy diet).

Part IV: Breast examination findings which present the results of breast examination based on mammogram findings interpretation. Benign changes which include (Adenosis, Cysts, Fat necrosis, Fibroadenomas, and Intraductal papilloma), and **carcinogenic changes** which include (Ductal carcinoma in situ (DCIS), and Breast cancer "Stage 0, stage IA, Stage IB, Stage IIA, Stage IIB, Stage IIIA, Stage IIB, Stage IIIC, and Stage IV"). ACS, 2020) (**Appendix I**).

Tool II: Women knowledge regarding breast cancer assessment tool:

Women knowledge regarding breast cancer was assessed by using a adapted tailored breast cancer screening web-based guided by the launched 100 million Seha initiative official web site http:// www. 100 million Seha.eg/ (Egyptian 100 million Seha Initiative, 2020). It includes four domains which are:

Domain I: Nonmodifiable risk factors which include 5 items (Sex**,** Age**,** Positive family history**,** Previous history of the disease**,** and Early menarche before age 12 and delayed menopause after age 55 years old).

Domain II: Modifiable risk factor which include 3 items (Obese class III, delayed getting children or first child after 35 years, and Hormonal replacement without doctor prescription

Domain III: Signs of abnormal changes in breast which include 8 items (Persistence lumps and bumps at breast or under axilla lymph node**,** Redness, hotness at any site of the breast**,** Change in breast size or configuration**,** Skin wrinkles**,** Persistent and sudden pain at any site of the breast**,** Itching and skin rash around nipple**,** Inverted or retracted nipple**,** Sudden breast secretions.

Domain IV: Prevention of breast cancer which include 6 items (Fixed Breast Self-Examination (BSE) monthly (either at after menses every month or at a defined time after menopause, Call physician immediately if observe abnormal changes in breast, Follow healthy lifestyle pattern, Healthy diet, Exercises, and Breast feeding if possible).

The total Knowledge Scores was 48 points, each complete correct answer was scored "2", incomplete correct answers scored "1", and a score of "0" was given to incorrect answers or don't know. Then the total scores are transferred into percentages and classified into three categories where, those who get a score of 75% and more was classified as "good knowledge", those who get a score of 50% to less than 75 % was classified as "fair knowledge" and those who get a score of less than 50% was classified as "poor knowledge level". This tool was used to assess women knowledge either pre- or post-the training.

Tool III: Women Practice for Breast Self-Examination (BSE) assessment tool:

Women practice for BSE was assessed by using a adapted tailored breast cancer screening web-based guided by the launched 100 million Seha initiative official web site

http://www.100millionSeha.eg/ illustration for the BSE steps (Egyptian 100 million Seha Initiative, 2020). It includes three main techniques (in the mirror technique which include 2 steps), (lying down technique which include 3 steps), and (while bathing technique which include 1 steps).

The total practice Scores was 12 points, each complete correct practice was scored "2", incomplete correct practice scored "1", and a score of "0" was given to incorrect practice or don't know. Then the total scores are transferred into percentages and classified into three categories where, those who get a score of 75% and more was classified as "good practice", those who get a score of 50% to less than 75 % was classified as "fair practice" and those who get a score of less than 50% was classified as "poor practice level". This tool was used to assess women BSE practice either pre- or post-the training.

Tool IV: Women's satisfaction with the tailored BCS Web based educational program based on 100 million Seha assessment tool:

This tool was developed by the researchers to assess the level of women satisfaction with implemented web based program based on 100 million Seha initiative. It includes 25 statements arranged under three main parts which are;

Part I: Women general satisfaction regarding the availability of web site which include 5 items (Quality of the web site, responsiveness to your questions, user friendliness of the web site, provided knowledge in the web site, and overall web site interface).

Part II: Level of women's satisfaction regarding the ease of use of the web site which include 13 items (The content provided on screen, Interface design of the web site, the organization of information on the screen, the content provided, the use of terms throughout the web site, the characters on the screen, accessibility of the web site, the attractiveness of the web site, the pictures used, if they will recommend this web site for others, the position of messages on the

screen, the applicability of information, and the referral system guidance).

Part III: Level of women's satisfaction regarding the training program received it includes 7 items (The materials and technical equipment used, the trainer (s) ability to lead the discussions and answering the trainees inquires, the training environment, the role of the trainer(s) in the clarification of the content, the sequence of the sessions, the teaching method used, the duration of training). In addition to women opinion regarding the best word to describe the web site to others.

This tool used a three-points Likert scale ranged from (0 Dissatisfied), (1 Partially satisfied) and (2 Satisfied). The total satisfaction score indicates the sum of scores of the three parts and it was 50 points. Then the total scores are transferred into percentages and classified into three categories where, those who get a score of 75% and more was classified as "satisfied", those who get a score of 50% to less than 75 % was classified as "partially satisfied" and those who get a score of less than 50% was classified as "dissatisfied".

Google form was distributed online to the studied subjects to assess their satisfaction after they watch and use the web site.

Methods:

The study was conducted through three phases:

Phase I: Assessment and preparation phase:

A- Administrative process

- An official letter was directed from the Faculty of Nursing, Alexandria University to Directorate of Health Affairs in Alexandria to obtain an approval for collecting the necessary data from the selected settings.

- Approval letters directed from the Directorate of Health Affairs in Alexandria to directors of the selected primary health care settings (health offices).

- Meetings were held with directors of the selected health offices to clarify the purpose of the study, to gain their cooperation during data collection and if possible, to provide a suitable place to hold meeting with the participant women.

B- Development of study tools.

- Tool I and tool IV was developed by the researchers after a thorough review of the relevant literature and Tool II and tool III were adopted by the researchers after reviewing of recent literatures guided by 100 million Seha initiative official web site (O'Donovan et al,2020, Ginsburg, Chowdhury, Wu et al, 2014, Abuidris, Elsheikh, Ali et al, 2013).

C- Content validity:

- Tools were tested for their content validity by five experts in community health nursing field.

D- Reliability of the tools:

- Reliability of the tool IV was asserted using Cronbah's Alpha coefficient test. The coefficient values were (r = 0.971) which indicate that the tool is 97.1% reliable.

E- Pilot study

- A pilot study was carried out on 10 women in order to ascertain the relevance, clarity and applicability of the tools, test wording of the questions and estimate the time required for filling the questionnaire. Based on the obtained results, the necessary modifications were done.

F- Development of the training program:

- The developing of the breast cancer and BSE awareness program was carried out by researchers according to the following steps using and based on national initiatives of 100 million Seha:

Step I- Stating clear objectives;

A-General objective:

At the end of the training program application the women's knowledge

regarding breast cancer and BSE practices will be improved.

B- Specific objectives:

- Identify the modifiable risk factors related to cancer.

- List the non-modifiable risk factors related to cancer.

- Differentiate between modifiable and non-modifiable risk factors related to cancer.

- State the signs of abnormal changes in breast.

- Discuss the preventive measures for breast cancer

- Demonstrate the BSE using the in-mirror technique, lying down technique, and while bathing technique following the correct steps for each technique.

Step II- Preparation and organization of the program media:

- Preparation of media used in the program application: The most relevant, culturally acceptable and elaborative resources as "Videos" were selected by the researchers to be used in conjunction with the 100 million Seha initiative Official web site as it considers the main visual available online sources for mother (Tailored Breast Cancer Screening Web-Based) in order to enhancing the women's memorization of breast cancer related knowledge and BSE practice.

Phase II: Field work/ Implementation phase:

- This phase included the implementation of the planned program's sessions according to the following; - The researchers were introducing themself to the studied women and ask them to share one little known fact about themselves (Ice breaking process).

- The studied women were divided into five group including 20 women at each setting of the study to facilitate group control and provide better messages and train them effectively.

- Tool I,II,III were distributed to women before conducting the program to perform the pretest phase

- In each setting the program was lunched when available number of women at least 5 were accepted and welling to participate from chosen list.

- Each session was discussed with women using online web based as one of the educational strategies and aid used in implementation through using researchers' internet source.

- The breast cancer awareness program was implemented for the women in the form of eight sessions, each session takes around 15-25 minutes and it was including the following: **Four awareness raising sessions**; session **(1,2)**: Introduction about the magnitude and significant of cancer screening and its related risk factors either modifiable or non-modifiable risk factors. Session **(3,4)**: Signs of abnormal changes in the breast that permit early detection of cancer and its preventive measures. **Four practice related sessions**; **(5, 6)**: introduction about the importance of breast self-examination (BSE) and its timing. Different techniques for BSE. Session **(7, 8)**: steps of BSE in different technique either in-mirror, lying down or while bathing.

- The researchers used different teaching methods as discussion, demonstration and re-demonstration on breast model and used for example a real different size and shape of orange to get mother familiar with texture of abnormality and role play. Power point presentation, teaching aids as printed materials and illustrative videos also were used.

- The link of the web based was sent to each woman through desired social media to help in knowledge retention and for further information.

Phase III: Evaluation phase:

- After the implementation of the breast cancer awareness program, the evaluation phase performed.

——At the end of the program post-test was done to determine the effect of the program on the women's knowledge regarding breast cancer and BSE practice using tool II and tool III after the program implementation.

——Tool IV were sent as online link using google from to assess participants women satisfaction regarding the web program

- Data were collected by the researchers from July to October 2019.

Statistical analysis

- Data collected was coded and transferred into specially designed formats to be suitable for computer feeding. International Business Machine - Statistical Package for Social Sciences (IBM-SPSS version 25) was utilized for both data presentation and statistical analysis of the results.

- Categorical data were expressed in the form of frequencies and percentages. Numeric data were expressed in the form of mean and standard deviation (SD).

- Chi-square test and Fisher's Exact test were used to test the significance of results of qualitative variables. Mauchly's test of sphericity (sphericity assumed / epsilon Greenhouse Geisser/Huynh-Feldt) and Eta square (Eta square (η^2) were used to detect the effect size of the program.

    - The level of significance selected for this study was P value equal to or less than 0.05.

Ethical considerations

- Written informed consent after complete description of the research included at the start-up statement at the beginning of the questionnaire. Also, assured confidentiality and anonymity of participant's response. Participation was maintained on a voluntary basis and their right to withdrawal at any point of the study were emphasized.

Results:

Table (1) presents that the mean age of the studied women is 51.2±5.8years (SD) ranging from 40 to less than 65 years. Nearly

two third were married (67%). Nearly two fifths of them (43%), had a basic level of education and a 12 % have a high level of education. Nearly half (49%) of them were working women. The majority of the studied women (83%) reported that they have unsatisfactory income.

Table (2) present that 67% of the women were currently married and 28% were previously married and 78.9% of them gravida 2-3. Whereas, among those who get previous pregnancy (88 women), the majority (84.1%) of them were para 2-3 and among those who have children, only more than two fifths (45.5%) of them comply their breast-feeding experience for a whole two years of babies live. The table show that 81.1% of the married women previously used Intra uterine device and 71.5% used hormonal method and only 6.3% used isolation as a natural contraceptive method. Less than one fifth (18%) of the studied women have positive family history of breast cancer. Around two fifths (43%) of them were overweight or have certain degrees of obesity (class I or II). Regarding the reported lifestyle pattern of the studied women only less than a fifth of them practicing exercises regularly and have periodic checkup (16%, 14%respectively). Slightly more than half (52%) of the studied women also added that they exposed to passive smoking at their homes. And the minority of them also reported that they are active smokers. Finally, around one third (31%) of the studied women consume unhealthy diet from their perspectives or didn't able to confirm that they get a healthy diet or no.

Figure (2) document the findings among 125 women who enrolled in the study at its first stage, before exclusion of those who have carcinogenic changes based on mammogram findings of breast examination. The majority of these women didn't have benign nor carcinogenic changes (84.8%, 89.6% respectively). The figure portrays that fibroadenomas, adenosis, cyst, fat necrosis and intraductal papilloma are the form of benign changes noted among the minority of the studied women (4%, 3.2%,3.2%,3.2% and 1.6% respectively), whereas, stage I A breast cancer, stage I B breast cancer, stage 0 breast cancer or ductal carcinoma in situ (DCIS), and

stage II A breast cancer are the form of carcinogenic changes noted among the minority of the studied women (4 %, 3.2%, 1.6% and 1.6% respectively).

Table (3) present the studied women knowledge regarding non-modifiable risk factors of breast cancer only 7 % know that gender is one of these factors preprogram compared to 75% post the program. Only 8 % know that age is one of these factors pre the program compared to 74% post the program. Only 8 % know that positive family history is one of these factors pre the program compared to 73% post the program. Only 9 % know that previous history of the disease is one of these factors preprogram compared to 63% post the program. Only 7 % know that early menarche before age 12 and delayed menopause after age 55 years old is one of these factors pre the program compared to 62% it post the program.

Regarding women knowledge related to the modifiable risk factors of breast cancer we found that only 7 % know that third degree of obesity is one of these factors preprogram compared to 61% post. Also, only 5 % know that getting children after 35 years is one of these factors pre the program compared to 61% post the program. Only 5 % know that hormonal replacement without doctor prescription is one of these factors pre the program compared to 65% post the program.

Regarding women knowledge related to the signs of abnormal changes in breast in case of breast cancer we found that only 6 % know that persistence lumps and bumps at breast or under axilla lymph node is one of these signs pre the program compared to 58% post the program. Only 7 % know that Redness, hotness at any site of the breast is one of these signs pre the program compared to 58% post the program. Also, the table shows that 5 % know that change in breast size or configuration is one of these signs pre the program compared to 54% post the program. Only 6 % know that breast skin wrinkles are one of these signs preprogram compared to 75% post the program. Only 5% know that Persistent and sudden pain at any site of the breast is one of these signs preprogram compared to 57% post the program. Only 4% know that nipple itching, and skin rash is one

of these signs pre the program compared to 56% post the program. Only 6% know that inverted or retracted nipple is one of these signs pre the program compared to 57% post the program. Only 6% know that sudden breast secretion is one of these signs pre the program compared to 75% post the program.

Regarding women knowledge related to the preventive measures of breast cancer we found that only 12 % know that Fixed Breast Self-Examination (BSE) monthly (either at after menses every month or at a defined time after menopause) is one of these preventive measures pre the program compared to 58% post the program. Only 57 % know that they must call physician immediately if observe abnormal changes in the breast as one of these preventive measures pre the program compared to 33% post the program. Only 14 % know that they must follow healthy lifestyle pattern as one of these preventive measures pre the program compared to 61% post the program. Only 5 % know that they must eat a healthy diet as one of these preventive measures pre the program compared to 46% post the program. Lastly, only 12 % know that they must follow exercises program as one of these preventive measures pre the program compared to 51% post the program. Only 12 % know that they must breast feed their babies if possible, as one of these preventive measures pre the program compared to 51% post the program.

Table (4) show the studied women breast self-examination practices either pre the educational program implementation or after. Regarding women practices of BSE steps Infront of mirror we found that only 6 % perform the first step (check for any changes in the normal look and feel of your breasts, such as dimpling, size difference or nipple discharge) correctly pre the program compared to 73% post the program. only 7 % perform the second step (Inspect four ways: arms at sides; arms overhead; firmly pressing hands on hips and bending forward) correctly pre the program compared to 74% post the program.-

Regarding women practices of BSE steps in lying down position we found that only 8% perform the first step (Lie on your back with a pillow under your right shoulder and your right hand under your head.) correctly pre the

program compared to 71% post the program. Only 5 % perform the second step (With the four fingers of your left hand make small circular motions, follow an up and down pattern over the entire breast area, under the arms and up to the shoulder bone, pressing firmly) correctly pre the program compared to 71% post the program. Only 5 % perform the third step (Repeat using right hand on left breast) correctly pre the program compared to 70% post the program.

Finally, regarding women practices of BSE while bathing we found that only 6% perform the first step (With your right arm raised, check your right breast with a soapy left hand and fingers flat using the method described under step 2 ('Lying down'). Repeat on the other side) correctly pre the program compared to 74% post the program.

Table (5) present the studied women according to assessment for the 100 million Seha - supporting women health web site interface and program received. their general satisfaction regarding the availability of web site, the majority (82%) of the studied women were satisfied by the overall web site interface. More than three quarters (79%) of them were satisfied by the quality of the web site, followed by 68% who satisfied by the provided knowledge in the web site, and 62 % who satisfied by the user friendliness of the web site and 61% who satisfied by the responsiveness of to their questions.

Regarding level of women's satisfaction regarding the ease of use of the web site, the majority of the studied women were satisfied by the high-quality content provided on screen, the suitable interface design, the organized non-confusing information, the self-illustrative content provided, and the consistent use of terms throughout the web site (83%,83%, 83%, 82%, and 81% respectively). Just 70% satisfied by illustrative pictures used, and reported recommendation of this web site for others (70%, 69% respectively). Also, applicability of information provided. The clear guidance with a specific information about the referral site address provided (63%, 63% and 56% respectively).

Regarding level of women's satisfaction of training program received, the majority of the studied women satisfied by the materials and technical equipment which simplifying the content, the trainer (s) who can lead the discussions and answering the trainees inquires adequately, and the well designed and arranged training environment (83%, 83%, and 81% respectively). Finally, 63% of the studied women were satisfied by the teaching methods used, and the duration of training and they were satisfied with demonstration and re-demonstration of BSE techniques during the session.

Figure (3) portrays the best words to describe the web site to others from women's perspectives. Around one third (31%) suggests describing it as "it includes updated knowledge", followed by slightly less than a quarter (23%) who suggests describing it as "it is easy to use", around one fifth suggests describing it as "It is easily accessible", "it's interface is well designed" (18%, 17% respectively). Finally, around one tenth (11%) suggests describing it as "it's features are well arranged".

Table (6) presents that there is a statistically significant improvement of the knowledge level regarding the nonmodifiable risk factors domain of the studied women after the training implementation, where the mean score percent pre the training was 31.0 ± 30.9 which increased to 82.7 ± 25.7 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:4.709, P: <0.001, η^2:0.514). Furthermore, there is a statistically significant improvement of the knowledge level regarding the modifiable risk factors domain of the studied women after the training implementation, where the mean score percent pre the training was 27.0 ± 28.8 which increased to 79.1 ± 26.8 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:9.129, P: <0.001, η^2:0.572).

The table also shows that, there is a statistically significant improvement of the

knowledge level regarding the signs of abnormal changes in breast domain of the studied women after the training implementation, where the mean score percent pre the training was 32.3±26.9 which increased to 78.5±26.2 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:7.891, P: <0.001, η^2:0.640). Moreover, there is a statistically significant improvement of the knowledge level regarding the Prevention of breast cancer domain of the studied women after the training implementation, where the mean score percent pre the training was 41.5±29 which increased to 75.9±25.3 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:5.776, P: <0.001, η^2:0.485).

Finally, there is a statistically significant improvement of the total knowledge score of the studied women after the training implementation, where the mean score percent pre the training was 33.8±23.3 which increased to 78.8±19.3 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:2.221, P: 0.007, η^2:0.600).

Table (7) presents that there is a statistically significant improvement of the BSE practice level regarding in the mirror BSE technique of the studied women after the training implementation, where the mean score percent pre the training was 24.5±30.5 which increased to 85.0±26.1 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:44.082, P: <0.001, η^2:0.690). Furthermore, there is a statistically significant improvement of the BSE practice level regarding lying down technique of the studied women after the training implementation, where the mean score percent pre the training was 25.0±29.3 which increased

to 84.5±25.0 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:15.486, P: <0.001, η^2:0.672).

The table also shows that there is a statistically significant improvement of the BSE practice level regarding while bathing technique of the studied women after the training implementation, where the mean score percent pre the training was 25.0±30.5 which increased to 86.5±25.4 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:19.487, P: <0.001, η^2:0.535). Finally, there is a statistically significant improvement of the total BSE score of the studied women after the training implementation, where the mean score percent pre the training was 24.8±29.6 which increased to 85.0±24.5 after the training and these differences were statistically significant where the Eta square test (η^2) was greater than 0.14 that confirm that there are a large effect size of the intervention between the scores reading pre and post (F:12.382, P: <0.001, η^2:0.666).

Table (8) shows that there is a statistically significant association between the studied women's satisfaction with the 100 million Seha - supporting women health web site interface and their knowledge scores, BSE practices scores, and all socioeconomic data except age categories and those who have positive family history of breast cancer. The table shows that the women level of satisfaction was increased by the increased age category, where, slightly less than sixty percent (59.5%) of those who aged 40 to less than 50 years reported that they were satisfied, whereas slightly less than eighty percent (78%) of those who aged 50 to less than 60 years reported that they were satisfied, and slightly less than ninety percent (87.5%) of those who aged 60 years and more reported that they were satisfied. With no statistically significant association between age, positive family history of breast cancer and women's level of satisfaction. Additionally, although there is no statistically significant association between

women's satisfaction and positive family history of breast cancer among the studied knowledge it is clearly noted from the table that 77.8% of those who have positive family history of breast cancer were satisfied.

It also, the level of satisfaction was higher among widow, divorced and single women (85.7%, 85.7, and 80% respectively) than married women (64.2%) with a statistically significant association between marital status and women satisfaction level (FET: 13.029, P:0.022).

Additionally, the majority (96.3%) of those who have above average level of education were satisfied followed by more than two thirds (69.8%) of those who have basic level of education and half of those who have average and high level of education with the same percent for both. with a statistically significant association between level of education and women satisfaction level (FET: 25.388, P:<0.001). Slightly more than half (51%) of the non-working women were satisfied compared to slightly less than half (49%) of the working one, with a statistically significant association between working condition and women satisfaction level (FET: 22.141, P:<0.001). The majority (94.1%) of those who have satisfactory income were satisfied compared to more than two thirds (66.3%) of those who have unsatisfactory one. with a statistically significant association between income and women satisfaction level (FET: 6.009, P:0.043). Regarding the association between the women knowledge score and their satisfaction level, it is clearly noted that the majority (83.3%) of those who have good knowledge scores were satisfied, with a statistically significant association between women knowledge and their satisfaction level (FET: 28.305, P:<0.001). Finally, it is clearly also noted that the majority (83.3%) of those who have good practice scores were satisfied, with a statistically significant association between women knowledge and their satisfaction level (FET: 29.515, P:<0.001).

Table (1): Distribution of The Studied Women According to Their Sociodemographic Data (n.100)

Sociodemographic data	No. (100)	%
Chronological age (Years)		
40 to less than 50	42	42.0
50 to less than 60	50	50.0
60 and more	8	8.0
x̄±SD	51.2±5.8	
Min-Max	40-65	
Marital status		
Single	5	5.0
Married	67	67.0
Widow	21	21.0
Divorced	7	7.0
Level of education		
Basic education	43	40.3
Average	18	18.0
Above average	27	27.0
High-level of education	12	12.0
Occupation		
Working	49	49.0
Non-working	51	51.0
Income		
Satisfactory	17	17.0
Unsatisfactory	83	83.0

Table (2): Distribution of The Studied Women According to Their Health History and Lifestyle Pattern from Their Perspective (n.100)

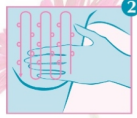| Health history and lifestyle pattern	No. (100)	%
Reproductive History		
No of Gravida	**n.95**	
None	7	7.4
Two – three times	75	78.9
Four times and more	13	13.7
No of Parity	**n.88**	
Once	5	5.7
Two to three times	74	84.1
Four times and more	9	10.2
Breast feeding history	**n.88**	
No	2	2.3
Yes, breastfeed their babies for less than 1 year.	46	52.3
Yes, complete their breast feeding for 2 years.	40	45.5
History of contraceptive use #	**n.95**	
IUD	77	81.1
Combined Contraceptive Pills (CCP)	25	26.3
Oral Contraceptive Pills (OCP)	25	26.3
Injection	10	10.5
Capsules	8	8.4
Isolation	6	6.3
Positive family history of breast cancer-	**n.100**	
No	82	82.0
Yes	18	18.0
BMI (either reported or measured by the researchers)		
Underweight	6	6.0
Average weight	51	51.0
Overweight	31	31.0
Obese class I	7	7.0
Obese class II	5	5.0
Lifestyle pattern		
Practicing exercises		
No	84	84.0
Yes, regularly.	16	16.0
Periodic check-up		
No	86	86.0
Yes	14	14.0
Smoking		
No	45	45.0
Passive smoking at home	52	52.0
Active smoking	3	3.0
Healthy diet		
No	22	22.0
Yes	69	69.0
Don't know	9	9.0

Multiple response
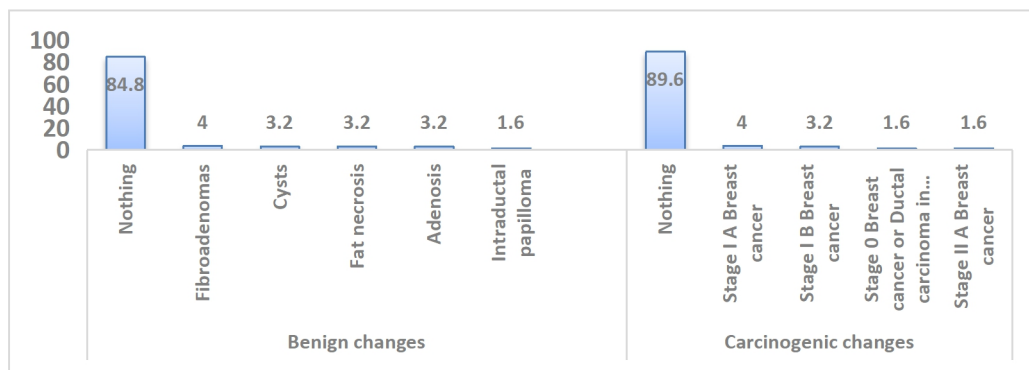
Figure (2) Distribution of The Studied Women According to Their Breast Examination Findings Based on Mammogram Findings (n. 125 before exclusion of those with carcinogenic changes) *

Table (3): Distribution of The Studied Women According to Their Knowledge Regarding Breast Cancer before and after the implemented program (n.100)

Women Knowledge Regarding Breast Cancer	Pre-program		Post program	
	No.	%	No.	%
Nonmodifiable risk factors				
Sex.				
Don't know	46	46.0	5	5.0
Not sure – undecided	47	47.0	20	20.0
Yes, sure	7	7.0	75	75.0
Age.				
Don't know	46	46.0	3	3.0
Not sure – undecided	46	46.0	23	23.0
Yes, sure	8	8.0	74	74.0
Positive family history.				
Don't know	46	46.0	4	4.0
Not sure – undecided	46	46.0	23	23.0
Yes, sure	8	8.0	73	73.0
Previous history of the disease.				
Don't know	45	45.0	4	4.0
Not sure – undecided	46	46.0	33	33.0
Yes, sure	9	9.0	63	63.0
Early menarche before age 12 and delayed menopause after age 55 years old.				
Don't know	46	46.0	4	4.0
Not sure – undecided	47	47.0	34	34.0
Yes, sure	7	7.0	62	62.0
Modifiable risk factor				
Obese class III.				
Don't know	50	50.0	5	5.0
Not sure – undecided	43	43.0	34	34.0
Yes, sure	7	7.0	61	61.0
Delayed getting children or first child after 35 years.				
Don't know	51	51.0	4	4.0
Not sure – undecided	44	44.0	35	35.0
Yes, sure	5	5.0	61	61.0
Hormonal replacement without doctor prescription.				
Don't know	54	54.0	3	3.0
Not sure – undecided	41	41.0	32	32.0
Yes, sure	5	5.0	65	65.0
Signs of abnormal changes in breast				
Persistence lumps and bumps at breast or under axilla lymph node.				
Don't know	36	36.0	4	4.0
Not sure – undecided	58	58.0	38	38.0
Yes, sure	6	6.0	58	58.0

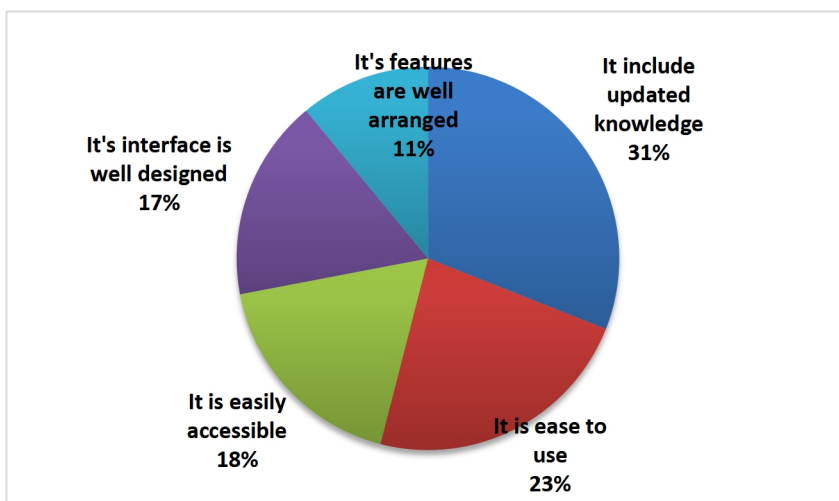| Women Knowledge Regarding Breast Cancer	Pre-program		Post program	
	No.	%	No.	%
Redness, hotness at any site of the breast.				
Don't know	36	36.0	5	5.0
Not sure – undecided	57	57.0	37	37.0
Yes, sure	7	7.0	58	58.0
Change in breast size or configuration.				
Don't know	34	34.0	4	4.0
Not sure – undecided	61	61.0	42	42.0
Yes, sure	5	5.0	54	54.0
Breast Skin wrinkles.				
Don't know	56	56.0	4	4.0
Not sure – undecided	38	38.0	21	21.0
Yes, sure	6	6.0	75	75.0
Persistent and sudden pain at any site of the breast.				
Don't know	36	36.0	3	3.0
Not sure – undecided	59	59.0	40	40.0
Yes, sure	5	5.0	57	57.0
Itching and skin rash around nipple.				
Don't know	36	36.0	3	3.0
Not sure – undecided	60	60.0	41	41.0
Yes, sure	4	4.0	56	56.0
Inverted or retracted nipple.				
Don't know	36	36.0	5	5.0
Not sure – undecided	58	58.0	38	38.0
Yes, sure	6	6.0	57	57.0
Sudden breast secretions.				
Don't know	58	58.0	5	5.0
Not sure – undecided	36	36.0	20	20.0
Yes, sure	6	6.0	75	75.0
Prevention of breast cancer				
Fixed Breast Self-Examination (BSE) monthly (either at after menses every month or at a defined time after menopause).				
Don't know	28	28.0	4	4.0
Not sure – undecided	60	60.0	38	38.0
Yes, sure	12	12.0	58	58.0
Call physician immediately if observe abnormal changes in breast.				
Don't know	28	28.0	4	4.0
Not sure – undecided	57	57.0	33	33.0
Yes, sure	15	15.0	63	63.0
Follow healthy lifestyle pattern.				
Don't know	28	28.0	4	4.0
Not sure – undecided	58	58.0	35	35.0
Yes, sure	14	14.0	61	61.0
Eating healthy diet.				
Don't know	29	29.0	1	1.0
Not sure – undecided	66	66.0	53	53.0
Yes, sure	5	5.0	46	46.0
Follow exercises program.				
Don't know	29	29.0	3	3.0
Not sure – undecided	59	59.0	46	46.0
Yes, sure	12	12.0	51	51.0
Breast feeding if possible.				
Don't know	29	29.0	3	3.0
Not sure – undecided	59	59.0	46	46.0
Yes, sure	12	12.0	51	51.0

Table (4): Distribution of The Studied Women According to Their Breast Self-Examination Practices (n.100)

Breast Self-Examination Practices		Pre-program		Post program	
Steps of BSE	**Accurate BSE steps**	**No.**	**%**	**No.**	**%**
In the mirror	**Step1.** In front of a mirror, check for any changes in the normal look and feel of your breasts, such as dimpling, size difference or nipple discharge.				
	Incorrect	57	57.0	3	3.0
	Incomplete correct	37	37.0	24	24.0
	Correct	6	6.0	73	73.0
	Step2. Inspect four ways: arms at sides; arms overhead; firmly pressing hands on hips and bending forward.				
	Incorrect	57	57.0	3	3.0
	Incomplete correct	35	35.0	23	23.0
	Correct	7	7.0	74	74.0
Lying down	**Step1.** Lie on your back with a pillow under your right shoulder and your right hand under your head.				
	Incorrect	58	58.0	2	2.0
	Incomplete correct	34	37.0	27	27.0
	Correct	8	8.0	71	71.0
	Step2. With the four fingers of left hand make small circular motions, follow an up and down pattern over the entire breast area, under the arms and up to the shoulder bone, pressing firmly.				
	Incorrect	55	55.0	3	3.0
	Incomplete correct	40	40.0	26	26.0
	Correct	5	5.0	71	71.0
	Step3. Repeat using right hand on left breast.				
	Incorrect	54	54.0	3	3.0
	Incomplete correct	41	41.0	27	27.0
	Correct	5	5.0	70	70.0
While bathing	**Step1.** With your right arm raised, check your right breast with a soapy left hand and fingers flat ('Lying down').				
	Incorrect	56	56.0	5	5.0
	Incomplete correct	38	38.0	21	21.0
	Correct	6	6.0	74	74.0

Table (5): Distribution of The Studied Women According to Their Assessment for the 100 Million Seha - Supporting Women Health Web Site Interface and The Training program Received (n.100)

Satisfaction domains	Dissatisfied		Partially satisfied		Satisfied	
	No.	%	No.	%	No.	%
Part I: Women general satisfaction regarding the availability of web site						
1. Quality of the web site.	8	8.0	13	13.0	79	79.0
2. Responsiveness to your questions.	7	7.0	32	32.0	61	61.0
3. User Friendliness of the web site.	9	9.0	19	19.0	62	62.0
4. Provided knowledge in the web site.	4	4.0	28	28.0	68	68.0
5. Overall web site interface.	8	8.0	10	10.0	82	82.0
Part II: Level of women's satisfaction regarding the ease of use of the web site:						
6. The content provided on screen are high in quality.	6	6.0	11	11.0	83	83.0
7. Interface design of the web site is suitable.	4	4.0	13	13.0	83	83.0
8. The organization of information on the screen is not confusing.	6	6.0	11	11.0	83	83.0
9. The content provided are self-illustrative.	5	5.0	13	13.0	82	82.0
10. Use of terms throughout the web site is consistent.	5	5.0	13	13.0	81	81.0
11. The characters on the screen is easy.	4	4.0	22	22.0	74	74.0
12. Accessibility of the web site.	5	5.0	21	21.0	74	74.0
13. Generally, the web site is attractive.	4	4.0	22	22.0	74	74.0
14. Pictures used are well illustrative.	6	6.0	24	24.0	70	70.0
15. I will recommend this web site for others.	4	4.0	27	27.0	69	69.0
16. Position of messages on the screen is consistent.	2	2.0	35	35.0	63	63.0
17. The web site provides applicable information.	3	3.0	34	34.0	63	63.0
18. The referral system provides clear guidance with specific information about the referral site address.	12	12.0	32	32.0	56	56.0
Part III: Level of women's satisfaction regarding the training program received:						
19. The materials and technical equipment simplifying the content.	6	6.0	11	11.0	83	83.0
20. The trainer (s) can lead the discussions and answering the trainees inquires adequately.	4	4.0	13	13.0	83	83.0
21. Training environment is well designed and arranged.	5	5.0	13	13.0	81	81.0
22. The role of the trainer(s) in the clarification of the content is adequate.	5	5.0	21	21.0	74	74.0
23. Sequence and sessions are well-organized.	6	6.0	24	24.0	70	70.0
24. The teaching method used is suitable.	2	2.0	35	35.0	63	63.0
25. The duration of training received is enough.	3	3.0	34	34.0	63	63.0

Figure (3) Women's opinion regarding the best word to describe the web site to others (n=100)

Table (6): The Mean Differences of the Studied Women Knowledge Regarding Breast Cancer Scores at Different Point of Time of The Study (n.100)

Knowledge domain	Pre-program		Post-program		Test of significance
	No.	%	No.	%	
Nonmodifiable risk factors Score					
Incorrect	46	46.0	5	5.0	F:4.709 P: <0.001* η^2:0.514
Incomplete correct	45	45.0	20	20.0	
Complete correct	9	9.0	75	75.0	
x̄±SD	31.0±30.9		82.7±25.7		
Modifiable risk factor Score					
Incorrect	55	55.0	5	5.0	F: 9.129 P: <0.001* η^2:.572
Incomplete correct	39	39.0	31	31.0	
Complete correct	6	6.0	64	64.0	
x̄±SD	27.0±28.8		79.1±26.8		
Signs of abnormal changes in breast Score					
Incorrect	36	36.0	4	4.0	F: 7.891 P: <0.001* η^2:0.640
Incomplete correct	58	58.0	40	40.0	
Complete correct	6	6.0	56	56.0	
x̄±SD	32.3± 26.9		78.5±26.2		
Prevention of breast cancer Score					
Incorrect	28	28.0	7	7.0	F: 5.776 P: <0.001* η^2:0.485
Incomplete correct	60	60.0	32	32.0	
Complete correct	12	12.0	61	61.0	
x̄±SD	41.5±29		75.9±25.3		
Total knowledge Score					
Poor	56	56.0	6	6.0	F: 2.221 P: 0.007* η^2:0.600
Fair	38	38.0	21	21.0	
Good	6	6.0	73	73.0	
x̄±SD	33.8±23.3		78.8±19.3		

F: Mauchly's Test of Sphericity (Sphericity Assumed / Epsilon (Greenhouse Geisser/Huynh-Feldt)   **η^2:** *Eta square (Eta square (η^2)* Effect size (small effect η^2= 0.01, medium η^2= 0.06, large η^2= 0.14)   **P:** P value of test of significance   *** :** Significant at p value ≤0.05

Table (7): The Mean Differences of the Studied Women BSE Practice Scores at Different Point of Time of The Study (n.100)

BSE Practice scores	Pre-program		Post-program		Test of significance
	No.	%	No.	%	
In the mirror technique					
Incorrect	57	57.0	6	6.0	F: 44.082 P: <0.001* η^2:0.690
Incomplete correct	37	37.0	24	24.0	
Complete correct	6	6.0	70	70.0	
x̄±SD	24.5±30.5		85.0±26.1		
Lying down technique					
Incorrect	58	58.0	3	3.0	F: 15.486 P: <0.001* η^2: 0.672
Incomplete correct	37	37.0	25	25.0	
Complete correct	5	5.0	72	72.0	
x̄±SD	25.0±29.3		84.5±25.0		
While bathing technique					
Incorrect	56	56.0	5	5.0	F: 19.487 P: <0.001* η^2:0.535
Incomplete correct	38	38.0	21	21.0	
Complete correct	6	6.0	74	74.0	
x̄±SD	25.0±30.5		86.5±25.4		
Total BSE Score					
Poor	57	57.0	7	7.0	F: 12.382 P: <0.001* η^2: 0.666
Fair	37	37.0	22	22.0	
Good	6	6.0	71	71.0	
x̄±SD	24.8±29.6		85.0±24.5		

F: Mauchly's Test of Sphericity (Sphericity Assumed / Epsilon (Greenhouse Geisser/Huynh-Feldt)   **η^2:** *Eta square (Eta square (η^2)* Effect size (small effect η^2= 0.01, medium η^2= 0.06, large η^2= 0.14)   **P:** P value of test of significance   *** :** Significant at p value ≤0.05

Table (8): Association between the Studied Women's Satisfaction with The 100 Million Seha - Supporting Women Health Web Site Interface and Their Socioeconomic data, knowledge and BSE practices (n.100)

Variables	Women's satisfaction								Test of significance
	Dissatisfied		Partially satisfied		Satisfied		Total		
	No.	%	No.	%	No.	%	No.	%	
Chronological age (Years)									
40 to less than 50	4	9.5	13	31.0	25	59.5	42	100.0	FET: 7.005 P:0.106
50 to less than 60	5	10.0	6	12.0	39	78.0	50	100.0	
60 and more	1	12.5	0	0.0	7	87.5	8	100.0	
Marital status									
Single	1	20.0	0	0.0	4	80.0	5	100.0	FET: 13.029 P:0.022*
Married	5	7.5	19	28.4	43	64.2	67	100.0	
Widow	3	14.3	0	0.0	18	85.7	21	100.0	
Divorced	1	14.3	0	0.0	6	85.7	7	100.0	
Level of education									
Basic education	7	16.3	6	13.9	30	69.8	43	100.0	FET: 25.388 P:<0.001*
Average	2	11.1	7	38.9	9	50.0	18	100.0	
Above average	1	3.7	0	0.0	26	96.3	27	100.0	
High-level of education	0	0.0	6	50.0	6	50.0	12	100.0	
Occupation									
Working	5	10.2	18	36.7	26	53.1	49	100.0	FET: 22.141 P:<0.001*
Non-working	5	9.8	1	2.0	45	88.2	51	100.0	
Income									
Satisfactory	1	5.9	0	0.0	16	94.1	17	100.0	FET: 6.009 P:0.043*
Unsatisfactory	9	10.8	19	22.9	55	66.3	83	100.0	
Positive family history of breast cancer-									
No	7	8.5	18	22.0	57	69.5	82	100.0	FET:3.292 P:0.179
Yes	3	16.7	1	5.6	14	77.8	18	100.0	
Total knowledge Score									
Poor	7	12.5	1	1.8	48	85.7	56	100.0	FET: 28.305 P:<0.001*
Fair	3	7.9	17	44.7	18	47.4	38	100.0	
Good	0	0.0	1	16.7	5	83.3	6	100.0	
Total BSE practices Score									
Poor	7	12.3	1	1.8	49	86.0	57	100.0	FET: 29.515 P:<0.001*
Fair	3	8.1	17	45.9	17	45.9	37	100.0	
Good	0	0.0	1	16.7	5	83.3	6	100.0	

FET: Fisher Exact Test   P: P value of FET   *Significant at P value≤0.05

Discussion

Although, there is no consensus on common cancer screening programs worldwide because the screening programs in each country vary depending on sociocultural and ethnic structures. Moreover, the cost of screening is very high. But Egyptian governorate strive to provide this service for free for the Egyptian women to maintain their health and decrease cancer related deaths (Egyptian 100 million Seha Initiative, 2020). These screening activities become a theme in more than country worldwide, where, breast cancer screening programs have been actively conducted in Turkey to national standards of Cancer Early Diagnosis, Screening and Education Centers, which were established under the Directorate of Public Health and approved that more than 70% of female population must be included in the screening programs to reach the targeted aim of "decreasing the mortality of breast cancer" (Üçüncü, Üçüncü, and Toprak, 2018). Also, Zaman (2010) added that, Norway is a welfare state, and the costs of most health care including mammography screening are covered by the government. So, it is highly important to raise public awareness regarding such screening activities.

Awareness of what is going on with our body was motivate us for cue to action. On behave of this fact, screening program will help women to examine their bodies and be fully oriented with what is going inside this body. So, every public initiative must deal with these previous experiences of the women and try to improve their level of satisfaction. A well-motivated woman shows better adherence to comply with the public initiatives. it is a very bad experience and is a leading to death among women That's why it is important to equip these women either younger or older one with a good level of knowledge, and practice skills regarding this fatal disease.

According the breast cancer facts and figures 2019-2020 published by the ACS, 2019. Historically, ductal carcinoma in situ (DCIS) and lobular carcinoma in situ (LCIS), were considered the two main types of in situ breast cancer. In fact, DCIS sometimes grows so slowly that even without treatment it would not affect a woman's health. Long-term studies have found that only 20%-53% of women with untreated DCIS are ultimately diagnosed with invasive breast cancer. DCIS patients who are premenopausal at diagnosis or who had their DCIS detected by palpation are at greater risk of being diagnosed with a future invasive breast cancer (**Visser**,**et.al 2019, Punglia , et al, 2018).** During 2012-2016, DCIS represented 16% of all breast cancer diagnoses. Incidence rates of DCIS and invasive breast cancer rose rapidly during the last years, particularly among women 50 years of age and older, largely due to increases in the prevalence of mammography screening, DCIS rates among women 50 and older, increased more than 11-fold from 1980 (7 cases per 100,000) to 2008 (83 cases per 100,000) (Surveillance, Epidemiology, End Results Program (SEER), National Cancer Institute, 2018). These findings nearly the same as the current study, where it is noticed that the majority of the studied women didn't have benign nor carcinogenic changes (84.8%, 89.6% respectively). While in more details the results portray that fiber adenomas, adenosis, cyst, fat necrosis and intraductal papilloma are the form of benign changes noted among the minority of the studied women, whereas stage I A breast cancer, stage I B breast cancer, stage 0 breast cancer or ductal carcinoma in situ (DCIS), and stage II A breast cancer are the form of carcinogenic changes noted among the minority of the studied women.

Qasim, Tayyab, Zulqadar, et al, study (2020) suggests that clinical training may have improved knowledge of female medical students regarding breast cancer; yet the knowledge related to the symptoms and risk factors of breast cancer and frequency of breast self-examination of female medical students is less than anticipated. In fact, knowledge of breast cancer symptoms and risk factors is essential for seeking health services. That is means women with higher knowledge level regarding cancer symptoms and its risk factors will adhere to screening program. In this regards the current study shed the light in cheerful findings since although, the minorities of the studied women were knowledgeable about the signs of abnormal changes in breast in case of breast cancer and its risk factors either modifiable or non-modifiable pre the training program, they become more knowledgeable and

their scores improved among around half to around three quarters of them post the program. These findings also confirmed by **Anuwe, 2020** who document that raising public awareness regarding manifestation and risk factors of breast cancer are paramount and it became incentives to seek more information that acting as a reminder to get screened.

One of the Healthy People 2020 initiatives within the U.S. is to increase the proportion of women who receive breast cancer screenings based on the most recent medical guidelines **(Miller, 2016).** Success in breast cancer screening push the women positively and affecting their satisfaction and motivate them to act more to be protected from this fatal disease. There are many factors affecting the success of such screening initiative. In this regard, **Miller, 2016** who studied "Factors for success in breast cancer screening" and **Paul, 2012** who studied factors that influence the uptake of breast cancer screening among women of reproductive age, their studies findings indicate that several social determinants of health as age, income, and having health insurance and region of residence, access to health insurance greatly increases the odds of participation in routine screening. These findings were going in line with the current study findings, where the current study found a statistically significant association between the studied women level of satisfaction and their sociodemographic characteristics including, level of education, marital status, working condition and income. Thereby, such satisfaction affecting the success of the screening initiative.

Generally, women knowledge and practices regarding breast cancer also affecting their satisfaction rate and use of screening services pertained in the community. In this regard, the current study stresses the importance of raise public knowledge level and document the success of training and teaching women which positively affecting their knowledge level in post assessment phase than before. These findings confirm Shrestha-Bogati (2020) study findings who found that the knowledge level of female participants regarding breast cancer in pre data was found to be poor level which increased to very good level after awareness program. Similarly, screening practices were found to be poor level in pre-test results and

after the awareness program, it was increased to excellent level. Furthermore, knowledge of breast cancer screening has been shown to be an important facilitator of mammography use as Marmarà said, 2019. All these findings indicating that later will be affecting the women survival rate, since early detection of cancer affecting its prognosis positively, which was confirmed by Dingemanse, 2013.

From another view, **Wu, Liu, and Chung (2012)** in their research stated that their findings provide a foundation to better understand beliefs and practices of Chinese women toward breast cancer screening (BCS) and highlight the critical need for general public, health professionals, and the health care system to work collaboratively toward improving the quality of breast cancer care in this population. So, more collaborative effort will be affecting women satisfaction rate and use of screening service.

Age is one of the important factors affecting women decision to use screening activities and have a commitment to do so. Age also affecting women satisfaction with screening activities and awareness activities as reported in the current study, which also confirm the **Wilson (2015)** findings, who reported that educating younger women aged 18-39 can have a positive impact on changing behaviors and making better strides to emphasize the importance of breast cancer screening. By educating women before they reach screening age, they will have a better understanding of their needs, and the questions to ask that will increase their likelihood of being screened through mammography beginning at age 40. Another factor investigated in the current study is "is there is an association between those who have positive family history and the level of satisfaction" in this regard, the current study found that although there is no association noted but also these women have a higher satisfaction rate. These findings indicate that these women with positive family history were willing to be engaged in such screening activities and protect themselves from negative consequences of late action. In contrast, the data of Hibler study, 2014 entitled "Screening mammography among women with a family history of breast cancer" demonstrate that high risk populations are not more likely to adhere to

screening guidelines for breast cancer than their average risk counterparts. Whereas Abrahamsson who study "statistical models of breast cancer tumor progression for mammography screening data" in Sweden (2012) confirmed that those who have certain risk factors are more willing to perform screening compared to others.

One of the important parameters affecting women decision to be knowledgeable about any health problem is the ease, availability of teaching material without effort and at achievable cost or even for free. Nowadays, web-based training resources are available everywhere, but one of the challenges facing those who prefer to use these resources is their trust in the information provided and the applicability of its intervention. That is why, it is important to prepare a tailored web-based resources and to be provided through a credential author or referee. One of the interesting focus of this research is that this tailored web-based educational resources are actually available and their authors are credential author. So, it is highly important to understand if the user "women" are satisfied with these resources and declare the weakness to ask the decision makers to improve or even prove its validity.

In this regard, the current study shed the light to assess women satisfaction with the 100 million Seha - supporting women health web site interface and the training program received. This assessment includes three main parts which are women general satisfaction regarding the availability of web site, level of women's satisfaction regarding the ease of use of the web site, and level of women's satisfaction regarding the training program received. The overall findings of the assessment denote that the majority of the studied women were satisfied with this web-based service as well as the training received. These findings confirm Wyatt, Jenkins, Plevak, Venegas Pont, Pruthi study findings (2019) as they conclude that, tailored mobile applications optimize care by facilitating shared decision making and knowledge transfer, and it also enhance the experience of patients as they navigate through their breast cancer journey.

Moreover, a study done in 2014, to explore "Do cancer-specific websites meet patient's information needs?", revealed that, the inter-rater reliability was good, with an intraclass coefficient and the studied subjects confirmed that the questions that were not answered thoroughly by the website include questions about "future planning", "monitoring", and "decision-making" compared to the biomedical questions which received the highest score **(Warren, et.al.2014).** A study done by **Morgan, et al. (2015)** entitled "Using tablet-based technology in patient education about systemic therapy options for early-stage breast cancer: a pilot study" also added that they used a clinician-administered, tablet-based teaching aid to teach patients with early-stage breast cancer about adjuvant systemic therapy that has a positive impact on patient's knowledge and satisfaction. These findings go in line with the current study findings, where the majority of the studied women were satisfied by the overall web site interface, more than three quarters of them were satisfied with the quality of the web site, followed by around seventy percent who satisfied with the provided knowledge in the web site, and around two thirds who satisfied with the user friendliness of the web site and the responsiveness of to their questions. Also, around sixty percent of the studied women were satisfied with the consistent position of messages on the screen, the applicability of the information provided, and the clear guidance with a specific information about the referral site address provided.

To sum up, community health nurses have to clarify to their patients that the 'web-based training' or 'online training' or 'computer-based learning' or 'e-learning' provides the learners with 24-hour access to the training materials, is self-paced, eliminates the need to travel, is less disruptive for the work schedule, and can decrease the time associated with learning. Furthermore, nowadays health care delivery systems strive to upgrading their information technology infrastructure as they increasingly adopt electronic health records. This infrastructure can also support the deployment of web-based training (Atreja, Mehta, Jain, Harris, Ishwaran, Avital, and Fishleder, 2008). Community health nurses have to offer satisfactory services that affecting the women experiences positively and may enhance generations health messages

transference enhancing the community health promotion.

Conclusion

The findings of the present study concluded that, there is a statistically significant improvement in women's knowledge and BSE practice scores after the training implementation. Slightly less than seventy percent of the studied women were satisfied with the availability of the web site, slightly less than three quarters of them were satisfied with the ease of use of the web site and the received training with the same percentage for both of them, the overall satisfaction level of the studied women portrayed that slightly more than seventy percent of them were satisfied with the 100 million Seha-supporting women health web site interface and the training program applied. Finally, there is a statistically significant association between the studied women's satisfaction with the web-based 100 million Seha - supporting women health web site interface and their knowledge scores, BSE practices scores, and all sociodemographic data except age categories and positive family history of breast cancer.

Recommendations

Based on the findings of the current study the following recommendation are suggested:

1- Developing comprehensive coordination protocol between Alexandria Health Directorate, Alexandria University, Ministry of Youth and Sports, NGOs, and other different sectors of the community to raise community awareness the importance of early detection of breast cancer and its benefits.

2- Disseminate the tailored breast cancer screening web-based educational program link in a wider-base (Schools, clubs, youth centers, health care facilities and in a wider community).

3- A web-based material must include a self-reflection questions to understand the users' needs and facilitate material enhancement based on personalized client needs.

4- Encouraging the mass media to highlight this link for wider distribution

5- Further research on web-based educational sites and barriers to use are needed, are also needed.

Author Contribution

All two authors were part of the initial design of the research. They shared in collected and analyzed the data, wrote, and edited the final version of the text of the manuscript and formatted it and submitted it for publication.

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