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(صنف القرآن العظيم)
Effect of An Educational Program in Improving Knowledge, Attitude and Practices of Females Towards Breast Cancer in Kasab Garby and Madinat Elsalam Settings in Sinnar State, Sudan


Amna Alfadol Mohammed Abd Allah

Supervision committee

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Date: February / 2018
Effect of An Educational Program in Improving Knowledge, Attitude and Practices of Females Towards Breast Cancer in Kasab Garby and Madinat Elsalam Settings in Sinnar State, Sudan


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Date of Examination: 22/3/2018
DEDICATION

I am deeply and forever grateful to my parents, brother and sister for their love, support and encouragement throughout my entire life.

Thanks also to my family, especially my husband Sabir Ahmed Abou elnour and my children without their encouragement and understanding, it would have been impossible for me to finish this work.

To anyone who one day inspire me drew a smile on my face, those whom perfume my life with given and happiness my friends

Amna
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Also, my thanks extend to prof. Dafa Allah Omer Abuidris Clinical Oncology National Cancer Institute Member AORTIC of Council for his continues help.

I would like to express my special thanks to the people of Sinnar town especially the females who support this study and for the help and assistance that without them this study could not be achieved.

My thanks also extend to my colleagues for their continuous help in many ways.

Amna Alfadol Mohammed Abd Allah

Abstract

Breast cancer is the most common malignancy in women and it’s a leading cause of cancer death in females in both developed and developing countries, ranking second to lung cancer. A sharp increase in the incidence of breast cancer was found in younger age groups; still the highest number of cases was between 40 and 50 years of age. In Sudan breast cancer mortality rate is high and most of patients are detected at late stages of the disease due to the lack of awareness and absence of screening programs. This highlights the need for increased community awareness about breast cancer and the need for early detection. This study aimed to determine the effect of community based interventional program in improving Knowledge, Attitude and Practices (KAP) of females towards breast cancer after receiving interventional programs. A case-control study design carried out in Sennar state in two areas Kassab Garby (control) and in Madinat Elsalam (study) from August 2014 to December 2017. A total of (400) females were included. (200) for control and (200) for study group. The knowledge and practice regarding breast cancer, was measured by means of structured questionnaire before and after test for the same group. Intervventional program includes breast cancer knowledge and practice (mainly breast self-examination); in form of lectures, poster, and intellectual discussion. Also, pamphlet was prepared in simple Arabic language with simple local words. Data collected was analyzed using computer software program statistical package for social sciences. Ethical approval was taken from Ministry of Health in Sinnar State. Ethical review board and informed consent were taken from each participant. The result showed that the majority of females 105 (52.5%) at control group age >40, 185(92.5%) were married, 88 (44%) uneducated and 123 (61.5%) housewives, 21 (10.5%) had family history. In study group 56 (28%) age >40, 171(85.5%) were married 77(38.5%) uneducated and 141 (70.5%) housewives, 35 (17.5%) had family history. Study group showed statistically significant increases in knowledge regarding all aspects of breast cancer compared to control group post intervention p-value <0.05. Also, after
intervention 184 (92.0) practiced breast self-examination compared to 5 (2.5) pre-tests while no beneficial change was observed in females practiced breast self-examination in the control group 3 (1.5) compared to 0 (0.0) pre-tests. Three participants identified changes in their breasts (breast swelling and nipple discharge). Study concluded that community based interventional programs had a significant impact related to improvement of females’ knowledge of breast cancer and practices of breast self-examination post application of the program. Study recommended that health education programs through various channels should be implemented for the females to increase the awareness and knowledge about breast cancer. Mass media, both print and electronic, should be utilized and community organizations mobilized to disseminate correct relevant information about breast self-examination to females.
أثر البرامج التعليمي في رفع مستوى المعرفة والاتجاهات والسلوك اتجاه مرض سرطان الثدي بين ساكنات قرية كساب قرئي وحي مدينة السلام بمدينة سنار – السودان 2014-2017

أنثى الفضل محمد عبد الله

ملخص الدراسة

يعتبر سرطان الثدي الأكثر شيوعاً لدى النساء. وثاني أسباب الوفيات في الدول المتقدمة والمنامية بعد سرطان الرئة. هناك زيادة بارزة في نسبة حدوث المرض ولا يزال معظم الحالات تتراوح أعمارها ما بين الأربعين والخمسين سنة. وفي السودان تعتبر وفيات سرطان الثدي ذات معدل مرتفع وتبدو الكشف عن معظم المرضى في المراحل المتاخرة من المرض بسبب نقص الوعي وعدم وجود برامج فحص. وهذا يسلط الضوء للحاجة إلى زيادة وعي المجتمع بسرطان الثدي وضرورة الكشف المبكر. تهدف هذه الدراسة إلى قياس أثر فعالية البرنامج التعليمي للمجتمع في رفع مستوى المعرفة والاتجاهات والسلوك لإفادة اتباع اتجاه سرطان الثدي. هذه الدراسة تدليلاً (تいている دارسة قبل وبعد الاختبار) أجريت الدراسة في ولاية سنار في كل من قرية كساب قرئي (مجموعة ضابطة) وحي مدينة السلام بمدينة سنار (مجموعة الدراسة) في الفترة ما بين أغسطس 2014-ديسمبر 2017. بلغ عدد العينة 400 إمرأة 200 لكل مجموعة. تم قياس الوعي والمعرفة والسلوك والممارسات للمشاركات اتباع سرطان الثدي عن طريق استبان منظم قبل وبعد الاختبار. كما تم تقديم برنامج توعي لمجتمع الدراسة يختص بال applicationContext B سرطان الثدي وكيفية الكشف الذاتي للثدي في شكل محاضرات نشاطات وملصقات وبطاقات بلغة بسيطة ومجزمة ومفهومة. تم تحليل البيانات باستخدام برنامج الحساب والبرامج الإحصائية للعلوم الاجتماعية. تم أخذ الموافقة الأخلاقية من وزارة الصحة بولاية سنار ومن كل المشاركات في هذه الدراسة. وكانت النتائج كالالتالي (52.5%) من المشاركات من المجموعة الضابطة كانت أعمارهم أكثر من 40 سنة، 92.5% متزوجات و44% غير متزوجات 61.5% لديهن تاريخ مرضي في الأسرة أما المجموعة الدراسة فكان 85.5% منهم متزوجات 38.5% غير متزوجات 70.5% لديهن تاريخ مرضي في الأسرة. كان هناك فرق واضح وواضح وذات إحصائية عند مستوى دالة (0.05) في مستوى المعرفة لسرطان الثدي وكذلك في ممارسة الكشف الذاتي للثدي عند مجموعة الدراسة مقابلة بالمجموعة الضابطة حيث ارتفعت نسبة النساء اللواتي يمارسن الكشف الذاتي للثدي من (2.5%) إلى (92.5%) بعد البرنامج التدليلي بينما لا يوجد فرق ذا دالة إحصائية في مجموعة التحكم حيث كانت نسبة النساء اللواتي يمارسن الكشف الذاتي للثدي (0%) قبل و(3.5%) بعد الاختبار. تم التعرف على ثلاث حالات لديهن شكوك في الثدي (الم وافزات من الحلمائم). خلصت الدراسة أنها وجود فاعلية واضحة وذات إحصائية إيجابية في المعرفة والممارسة العملية للنساء بعد تطبيق البرنامج التعليمي. توصي الدراسة بضرورة تنفيذ برامج توعية ممتلئة لزيادة وعي النساء تجاه سرطان الثدي. كما ينبغي استخدام الوسائل الإلكترونية والمطبوعة في توسيع النساء بلكشف الثدي الذاتي للثدي.
# Abbreviation

<table>
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<td>ACS</td>
<td>American Cancer Society</td>
</tr>
<tr>
<td>BC</td>
<td>Breast Cancer</td>
</tr>
<tr>
<td>BSE</td>
<td>Breast Self-Examination</td>
</tr>
<tr>
<td>CDC</td>
<td>Center for Disease Control and Prevention</td>
</tr>
<tr>
<td>CBE</td>
<td>Clinical Breast Examination</td>
</tr>
<tr>
<td>CVA</td>
<td>Cerebrovascular accident</td>
</tr>
<tr>
<td>HRT</td>
<td>Hormone Replacement Therapy</td>
</tr>
<tr>
<td>IARC</td>
<td>International Atomic Research Centre</td>
</tr>
<tr>
<td>LCIS</td>
<td>lobular carcinoma in situ</td>
</tr>
<tr>
<td>Mamo-</td>
<td>Mammogram</td>
</tr>
<tr>
<td>MRI</td>
<td>Magnetic Resonance Imagery</td>
</tr>
<tr>
<td>NCI</td>
<td>National Cancer Institute (part of NIH)</td>
</tr>
<tr>
<td>P</td>
<td>Significant value</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomized Control Trial</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Science</td>
</tr>
<tr>
<td>SEER</td>
<td>surveillance epidemiology and end results</td>
</tr>
<tr>
<td>TNM</td>
<td>T (tumor size), N (palpable nodes), and/or M (metastasis)</td>
</tr>
<tr>
<td>USA</td>
<td>United State of America</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
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<td>WHO</td>
<td>World Health Organization</td>
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Chapter One

Introduction

Breast cancer is a global health concern and a leading cause of morbidity and mortality among women (Altheas, M.D.et al,2005). It has been identified as a major public health problem in both developed and developing nations because of its high incidence-prevalence, over-burdened health system and added direct medical expenditure [Bray, F.et al,2013]. Trend analysis of breast cancer indicates a rise by 50-100% in the incidence of breast cancer in last 20 years (Abu Salem, O.et al,2007).

Breast cancer in men is uncommon, accounting for less than 1% of all breast cancers but rise in incidence of male breast cancer has also been demonstrated (Stang, A.et al,2008). Breast cancer can be distinguished from other cancers by the fact that it occurs at a site which can be easily noticed and thus liable for early detection & treatment (Taşçi, A.et al,2010). The incidence, mortality and survival rates for breast cancer vary across the globe because of underlying differences in known risk factors, availability of organized screening programs and access to effective and affordable treatment modalities (Althuis, M.D.et al,2005). However, fatality rates tend to be higher in low-resource countries (World Health Organization, 2006).

Breast cancer associated morbidity and mortality can be reduced through early detection by means of screening programs (Austoker, J.et al,2009), as it not only increases the chances for successful treatment and cure of the disease (Harmer, V., 2008), but also improves chances of survival and lessens the need of invasive treatment (Shrivastava, S.R.et al,2013)]. Ensuring availability of early diagnostic & screening services and taking immediate steps have been regarded as the two main strategies for warranting improvement in the prognostic outcome (Forbes, L.et al,2011).

Studies have shown that in contrast to the developed nations, most of the developing nations have recorded a poor outcome and high fatality rate owing to diagnosis of the breast cancer in advanced stages (Ertem, G.et al,2009). In fact, in a study done in India, five-year survival rate was 56% among patients diagnosed with breast cancer at a later stage in comparison to 85% for cases diagnosed early (Gupta, S.K.et al,2009). Implementation of the preventive measures has been acknowledged as the main tool
in the fight against breast cancer worldwide. Globally, breast self-examination (BSE), clinical breast examination (CBE) and mammography are the recommended screening test for early detection of breast cancer. Due to lack of access to diagnostic facilities, especially for women in low resource settings, it is essential to empower them with BSE as a primary modality for screening (Gupta, S.K.et al.,2009, Karayurt, Ö.et al.,2008).

In Sudan, breast cancer is the most common cancer. It forms 29 – 34.5 % of all cancers among females. It occurs at a younger age compared to Western women, about 40% of the patients are below the age of 45 years, mean age of 50 years. Most of the patients are present with stages 3 and 4 due to the lack of awareness and absence of screening programs (Abuidris, D.O. et al.,2013). Prevention and early detection is the best way for women to lower their risk of dying from the disease ([ACS], 2014). Improve the delivery of services of cancer control through effective planning, coordination and integration of resources and activities such as educational activities, monitoring and evaluations which is one of the objectives of the Sudan National Cancer Strategy, may be the solution for the late stage presentation. (Mohammed S. et al, 2011) Knowing the signs and symptoms of breast cancer help in discovering the disease early and then there are more treatment options and a better chance for cure. (Hussien, R.A et al, 2017) This highlights the need for increased community awareness about breast cancer and the need for early detection. The cancer control program at the federal ministry of health is a part of non-communicable diseases control program, which is responsible for development of plans and guidelines. Guideline has been developed for prevention and control of most common cancer in Sudan (breast, cervix and oral cancer) by raising the awareness of community about risks factors of cancer and by detection of cancer at an early stage, when there is a high potential to be cured. (Lee, N.C.et al, 2014)

Risks factors significantly associated with breast cancer in Sudan were, past history of benign breast disease, pesticides and plasticizers exposure, period of being overweight, practice physical activities, unmarried and decreased number of children. (Ahmed, H.G.et al, 210) These results were allied with the globally known risks factors of breast cancer. Breast cancer early detection comprises early diagnosis and screening. The World Health Organization has adopted the following definitions: an early detection program is the organized and systematic implementation of
interventions that comprise early diagnosis, screening (if sufficient resources are available), diagnosis, treatment and follow-up. (Ahmed, H.G. et al, 210), (WHO, 2007)

Early diagnosis is the awareness (by the public or health professionals) of early signs and symptoms of cancer in order to facilitate diagnosis before the disease becomes advanced, thus enabling more effective and simpler therapy. Although the standard for screening for breast cancer in developed countries is mammography, most middle income and all low income developing countries cannot afford mammography screening, because of the high cost of equipment, personnel and their training. Because of that, in countries with breast cancer are at increasing problem (like Sudan). Alternatives to mammography screening must be considered such as training of lay health care in raising the awareness of the community. (WHO, 2007), (Han, H.R. et al, 2008)

In the absence of readily available mammographic screening, breast self-examination (BSE) (despite its known limitations) remains a viable and practical alternative. (Abdelrahman, S.A. et al, 2006) With greater awareness of breast cancer and proper training in BSE combined with regular clinical breast examination (CBE) it is possible to diagnose breast cancer earlier. (Rao, R.et al, 2005)
**Problem statement**

Breast cancer is a global health concern and a leading cause of morbidity and mortality among women (Altheas, M.D.et al,2005). It has been identified as a major public health problem in both developed and developing nations because of its high incidence-prevalence, over-burdened health system and added direct medical expenditure [Bray, F.et al,2013].

In Sudan, breast cancer appears to be the most frequent hospital treated malignancy, accounting for about one fifth of all cancers reported in males and females combined. (Awadelkarim et al., 2007).

**Rationale**

In Sudan breast cancer is on the rise. 80-85% of these women present with a late stage. Local healers, poverty, illiteracy and ignorance, lack of an effective health education and screening system, and poor distribution of the limited medical resources contribute to this late presentation and death. (Abuidris, D.O.et al,2013).

Women living in rural areas who lack basic health and inadequate skills may have difficulty obtaining, processing, and understanding cancer related information. Also, the stigma surrounding cancer is so great that people hide the disease from their family and friends and will not seek treatment until they are in severe pain,“ (Abuidris, D.O.et al,2013).

Previous research has highlighted that self-care education related to breast health can positively influence outcomes such as increasing the awareness of breast cancer, practicing BSE, and seeking regular professional breast examinations (Ludwick, R.et al,2001; O`ztürk, M.et al, 200). Studies have also indicated the effectiveness of implementing intervention programs in local community centers, clinics, work sites, organizations, residences, and churches to increase breast cancer screening awareness (Worden, J. et al., 1999).

So, this study is to be conducted to find out how the knowledge and practice of females about breast cancer may improve outcome and increase the percentage of female practice breast self-examination from pre- to post-interventional programs. Previous studies conducted by (Hussien, R.A.et al,2017) at Wad Nubau, in
Omdurman locality, North Sudan demonstrated that significant improvement in knowledge regarding, over all knowledge, risk factors knowledge, and change in breast self-examination are practiced from pre- to post-interventional program (Hussien, R.A.et al,2017)
Objectives:

General Objective:

To determine the effect of educational program in improving Knowledge, Attitude and Practices (KAP) of females towards breast cancer in Kasab Garby and Madinat Elsalam settings in Sinnar state, during JANUARY 2015 to December 2017.

Specific Objectives

1. To assess the knowledge, attitude and practices of females toward prevention of breast cancer, mainly self-examination of the breast.

2. To identify barriers towards prevention of breast cancer and care seeking behavior and early detection of breast cancer.

3. To determine prevalence of breast problems among the females.


5. To design and implement training program for females about breast cancer knowledge and practice of breast self-examination.

Research hypothesis.

The research hypothesis was; the application of breast cancer educational program will positively change females’ knowledge, attitude and practice towards breast cancer in Kasab Garby and Madinat Elsalam settings in Sinnar state, during August 2015 to December 2018.
Chapter Two

Literature Review

Review of the disease

According to the National Cancer Center at the National Institute of Health, the word cancer is “a term used for diseases in which abnormal cells divide uncontrollably and are able to invade other tissue. ([NCI],2014) Breast cancer, in particular types of cancer, is a malignant tumor that starts in the cells of the breast. Malignant tumor is a group of cancer cells that can grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body. The disease occurs almost entirely in women, but men can get it, too. ([ACS], 2015).

To understand breast cancer, it helps to have some basic knowledge about the normal structure of the breasts, the female breast is made up mainly of lobules (milk-producing glands), ducts (tiny tubes that carry the milk from the lobules to the nipple), and stroma (fatty tissue and connective tissue surrounding the ducts and lobules, blood vessels, and lymphatic vessels). Most breast cancers begin in the cells that line the ducts (ductal cancers). Some begin in the cells that line the lobules (lobular cancers), while a small number start in other tissues. (ACS, 2015).

Tumors in the breast can be benign (not cancerous) or malignant (cancerous). The latter of the two has the capability of invading and damaging nearby organs and tissues (such as the chest wall); can spread to other parts of the body; can be removed yet sometimes can grow back; and may very well be a threat to one’s life (NCI, 2009). In essence, it is this type of tumor that constitutes what is known as breast cancer. (Wooster, Ret al, 2003)

Warning signs of breast cancer

The warning signs of breast cancer are not the same for all women. (Susan G Komen.2015)
The most common presentation of breast cancer is a lump which is usually painless. Malignant lesion is usually firm, irregular, and often produce visible signs of asymmetry (Rao, R, 2005), or cystic characterized by its persistence throughout menstrual cycle (Scott, S. et al,1999). Still (80%) of all breast lump are non-cancerous (Crosby, J.H., 1996). Nipple discharge is a common symptom but an uncommon presentation of patient with carcinoma, it is only found in (2-10%) of cases (McCarthy, M. et al, 1991) Again, breast pain is rarely a sign of carcinoma (Parker S. L1997). Skin changes: Pseudo range (due to cutaneous lymphatic edema) and Paget's disease (Eczema like condition of the nipple) are presentation of breast cancer (Buyske, J. et al,1996). Normal structures that might be mistaken for a breast mass include prominent rib or costochondral junction, normal granularity of the menopausal breast, and the inflammatory ridge of previous biopsy site (Scott s.et al,1999). That is why distinguishing between early breast cancer and benign conditions could be difficult ([M.O.H] ,1999). Many breast tumors are found by women themselves even in highly screened population. (Auvinen, A. et al,1996).

**Risk factors, symptoms and survival of Brest cancer**

A risk factor is anything that affects your chance of getting a disease such as cancer. About one-half of newly diagnosed breast cancers can be explained by known risk factors, such as age at menarche, first live birth, menopause, and proliferative breast disease. An additional 10 percent are associated with a positive family history. In addition, risk may be modified by demographic, lifestyle, and environmental factors, although their association with breast cancer risk has not been clearly demonstrated. (Miller, A.B.et alm2014). Some women will develop breast cancer even without any known risk factors. Having a risk factor does not mean you will get the disease, and not all risk factors affect your risk to the same extent. Most women have some risk factors and most women do not get breast cancer. (ACS,2015)

Risk factors can be divided into risk determinants and risk modulators. Determinants cannot be changed or influenced on the other hand risk modulators can be changed or influenced.
Age

The risk of breast cancer is strongly related to age (CDC, 2014). About 77% of women diagnosed with breast cancer each year are over age 50, and almost 50% are age 65 and older. Consider this: In women 40 to 49 years of age, there is a one in 68 risk of developing breast cancer. In the 50 to 59 age group, that risk increases to one in 37 (Siegel RL et al, 2017). Epidemiology, and End Results (SEER) database, the incidence of breast cancer by age range was (Edwards, B. K. et al, 2002)

20 to 34 years of age – 2 percent
35 to 44 years – 10 percent
45 to 54 years – 23 percent
55 to 64 years – 24 percent
65 to 74 years – 20 percent
75 to 84 years – 16 percent
Age 85 and older – 6 percent

Genetic risk factors

About 5% to 10% of breast cancer cases are thought to be hereditary, meaning that they result directly from gene defects (called mutations) inherited from a parent. The most common cause of hereditary breast cancer is an inherited mutation in the BRCA1 and BRCA2 genes. In normal cells, these genes help prevent cancer by making proteins that keep the cells from growing abnormally. If you have inherited a mutated copy of either gene from a parent, you have a high risk of developing breast cancer during your lifetime (Jack, R.H. et al, 2009). About one woman in 200 carries the genes. Having one of them predisposes a woman to breast cancer but does not ensure that she will get it (Jack, R.H. et al, 2009).

The risk associated with a positive family history of breast cancer is strongly affected by the number of female first-degree relatives with and without cancer. As an example, in a pooled analysis using data from over 50,000 women with breast cancer
and 100,000 controls, the risk of breast cancer was increased almost twofold if a woman had one affected first-degree relative

Increased threefold if she had two affected first-degree relatives.

In addition to a family history of breast cancer, the age at diagnosis of the affected first-degree relative also influences the risk for breast cancer. Women have a threefold higher risk if the first-degree relative was diagnosed before age 30. But only 1.5-fold increased if the affected relative was diagnosed after age 60.

**Female gender**

Breast cancer occurs 100 times more frequently in women than in men.

Race and ethnicity- Much of the ethnic differences in breast cancer rates are attributable to factors associated with lifestyle and access to healthcare, although genetic and/or biologic factors may also contribute (medup.2016). For example, breast cancer in women under 40 years old and triple-negative breast cancers appear to be more common among African Americans, than whites.

**Breast pathology**

Benign breast disease - A wide spectrum of pathologic entities is included in the category of benign breast disease. Among these, proliferative lesions (especially those with histologic atypia) are associated with an increased risk of breast cancer.

Dense breast tissue — The risk of breast cancer is four to five times greater in women with mammographically dense breasts (usually defined as ≥75 percent density) compared with women of similar age with less or no dense tissue Boyd, N.F.et al,2005), (Boyd, N.F.et al,2007). In addition, longitudinal increases or decreases in breast density on serial screening mammography are associated with an increased or decreased risk of breast cancer, respectively McCormack, V.A.et al,2006). However, increased breast density is not associated with mortality from breast cancer (Kerlikowske, K.et al, 2007), (Lokate, M.et al,2011).
Natural estrogen

One of the most established risk factors for breast cancer is a woman’s total lifetime exposure to oestrogen (Travis, R.C. et al, 2003.). Although oestrogen is produced in a woman’s body (in the ovaries) and is essential for the development of the breast, paradoxically oestrogen is also involved in the development of breast cancer via the stimulation and proliferation of breast cancer cells (Russo, I.H. et al, 1998). In fact, the longer oestrogen is circulating in a woman’s body, the greater the risk of developing breast cancer. If a woman starts her periods earlier than average and goes through the menopause later, her body is exposed to more natural oestrogen (released from the ovaries during every menstrual cycle) over her lifetime and she therefore has an increased risk of developing breast cancer. For women who start their periods earlier than average, the risk is increased by 5% per year, and for late menopause the risk is increased by 3% per year ((Snedeker, S.M.et al, 1995). Similarly, having children reduces a woman’s lifetime exposure to her own oestrogen and therefore her breast cancer risk (Collaborative Group on Hormonal Factors in Breast Cancer, 1997). Each pregnancy is thought to decrease breast cancer risk by 7%. (Russo, J.et al,2005) This is because for the duration of pregnancy the ovaries are not producing oestrogen. It is thought that this is one of the reasons why breast cancer incidence is increasing in western societies, as women are now having fewer children later in life or no children at all. Research indicates that breastfeeding also reduces breast cancer risk and that the longer a woman breastfeeds, the greater the reduction in risk, with a 4.3% decrease in cancer for every 12 months of breast feeding. (Collaborative Group on Hormonal Factors in Breast Cancer, 2002), (Schack-Nielsen, L.et al,2005) It is not fully understood why this should be, but scientists think the breastfeeding may change the cells in the breast and may make them less prone to developing cancer.

Risk modulators (Lifestyle-Related Breast Cancer Risk factors)

Estrogen in pharmaceutical products like the pill and HRT, the contraceptive pill (which contains female hormones) has been shown to slightly increase a woman’s breast cancer risk. This risk slowly disappears after coming off the pill, and is no longer an issue 10 year after cessation of use (Collaborative Group on Hormonal Factors in Breast Cancer, 1996). Post-menopausal use of Hormone Replacement
Therapy (HRT) drugs can increase a woman’s risk of breast cancer (Greiser, C.M.et al,2005), (Million Women Study Collaborators, 2003), (Chlebowski, R.T.et al,2009)

**Alcohol consumption and smoking**

Drinking alcohol has consistently been shown to increase breast cancer risk, in both pre- and post-menopausal women (Longnecker, M.P.et al,195),(Singletary, K.W. et al, 2001),( Hamajima, N.et al, 2002). A recent collaborative survey, looking at over 50 separate studies, also suggests that drinking even small amounts of alcohol can increase the risk. It was shown that 8.8% of women who abstain from alcohol develop breast cancer by the time they are 80 years old, but of those drinking between 2 units and 4 units/day 10.1% and 11.6% respectively will develop breast cancer by the time they are 80 (Sasco, A.J.et al,203). Smoking has long been thought to have no significant effect on breast cancer risk (Johnson, K.C., 2005), (Ha, M .et al,2007). Recent research has suggested exposure to tobacco smoke may increase risk. Exposure to second-hand smoke (passive smoking), has been found to slightly increase breast cancer risk and research suggests that smoking whilst a teenager can also increase a woman’s risk post-menopause (Marcus, P.M.et al200). More research is needed before the association between cigarette smoke and breast cancer is clearly defined. In the meantime, not smoking has other clear health benefits.

**Weight gain and lack of exercise**

Weight gain and being overweight are risk factors for breast cancer in women who have gone through the menopause (Vainio, H., 2002), (Reeves, G.K.et al,2007). The advice would be to adopt a diet that avoids weight gain. Physical activity reduces a woman’s breast cancer risk (Monninkhof, E.M.et al,2007) so regular exercises is advisable. The UK Government currently recommends 30 minutes of moderate activity five days per week (Britain, G., 2004).

**Other risk factors**

As well as those described above, other risk factors for breast cancer include radiotherapy treatment for Hodgkin's lymphoma (Sanna, G.et al,2007), having dense breasts (Tamimi, R.M .et al,2007), being taller than average 43 and having certain kinds of noncancerous breast disease (Webb, P.M.et al,2002). In addition, exposure to
ionizing radiation such as X-rays has been shown to increase cancer risk but this should not stop women having mammograms as the potential benefit of early detection of a breast tumor is believed to far outweigh any risk of exposure to a tiny amount of x-ray radiation during the scan. Research also suggests women working predominantly at night are at increased risk of breast cancer (Hansen, J., 2001). This could be due to exposure to ‘light at night’, which suppresses the production of melatonin, a hormone which is thought to be able to prevent the growth of cancerous cells and which may also increase the release of estrogen from the ovaries (Hansen, J., 2006). More work is needed to fully confirm a link between light at night and breast cancer.

**Environmental factors**

The primary environmental factor that has been shown to have a direct link with breast cancer is ionizing radiation. Epidemiological studies have shown that women exposed to ionizing radiation due to nuclear war and medical diagnostic or therapeutic procedures are at an increased risk of developing breast cancer (Stevens, R.G., 2006). Multiple chest fluoroscopes, breast irradiation for metastasis and radiation treatment, particularly for Hodgkin’s lymphoma and thyroid cancer, have all been linked to an increase in breast cancer. Radiation exposure after the age of 40 results in a minimal increase in risk, while radiation in adolescence is associated with the greatest risk of breast cancer development. Irradiation during infancy for thymus enlargement has a linear dose-response risk for subsequent breast cancer development at a later stage in life (Mattsson, A. et al, 2000). Also, geographic variation in incidence of breast cancer may be partially explained by environmental factors influencing the development of the disease.

**Stage of breast cancer**

To stage cancer, the American Joint Committee on Cancer first places the cancer in a letter category using the TNM classification system. Cancers are designated the letter T (tumor size), N (palpable nodes), and/or M (metastasis):

T: Tumor Size

The letter T followed by a number from 0 to 4 describes the tumor's size and whether it has spread to the skin or chest wall under the breast. Higher T numbers indicate a larger tumor and/or more extensive spread to tissues surrounding the breast.

TX: Tumor cannot be assessed

T0: No evidence of a tumor

Tis: Cancer may be lobular carcinoma in situ (LCIS), ductal carcinoma in situ (DCIS) or Paget's disease

T1: Tumor is 2 cm or less in diameter

T2: Tumor is between 2 and 5 cm in diameter

T3: Tumor is more than 5 cm in diameter

T4: Tumor is any size, has attached itself to the chest wall and spread to the pectoral (chest) lymph nodes

N: Palpable Nodes

The letter N followed by a number from 0 to 3 indicates whether the cancer has spread to lymph nodes near the breast and, if so, whether the affected nodes are fixed to other structures under the arm.

NX: Lymph nodes cannot be assessed (lymph nodes were previously removed, etc.)

N0: Cancer has not spread to lymph nodes

N1: Cancer has spread to the movable ipsilateral axillary lymph nodes (underarm lymph nodes on same side of breast cancer)

N2: Cancer has spread to ipsilateral (same side of body as breast cancer) lymph nodes fixed to one another or to other structures under the arm
N3: Cancer has spread to the ipsilateral mammary lymph nodes or the ipsilateral (same side of body as breast cancer) supraclavicular lymph nodes
M: Metastasis
The letter M followed by a 0 or 1 indicates whether or not the cancer has metastasized (spread) to distant organs (i.e., the lungs or bones) or to lymph nodes that are not next to the breast, such as those above the collarbone.
MX: Metastasis cannot be assessed
M0: No distant metastasis to other organs
M1: Distant metastasis to other organs (imaginis.2015)

**Survival Rate of Breast Cancer**

Survival rate of breast cancer patients depends greatly on the cancer stage; the earlier the cancer is detected and treated, the better the prognosis and the higher the survival rate (Richards, M.A.et al, 1999).
The five-year survival rate for breast cancer is calculated based on averages. Each patient's individual tumor characteristics, state of health, genetic background, etc. will affect her survival. In addition, levels of stress, immune function, will to live, and other UN measurable factors, also play a significant role in a patient's survival. (NCI, 2014)

**Table Stage and survival of breast cancer**

<table>
<thead>
<tr>
<th>Stage</th>
<th>5-year Relative Survival Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>I</td>
<td>100%</td>
</tr>
<tr>
<td>II</td>
<td>93%</td>
</tr>
<tr>
<td>III</td>
<td>72%</td>
</tr>
<tr>
<td>IV</td>
<td>22%</td>
</tr>
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</table>


Tools for early detection.
Breast cancer awareness:

Breast cancer awareness is an effort to raise awareness and reduce the stigma of breast cancer through education on symptoms and treatment. (Smith, R.A.et al, 2006)

Education and awareness together may contribute in a favorable shift in the stage of breast cancer at presentation. Education can be achieved with very low costs, simple, and popular means, such as radio and television advertisement and programs. Education need to be culturally appropriate and targeted toward the individual population so that highest benefit can be gained. It is also important to educate men as well as women because men can facilitate early detection in their partner and help to reduce the barrier to seek care (Smith, R.A.et al, 2006).

The important aspect of awareness is the dissemination of knowledge about that breast cancer is curable and if diagnosed early survival rate is good. With earlier stage at presentation and with good treatment facilities it is not a big problem. (DeSantis, C.et al, 2011)

It is also important to educate health care providers, especially those who come in regular contact with women. These providers may be physicians, nurses, midwives, and medical students. Evidence suggest, for example that nurses can play an important role providing the information regarding breast cancer in countries with limited resources Stockton, D.et al, 1997).

Breast Self-examination:

Breast self-examination is a screening method used to detect early breast cancer that involves a woman examining her own breasts—looking and feeling each breast for possible lumps, swelling, or distortions. BSE was once heavily promoted as a means of detecting breast cancer at a more curable stage on a monthly basis, checking for any abnormalities in appearance, size, shape, etc. Forty percent of diagnosed breast cancers are detected by women who feel a lump. (Smith, R.A.et al, 2006). American Association of Cancer 2007 recommended the following strategies for early detection of breast cancer: Breast self-examination (BSE) for young women should be started at age 20's, should be done every month after menstruation, (Saslow, D.et al, C.et al, 2004). Women 20-30 years should have clinical examination (CBE) by a health
professional every 3 years. Women age equal or more than 40 years should have a mammogram every year. Screening MRI is recommended for high risk women with strong family history of breast cancer, ovarian cancer and women who treated for Hodgkin disease (Moss, S.M.et al,006)

Studies conducted in developing countries have established breast self-examination as one of the most reasonable and feasible approach in early detection of breast cancer (Shrivastava, S.R.et al,2013). Breast self-examination not only familiarize women with the appearance/feel of their breast but also aids in early detection of breast cancer (Karayurt, Ö.et al,2008). Some of the studies have reported that breast self-examination is highly effective in increasing sense of ownership about health, healthcare seeking behavior, encouraging adoption of preventive health behaviors and creating awareness about breast cancer among women (Austoker, J.et al,2003, Manaclelike, R.et al,2003). Multiple studies have concluded that women, who regularly perform breast self-examination present with smaller neoplasm and rare involvement of axillary lymph nodes (Gupta, S.K.et al,2009, Karayurt, Ö.et al,2008). On the other hand, some researchers have seriously questioned the usefulness of breast self-examination (Kearney, A.J.et al,2006; Thomas, D.B.et al,2002) while others have revealed no added benefits of breast self-examination in improvement of survival rates (Kösters, J.P.et al,2003; Nelson, H.D.et al,2009).

**Practice of Breast Self-examination**

With the rising incidence of breast cancer and absence of any uniform breast screening strategy in most of the nations, it is important to assess the knowledge and practice of Breast Self-examination in various age groups. Irrespective of the multiple benefits of Breast Self-examination, various studies identified a wide knowledge application gap with regards to Breast Self-examination, the practice of BSE remaining low and variable in different nations like 54% in England (Philip, J.et al,1986) varying from 19% to 43.2% in Nigeria (Okobia, M.N.et al,2006; Gwarzo, U.M.D.et al,2009), and varying from 0 to 52% in India (Gupta, S.K.et al,2009; Yadav, P. etal,2010). In a study done in Korea, 27% of students were engaged in BSE which was higher than what was observed in students (10.1%) from Nigeria Shin, K.R.et al,2012, Isara, A.R.et al,2011)
Among the health-care providers, around 90.3% women performed BSE in Sao Paulo Carelli, I .et al,2008), while in Turkey 28% of the nurses and 32% of physicians did not practice breast self-examination (Cavdar, I.et al,2007). Similarly, in a cross-sectional study conducted in Iran it was revealed that most of the female health care workers (63-72%) did not practice BSE (Haji-Mahmoodi, M.et al,2002). Studies done with an aim to assess the knowledge about breast self-examination among men have shown low level of knowledge (Thomas, E.et al,2010, Al-Naggar, R.A.et al,2012) This was mainly because most of the pamphlets and information-education-counseling materials usually deals only with women’s breast cancer related issues (Thomas, E.et al,2010, Al-Naggar, R.A.et al,2012).

**Impact of Socio-Demographic Parameters on Breast Self-examination**

Studies have indicated that major proportion of the women are not aware of what they need to do to protect themselves from breast cancer or even how to check themselves (Al-Naggar, R.A.et al,2011, Kosgeroglu, N.et al,2011), Further, it has been reported that older age (>45 years) and married women were more likely to practice BSE than others (Austoker, J.et al, 2003, Ravichandran, K.et al,2011). In a study done in Turkey, significant association was observed between breast cancer knowledge and practice of breast self-examination (Austoker, J.et al, 2003).In addition, women with a positive family history of breast cancer had a better knowledge as well as higher frequency of breast self-examination than those with a negative family history (Kosgeroglu, N.et al,2011, Karayurt, Ö.et al,2008) The importance of education in the adoption of breast self-examination practice has been reported repeatedly (Ravichandran, K.et al,2011, Rasu, R.S.et al,2011, Ceber, E.et al,2010). Simultaneously the positive impact of educational interventions on breast self-examination and breast cancer awareness have also been emphasized (Yavari, P.et al,2007, Venkatramana, M.et al,2011).

**Role of Nurses’ in Breast Self-examination**

Health care providers, educational institutions and mass-media are the important resources in dissemination of any public health related information to masses. The nursing staff can play a pivotal role in educating women through specially designed
learning programs in the health care setting, as well as, through community outreach approaches that suit the social and cultural settings (Ceber, E.et al,210). A study done in Turkey emphasized that nurses’ opinion about breast cancer screening programs was crucial in developing breast cancer educational programs (Ceber, E.et al,210). It has been reported that nurses who own adequate knowledge about breast cancer can definitely contribute towards early detection of breast cancer (Lee, S.O.et al,2010). It has been realized that nurses have an indispensable role in teaching women in the community and in influencing their behavior, especially those working in the rural healthcare set-up (Taşçı, A.et al,2010).

**Barriers to Breast Self-examination**


**Implications for Practice of Breast Self-examination**

There is an immense need for a public health education program to inculcate the practice of breast self-examination among women to minimize the fear, denial, myths and misconceptions. The messages and recommendations about breast cancer screening must be clear and the recognized barriers should be taken into consideration for maximization of the outcome. Every effort has to be taken to encourage the practice of BSE not only among women but also among men as there is visible increase in the incidence of male breast cancer. Health care professionals including grass root level health workers have to play a significant role in educating the public especially the high-risk men & women. The involvement of community, family especially parents and spouse should be facilitated to maximize the understanding of
breast self-examination. Non-governmental organizations can be roped in rural areas for this initiative. Concurrently, family physicians should be encouraged to raise awareness; offer clear and specific instructions on practice of breast self-examination and promote referral as well.

**Clinical Breast Examination:**

A clinical breast exam (CBE) is a physical exam done by a health care provider as part of your regular medical check-up. Your provider should carefully feel your breasts and underarm for any changes or abnormalities (such as a lump). He/she should visually check your breasts while you are sitting up and physically examine your breasts while you are lying down. (Susan G. Komen’s, 2014) It is important to ask for a CBE if one is not offered at your check-up. CBC Starting at age 20 (Saslow, D.et al, 2007). women ages 20-39, should do a CBE at least every three years. Women 40 and older should do a CBE every year. (Saslow, D.et al,2004).

**Mammography**

A mammogram is an x-ray examination of the breasts, used to detect and diagnose breast diseases (Susan G. Komen’s, 2014). Mammography is your best defense against breast cancer because it can detect the disease in its early stages, often before it can be felt during a breast exam. Research has clearly shown that mammography can increase breast cancer survival rates (Choi et al., 2010; Lee, Fogg, & Sadler, 2006; Wu & West, 2007). Screening mammography can help reduce the number of deaths from breast cancer among women ages 40 to 74 (Moss, S.M.et al,2006). The World Health Organization concluded in 2002 that screening mammography for women between the ages of 50 and 69 years reduced the rate of death from breast cancer by 25%. (Kalager, M.et al,2010). American association of cancer 2007 recommended the following strategies for early detection of breast cancer: one of these recommended women age equal or more than 40 years should have a mammogram every year.

Despite the benefits of mammography, several previous studies demonstrated poor knowledge, attitudes and utilization among variable study populations in the developing world (Akhigbe, A.O.et al,2009, Akinola, R.et al,2011, Bello, O.T.et al,2007, O. Odusanya, Olufemi O.et al,2001). Several factors have been identified as influencing the level of knowledge and utilization of screening services in general.
Socio-demographic characteristics such as younger age group (Lee, K., Lim, H.T.et al,2010) and education (Okobia, M.N.et al,2006, Ojikutu, R.K.et al,2009) have been reported with higher levels of awareness and utilization of screening services more common among the educated and those with high socioeconomic class.

Prophylactic mastectomy is a preventive procedure in which one or both of the breasts are removed in women who are at very high risk for developing breast cancer. The decision to have prophylactic mastectomy should be made carefully after consultation with physicians and family members. Recent research has shown that prophylactic mastectomy can reduce the risk of breast cancer by 90%.

**Breast cancer diagnosis screening**

Breast cancer is generally diagnosed through either screening or a symptom (e.g., pain or a palpable mass) that prompts a diagnostic exam. Screening of healthy women is associated with the detection of tumors that are smaller, have lower odds of metastasis, are more amenable to breast-conserving and limited axillary surgery, and are less likely to require chemotherapy (Fuller, M.S.et al,2015). This scenario translates to reduced treatment-related morbidity and improved survival. The only screening modality proven to reduce breast cancer–specific mortality is mammography (Berry, D.A.et al,2005). Screening mammography leads to a 19% overall reduction in breast cancer mortality (Pace, L.E.et al,2014), with less benefit for women in their 40s (15%) and more benefit for women in their 60s (32%). As a result, screening mammography is recommended by the American Cancer Society beginning at age 45, or sooner depending on individual preference. The potential negative aspects of screening mammography are false positive examinations, radiation exposure, pain, anxiety, and other negative psychologic effects. Mammography has a 61% chance of a false-positive result over a 10-y period for women commencing screening between the ages of 40 y and 50 y. The risk of a false positive examination decreases with older age (Pace, L.E.et al,2014). The US Preventative Task Force cited a 15% breast cancer–related mortality reduction for women who were 39–49 years old and a mortality-related benefit from screening between ages 39 and 69. However, the task force released a controversial report recommending only biennial screening mammography for women who were 50–74 y old, excluding younger women to a large extent because of the high rate of false-
positive results (Nelson, H.D.et al,2009). Mammography for women in the 39- to 49-y-old age group was recommended if indicated after the use of a risk-based model of breast cancer screening, such as the models developed by the Population-Based Research Optimizing Screening Through Personalized Regimens Network (Onega, T.et al,2014), or if requested by a patient. The addition of digital breast tomosynthesis to a conventional full field digital mammography examination reduces false-positive results and increases cancer detection (Friedewald, S.M.et al,2014). One concern about adding digital breast tomosynthesis to screening is the approximate doubling of the radiation dose over that of conventional full-field digital mammography alone (Svahn, T.M.et al,2015). To address this issue, some institutions, such as reconstruct synthetic 2-dimensional images from 3-dimensional tomosynthesis images; this process reduces the radiation dose by approximately 45% (Svahn, T.M.et al,2015). Initial clinical experience with synthetic 2-dimensional images has demonstrated no increase in recall examinations, so that the most significant tomosynthesis benefit is maintained (Zuckerman, S.P.et al,2016). Still, the reduction of false-positive examinations after tomosynthesis implementation has been modest (16/1,000) (Friedewald, S.M.et al,2014), and practice changes such as a lower maximum acceptable recall rate of 9%–10% (currently it is 12%) and an increase in the biopsy threshold from a 2% chance of malignancy to a 4% chance of malignancy (Hall, F.M., 2014.) could have a greater impact on reducing harm from screening. Supplementing mammography with other imaging modalities for higher-risk patients leads to the additional detection of mammographically occult cancers.

A meta-analysis of 14 studies of high-risk women found that MRI had a higher sensitivity for malignancy (84.6%) than mammography (38.6%) or ultrasound (39.6%) (Lehman, C.D.et al,2007). Further, the use of MRI as an adjunct to mammography had a higher sensitivity for malignancy (92.7%) than the use of ultrasound as an adjunct to mammography (52%) (Berg, W.A., 2009). As a result, for women who have a lifetime risk of breast cancer of greater than 20%, breast MRI as an adjunct to mammography is recommended by the American Cancer Society. This group includes women with genetic mutations that connote an increased risk of breast cancer and those with a history of radiation therapy for Hodgkin lymphoma that included the breast tissue. Ultrasound is a viable option for the screening of high-risk women who cannot have breast MRI or women with intermediate risk, such as those
with dense breasts. The main limitations of screening ultrasound are a high rate of false-positive results and dependence on operator expertise (Berg, W.A.et al,2008). The high rate of false-positive results (and the low positive predictive value) of ultrasound has not yet met the minimum standard recommended by the Ultrasound Agency for Health Care Policy and Research (Brem, R.F.,2015). Concerning other screening modalities, some of which are discussed elsewhere in this supplement, the current American College of Radiology appropriateness criteria state, “There is insufficient evidence to support the use of [additional screening] imaging modalities such as thermography, breast-specific gamma imaging, positron emission mammography, and optical imaging” (Mainiero, M.B.et al,2016).

Pathologic Evaluation

Specimen Processing and Evaluation. In clinical practice, diseased tissue is usually obtained by fine-needle aspiration, core biopsy, or surgical excision. A diagnostic challenge for pathologists is the distinction of closely related diseases, such as atypical ductal hyperplasia and in situ disease, in situ disease and microinvasion, or ductal cancer and lobular cancer. Ancillary immunohistochemical and molecular tests can be used to assist the characterization of ambiguous morphology in many, but not all, cases. Features such as tissue handling, ischemic time, cautery, use of frozen sections, fixation, decalcification, and processing all are critical for the quality of the histologic sections used for microscopic evaluation and ancillary tests, such as immunohistochemistry (IHC), in situ hybridization, and molecular tests based on reverse transcription–polymerase chain reaction.

The size of the tumor is determined by careful clinical and pathologic correlation. When a breast cancer forms a distinct mass outward from a point of origin, the size can be easily assessed by imaging and gross pathologic examination. When a tumor arises in a poorly defined field of genetic instability and there is intratumoral normal tissue, accurate sizing can be challenging. In addition, finding and accurately measuring small cancers detected by advanced imaging can be difficult when they are not visible on gross inspection of the specimen, especially because the surgical specimen presented to the pathology laboratory might greatly deviate from the in vivo shape observed by the surgeon and radiologist due to breast tissue elasticity. Surgical specimens are typically marked with ink in 6 dimensions according to the orientation
given by a surgeon. However, margin standardization and potential artifacts from cautery or specimen handling.

**Imaging and Staging**

Physical examination, mammography, or ultrasound for the diagnostic work-up of a patient with newly diagnosed breast cancer is usually sufficient for local–regional staging. MRI is sometimes recommended, especially when a patient is younger, a genetic mutation or multifocal disease is suspected, or a mammogram or ultrasound yields indeterminate findings. Although breast MRI does detect additional disease in the contralateral breast approximately 3% of the time (Lehman, C.D.et al,2007), metaanalyses of preoperative breast MRI have shown an increase in rates of mastectomy (Houssami, N.et al,2013) and no increase in local control after breast-conserving surgery (BCS) and radiation treatment (Houssami, N.et al,2014).

Studies of breast MRI have also shown a risk for overestimation of tumor size (Berg, W.A.et al,2004). Further, it is possible that small additional cancers detected by MRI would never be clinically significant or responsible for a local recurrence because of adjuvant systemic or whole-breast radiation treatments. MRI may play an important role in evaluating disease extent when more limited radiation to the tumor bed or only regional node irradiation is considered (Dorn, P.L.et al,2013). In addition, breast MRI can be obtained in patients receiving neoadjuvant chemotherapy to assess responses and aid in surgical planning. A chest radiograph and routine laboratory blood tests are sufficient for staging in a patient with clinical stage I or II breast cancer and no specific symptoms of metastatic disease. For suspected advanced (stage IIIB/C or IV) disease, National Comprehensive Cancer Network guidelines (version 1.2015) recommend either chest, abdomen, and pelvis CT or chest CT with abdomen and pelvis MRI as well as bone scan or sodium fluoride PET/CT. 18F-FDG PET/CT is listed as optional for assessing stage IIIB/C or IV disease but is not indicated for the staging of stage I or II disease.

Supporting the use of PET to evaluate advanced breast cancer, ametaanalysis of 5 studies (547 patients) demonstrated a sensitivity for breast cancer of 0.97 (95% confidence interval, 0.93–0.99) and a specificity of 0.95 (95% confidence interval, 0.90–0.97) (Xu, G.et al,2012).
Breast Cancer Treatment

Surgery

The primary means of local and regional breast cancer treatment remains surgical intervention. During the first half of the 20th century, women diagnosed with breast cancer were commonly treated by radical mastectomy, as first described by William Stewart Halsted in 1894. Breast conservation surgery (BCS) was pioneered by Fischer et al. (Fischer, J.P.et al, 2014) and Veronesi et al. (Veronesi, U.et al, 1981), who reported that survival with lumpectomy and radiation was equivalent to that with mastectomy in the treatment of early breast cancer. Improved breast cancer screening resulted in diagnoses of nonpalpable cancers, necessitating the development of a localization approach for surgical treatment. Breast-Conserving Approaches. Wire localization of a breast tumor is a mainstay of BCS. This procedure is routinely performed by a breast imaging radiologist on the day of surgery. Placement of the surgical incision on the breast is guided by cosmetic considerations and tumor location. A circumareolar location is ideal for a tumor 1–2 cm from the areolar margin, but when a tumor is more than 2 cm from the areola, an incision directly over the area of concern may be advantageous so that the lumpectomy site can be easily identified if a margin reexcision is necessary. After the initial incision is made, the length of the localization needle is noted, and dissection can take place directly along the needle track. Radioactive seed localization reduces the time the patient spends in the hospital on the day of surgery and allows the surgeon to place the incision over the site with the highest counts without having to account for the site of entry of the needle, which may be in a quadrant different than the tumor. Studies comparing radioactive seed localization and wire localization demonstrated no significant difference in operative times and a possible lower reexcision rate with the seed localization technique (Gray, R.J.et al, 2004).

In women with larger breasts, wide excision can be performed with an oncoplastic procedure, which usually involves breast reduction. Non-Breast-Conserving Approaches. For most women with screening-detected and early-stage breast cancer, mastectomy is a choice. However, mastectomy may be necessary for women who have had radiation to the affected side (for prior breast cancer or Hodgkin lymphoma) or for women with a relatively small breast in the setting of a large primary breast
cancer, extensive calcifications, or multicentric disease. For women with a large primary breast cancer without extensive associated malignant calcifications, neoadjuvant chemotherapy may downstage the primary cancer and make breast conservation possible. (De La Cruz, L.et al,2015)

Following the breast cancer surgery, the patient has chronic neuropathetic syndrome like phantom breast pain, Intercosto brachial neuralagia and Neuroma pain. Radical mastectomy, a disfiguring type of breast cancer surgery that involves removal of breast, major and minor breast muscles and lymph nodes (Jung, B.F.et al,2003).

**Radiation therapy**

Radiation therapy — also called radiotherapy — is a highly targeted and highly effective way to destroy cancer cells in the breast that may stick around after surgery. Despite what many people fear, radiation therapy is relatively easy to tolerate and its side effects are limited to the treated area.

**Type of radiation**

**External Radiation**

External radiation is the most common type of radiation, typically given after lumpectomy and sometimes, mastectomy. In this section, you can read about how external radiation is given.

**Internal Radiation**

Internal radiation is a less common method of giving radiation. It is being studied for use after lumpectomy. In this section, you can read about how radiation is delivered inside the breast.

**Intraoperative Radiation**

Another relatively new type of radiation to treat breast cancer is intraoperative radiation therapy (IORT). IORT is given during lumpectomy surgery after the cancer has been removed. In this section you can read about how intraoperative radiation therapy is given (Breastcancer.org, 2017)
Radiation treatment and side effect

Radiation treatment remains a critical component of comprehensive breast cancer treatment, providing a substantial reduction in local and regional recurrence rates for early-stage and locally advanced breast cancers and contributing to improvements in overall survival. Over the past several decades, breast conservation treatment has become more widely used and the indications for post-mastectomy radiation have expanded, resulting in more patients receiving post-operative irradiation. Simultaneous refinements in the delivery of radiation to the breast or chest wall have evolved. The oldest radiation techniques exposed large volumes of the heart to excessive dose, but as this technique was recognized as harmful to the heart, the more contemporary technique of tangential irradiation was developed and widely adopted (Paszat, L.F.et al, 1998) Long-term outcome data in the era of tangential radiation have become available; these data show more subtle effects on the heart, demonstrating that the changes in technique were beneficial. In studies published before 1990, reflecting pre-modern radiation oncology, the risk of radiation-induced CAD was thought to be increased in patients with left-sided breast cancer compared with right-sided, exceeding the risk reduction gained by adjuvant radiation therapy. More recent meta-analyses have shown a survival benefit for radiation treatment after surgery (mainly breast conserving), and with modern techniques, and the incidence of cardiac disease for left and right breast radiation therapy is (similar Nixon, A.J.et al, 1998).

The surveillance epidemiology and end results (SEER) study examined the risk of cardiac death in 27,283 women in three periods of radiation therapy reflecting the transition to modern RT: 1973-1979, 1980-1984, and 1985-1989. This study confirmed the lack of laterality in the incidence of ischemic heart disease that grew from changing radiation treatment delivery technique and showed that the risk of death substantially decreased over time from approximately 13% in 1973 to 1979 to 5.5% in 1985 to 1989 (Giordano, S.H.et al, 2005).Data regarding the interaction of left breast irradiation and cardiotoxic systemic therapies, such as doxorubicin and trastuzumab, are limited since these agents have been in use a shorter time. Several studies have demonstrated a higher risk of cardiac disease when the internal mammary nodes were included in the treatment fields. Those who believe these nodes
should be covered in order to maximize the treatment benefits, utilize 3D CT-based
treatment planning in order to precisely target the area with any of several available
techniques, dictated by the patient's individual anatomy. Internal mammary nodes
should not be treated with 2D techniques in which the cardiac dose volumes cannot be
measured.

Radiation-induced late pericardial disease (months to years after treatment) may be
silent, with the incidental discovery of asymptomatic pericardial effusions, or may
present with hemodynamic compromise secondary to a reduction in ventricular filling
and cardiac output. There is no evidence that interventions can alter the course of
clinically silent effusions. There is evidence that the incidence of pericardial disease
can be decreased from 20% to 2.5% with the use of modern techniques. Radiation-
induced myocardial disease presents with diastolic disease and restrictive
hemodynamics. Modern techniques have reduced the risk of systolic dysfunction but
have not changed the course of restrictive disease.

**Delays in diagnosis and treatment of breast cancer**

Delays in diagnosis and treatment of breast cancer may seriously impact survival.
at a later stage is also associated with higher morbidity, due to more aggressive and
disfiguring approaches, and is more expensive. Thus, reducing these delays is
believed to be of high importance. Delay might be categorized to patient delay and
healthcare provider (system) delay. The interval between detection of the first
symptoms by the patient and the first physician visit is known as patient delay
(Chintamani, Tuteja, A.et al ,2011). However, the interval between the first visit and
receiving treatment is regarded as the system delay (Stuver, S.O.et al ,2011). Any
delay in diagnosis and treatment can result in disease progression, increased mortality,
and decreased survival rate (Hansen, R.P.et al,2011, Norsa'adah, B. et al,2011,
Dubayova, Tet al,2010). Several studies are available on the reasons for patient delay
and a number of factors such as patients’ low knowledge and education, low
socioeconomic status, and family history of breast cancer have been cited in this
Carter, T.I.et alm2012). However, sociocultural aspects of cancer treatment or cancer
treatment seeking behaviors might be different in developing countries (Norsa'adah,
B. et al. 2011). These two factors play an important role in timely diagnosis and treatment.

**Psychological Problems in Breast Cancer Patients**

Psychological problems like depression, anxiety, poor self-image and use of unhealthy strategies affect quality of life of breast cancer patient (Tuncer, G. et al. 2014). Significantly, pain and suffering are associated with the available treatment procedure. In addition to the physiological, social and medical stress, chronic and persistent pain acts as an additional stress. Nerve damage and certain sensory disturbances like burning and sensory loss are the pathogenic mechanism involved in breast cancer and also be a part of side effects of surgical processes (Gärtner, R. et al. 2009).

**Factors reducing breast cancer incidence**

*Physical activity*: exercise and cancer is a relatively new area of research. Recent studies show that strenuous exercise in your youth might provide life-long protection against breast cancer and that moderate to strenuous physical activity as an adult can lower breast cancer risk. More research is being done to confirm these findings (Albanes, et al. 1989).

*Breast feeding*: Some studies suggest that breast feeding may slightly lower breast cancer risk, especially if breast feeding is continued for 1.5 to 2 years. Other studies found no impact on breast cancer risk (Furberg, et al. 1999).

The explanation of this may be that both pregnancy and breast feeding reduce a woman’s total number of lifetime menstrual cycles. This may be similar to the reduction of risk due to late menarche (start of menstrual periods) or early menopause, which also decrease the total number of menstrual cycles. One study concluded that having more children and breast feeding longer could reduce the risk of breast cancer by half (Furberg, et al. 1999).
Health Education Program

Health Education Program The society's most valuable resource is its people. By protecting and promoting the health of its members, the best interferes of society will be severed. The higher level of health in a population, the most likely that individuals will be productive. They can share in the responsibilities of family life and they can contribute to the wellbeing of the communities in which they live and the country as a whole. Health education is the way to achieving this, (Carpenter, J.A.et al, 2002).

Health Education is an Integral Part of Nursing Roles

Nursing is a dynamic, therapeutic and educative process in meeting the health needs of society. Today education about preventive health practices and health promotion is considered an essential component of comprehensive health care. Education is also a mean of improving the health status of the public, (Gilson, L.et al, 2007)

Definition of Health Education Program

Health education is the process of providing learning experiences for the purpose of influencing knowledge, practices, and attitudes relating to health. It is the part of health care which concerned with promoting healthy behavior (Maurer, F.A.et al, 2013). In other words, health education is the instruction that addresses physical, mental, emotional and social dimensions of health; develop health knowledge, attitudes, and skills; and is tailored to each age level. Health educational program is a planned sequential program of experience that is designed to motivate people to maintain and improve their health, prevent disease, and reduce health-related risk, (Bastable, S.B., 2003).

Aim and Subjects of Health Education Program

The aim of health education program is to make people will be able to achieve health by their own action and efforts and available resources and develop the sense of responsibility for their better health as individuals, members of families and communities and governments in addition to the objectives of health education. They are informing into action, (Maurer, F.A.et al, 2013).
Principles of Health Education

To conduct health education, certain principles should be followed. They include motivating the learners. Motivation is a key to learning it. People benefit from an action. They will be encouraged to repeat that action. Fear is not a motivator, it destroys the learning process. Other principles are: helping learners to define and specify learning needs; encouraging the learning process by using all senses; assessing and alleviating learning difficulties among precipitants; conforming to beliefs and culture; creating a willing atmosphere for learning; reinforcing progress; having fun; giving feedback; presenting the message clearly; encouraging the active participation of the learners; avoiding prejudice and bias; deciding on priorities; objectives and actions. (Maurer, F.A. et al, 2013) suggested three factors work in client health education. The first one is health education includes a variety of strategies, such as lecturing, modelling, or providing printed material, and all methods are effective in increasing skills or knowledge level. The second one is the individualization and the adult learner. Individual characteristics such as age, social status, cultural issues, and educational level influence teaching effectiveness and long-term health behavior so it should be put into consideration when health teaching and the educational program should be individualized to meet learner's needs. In addition, the health educator needs to assess the learner's learning-teaching style and other pedagogy principles, (Boyd, M.D. ed., 1998). Finally, the third factor is the support system. The presence of a peer group can enhance learning by providing encouragement to the learners. Additionally, teaching a supportive family instead of just one family member is more effective in achieving learning objectives and modifying behavior. For groups of community learners, special efforts to include culturally appropriate information and the use of culturally sensitive materials may enhance participation and learning. (Boyd, M.D. ed., 1998).

Barriers Facing Health Education of People

Receiving information does not, in and of itself, guarantee that learning will occur. Several barriers can impede the learning of healthy behavior. They stop against achieving health education and changing of people's behavior into a healthy one. Some of these barriers are generally such as illiteracy, faulty values and beliefs, place, and environment, the influential practice of key persons, such as older family member

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and friends. In addition to absence or inadequacy of infrastructures such as water and sanitary conditions, other factors are considered. They are related to the human behavior as feelings, ideas, knowledge, experiences, values and traditions, cultures and attitudes. Besides absence or inadequacy of resources such as low budget, health team, time, certain skills, health service and educational skills, equipment and supplies, (Jarelnape, A.A.A., 2016). On the other hand, other specific factors are identified to learning, teaching process. In the nursing situation, learning barriers can be classified as either internal (psychological and physiological) or external (environmental and socio-cultural). The psychological barriers are anxiety, fear, anger, depression, and inability to comprehend, compared to the physiological barriers. They are pain, fatigue, sensory deprivation, and oxygen deprivation. Whereas, the environment are interruption, lack of privacy and multiple stimuli. Compared to socio-cultural barriers, they are language, value system, and educational background, (Maurer, F.A.et al, 2013). Large-print materials, good lightening and appropriate location are a few easy modifications than can reduce or eliminate barriers to learning, (Jarelnape, A.A.A., 2016).

**Steps of Health Educational Program**

Health educational program is a systematic ongoing process involving four sequential but interrelated steps which begins with identifying learners' learning needs, planning of the program (formulating objectives, selecting and organizing learning, learning materials, selecting teaching strategies and evaluation policies), planning budget and finance, designing systems of reports and records, implementing the program, and evaluating the program. The development of content, strategies for teaching and evaluation of the effectiveness of health educational program should be carried out in a systematic manner to achieve the most effective results. This systematic method is the teaching-learning process. The teaching-learning process parallels the nursing process. The nurse will use both the nursing process and the teaching-learning process to intervene for community health process. Both usually should start with needs an assessment (Boyd, M.D. ed., 1998).
Learning Needs Assessment

To create a health education program for a community, both the needs of the community and the learning needs of individual participants should be assessed. The assessment of the community is based on epidemiologic and demographic data, observations of health care personnel in the community and survey and conversations with community members. A real need is one that is based on a deficiency that actually exists. An educational need is one that can be met by a learning experience; a real educational need indicates that specific skills, knowledge, and attitudes are required to assist the client in attaining a more desirable condition; a felt need is recognized as important by the learner. (Boyd, M.D. ed., 1998).

Assessment of the learner is essential to planning the educational program. It also helps facilitate the learner's acceptance and use of the information being offered. Within the community, the learner may be individual, family or group. Initial assessment of the learner is often referred to the assessment of the learner's readiness to learn. In the group of learners, background, skills, abilities, and motivation are different for each group's members. In addition, several factors need to be considered during assessment including: learning style, potential learning needs, ability to learn, client strengths, previous experience and knowledge base. (Maurer, F.A. et al, 2013).

Planning the Education Program

The next step in developing the educational program is the planning which based on certain facts. Budget is the major factor put into consideration when planning health educational program, and the cost of resources whether human or inhuman. Also, planning includes determining the time needed to complete the program whether the period of sessions and their starting time. In addition to determining the actions phases, the responsible persons whether administrative or health educators, the setting and learning environment with certain characteristics and the construction of health education lesson plans, (Maurer, F.A. et al, 2013). In the initial phase of planning teaching, learning process in the assessment of needs is followed by creating the behavior goals and objectives which reflect changes in the learner's behavior that are observable and measurable. When the behavioral objectives are properly written, they will be useful tools in evaluating educational outcomes. Behavioral objectives are
classified into the domains of learning cognitive, psychomotor and affective. All three domains of learning are usually necessary to incorporate a new health behavior into the learner's life. Behavior objectives lead to the development of the content of the program. The health educator needs to be selective in planning content so the most important concepts and knowledge about how to use the information are included in the outset of the educational program. Additional content is included if time or money permit. The nurse also needs to plan using educational materials, the suitable methods of teaching and audio-visual material and degree of patient participation in his learning in addition to evaluation of learner progress and teaching performance. (Maurer, F.A. et al, 2013).

**Implementing the Program**

The implementation phase has to put the program into action. During this phase, the learning-teaching process is going on the health educator who uses suitable teaching technique that is congruent with size, composition, and learning abilities of the group. Consideration of cultural differences, barriers of learning and community values are necessary. (Maurer, F.A. et al, 2013).

**Evaluation of the Program**

Evaluation of health education program has two focuses. The first one is geared toward the learning-teaching process itself. This evaluation has two types: outcome evaluation and evaluation of teacher performance. Assessment of learner outcomes has traditionally been based on achievement of the behavioral objectives. The evaluation includes determining if the teaching session was successful and if the client learned the intended information. This can be observed, there is a change in client behavior related to learning activities. The evaluation of teaching performance is geared toward assessing the effectiveness of the teaching activities and deciding which modifications, if any, are necessary. Several activities can evaluate teaching effectiveness, including feedback from learner and colleagues and self-evaluation, (Daniels, R., 2004). On the other hand, the second focus of health education program is geared toward evaluating all steps of developing the health educational program, such as the educational objectives, the resources, budget and cost, the time, the evaluation tools for learning teaching process, the learning environment, evaluation of
performance of all responsible persons. Satisfaction questionnaires, chart audits, and budget reviews are examples of evaluation tools of educational and program, (Boyd, M.D. ed., 1998).

**Educational Tools**

Facilitating the learning process and retraining the learned information and skills are related to the educational materials. Educational materials may be classified into printing and non-printing materials. The printing group includes photographs, sketches, booklet, and pamphlets, whereas the non-printing materials include the audio-visual materials such as overhead transparencies, slides, motion pictures, videotapes. Each group has its specific different purpose and selection, (Boyd, M.D. ed., 1998).
Previous studies:

A number of articles have been found on breast cancer knowledge, attitude and practice. in our country but no article was found specially in Sinner state, on perspective on breast cancer knowledge attitude and practice. (Hussien, Abusalih, et al, 2012) conducted community based experimental pre-and after study design conducted in Wad Nubaui, Omdurman locality, Khartoum state - North Sudan.

The study aimed to determine the effect of awareness program on knowledge and practice regarding breast cancer early detection among women at Wad Nubaui. A sample of 69 women aged 20-59 years who were attending Wad Nubaui Primary health care center and had no history of breast cancer, they found that at baseline the majority of participants had heard about BSE (88.4%). The participants’ knowledge toward methods for early detection were increased, especially toward mammogram as a one of the methods for early detection of breast cancer from 45 (65.2%) to 59 (85.5%). Only (53.6%) had ever performed BSE. The main cause is lack of knowledge. (8.3%) performed monthly BSE, (14.5%) performed BSE 2times/6monthly and (27.5%) performed BSE once/6monthly. At 6-month follow-up, participants showed increases in regular monthly BSE performance by (23.6%), 2 times/6 monthly by (13.0%) and once/6monthly by (2.9%) compared with baseline.

(Park, K., Hong, W. et al, 2011). Conducted community-based intervention to promote breast cancer awareness and screening methods. A 6-month, 2-city community intervention trial was conducted. In the intervention city, 480 women were surveyed at baseline and 7 months later to evaluate the effects of the intervention program. Strategies implemented in the intervention city included community outreach and clinic and pharmacy-based in-reach strategies. This study showed a 20.4-percentage-point decrease in myths about the link between cancer and breast size, a 19.2-percentage-point decrease in myths concerning mammography costs, and a 14.1-percentage-point increase in intention to undergo screening mammography. We also saw a 23.4-percentage-point increase in the proportion of women at the action stage of the transtheoretical model in the intervention city. In the comparison city, smaller decreases and increases were observed.
(Ceber, E. et al, 2010) conducted an experimental post-test only, control group design. The result, the mean total knowledge score was significantly higher in the experimental group than in the control group. The application percentage of mammography and clinical breast examination was higher in the experimental group. There were no significant differences between two groups in performing breast self-examination. The experimental group was significantly more likely to feel confident and motivated, and their total score on the health belief scale was much better than that of the control group.

(Ahmed, and Elnimeiri et al, 2013) conducted a community-based descriptive cross-sectional study from April 2012 to April 2013 at Murab 15, locality of Omdurman City. The estimated sample size mounted to three hundred and fifty-three participants. They found that (66.9%) of study participants heard about breast self-examination and about (85.7%) of the participants had heard from TV, about (86.1%) of the participants that did not perform breast self-examination stated that they did not know how to perform BSE. (82.2%) of the participants, their knowledge was poor about the abnormal signs.

(Lee, E.et al, 2014) conducted a two-group cluster randomized, longitudinal, controlled design to determined the effectiveness of a community-based breast cancer education intervention among understudied populations in the New York State (NYS) Capital Region by assessing and comparing baseline and post-education breast cancer knowledge. Estimated sample of 428 married KA women 40 years of age or older who had not had a mammogram in the past year. The women and their husbands were recruited from 50 KA religious organizations. Couples were randomly assigned to intervention or attention control groups. Those in the KIM-CHI program (n = 211 couples) were compared to an attention control group (n = 217 couples) at baseline, as well as at 6 and 15 months postintervention on mammogram uptake. They found that the KIM-CHI group showed statistically significant increases in mammography uptake compared to the attention control group at 6 months and 15 months postintervention.

(Hiatt, R.A.et al,2001) conducted a cross-section of educational and community organizations in the NYS Capital Region. University/college organizations included University at Albany, Siena College. An estimated sample of 417 students recruited
from five colleges/universities and 67 women from four community group organizations. Baseline and post-education knowledge was assessed via self-administered mostly multiple-choice questionnaires. They found that the mean percentage of correct answers increased from 39.9% at baseline to 80.8% post-education (P<0.0001) among college/university students and from 43.5% to 77.8% (P<0.0001) among community group members. Effectiveness remained statistically significant in all stratified analyses with similarly high percentage of correct answers achieved post-education irrespective of knowledge level at baseline. Stratified analysis also revealed similar patterns of improvement in overall knowledge and narrowing of the gap in post-education knowledge. Primary prevention emerged as the dominant theme post-education in students’ responses to the open-ended question, signifying the effectiveness of our education in raising awareness about modifiable risk factors and inspiring proactive thinking about public health prevention strategies.

Chan, S.S. et al, 2007 conducted one group pretest/posttest designs, to evaluate the effectiveness of a community-based health education program via a mobile van to promote the awareness of breast cancer and breast self-examination (BSE) practice among women in Hong Kong. Sample and measurements: Seven hundred and seventy-seven women in Hong Kong completed a self-administered questionnaire before and after a breast health education program from May 2002 to March 2003. They found that about half were aware of breast health and breast diseases (53.7%) and breast screening methods (48.6%) before the intervention. It was found that women who had received instruction on BSE practice, and those who were aware of breast screening methods, breast health, and breast diseases were more likely to have had prior BSE practice. Most indicated their willingness to practice BSE regularly (93.3%) and to pass on the BSE knowledge to their relatives and friends (92%) in the posttest.

El-Mohsen, A. et al, 2015 conducted a quasi-experimental study in Health Technical Institute for female students at Al-Alzhar University for 113 female student nurse. to improve knowledge, beliefs and behavior of undergraduate female nursing students toward breast self-examination practice. Data was collected using self-administered questionnaires prepared by researchers and Health Belief Model Scale Data. Results: The participants in the study showed more deficiency on screening knowledge, and poor practice of BSE at pre-education. Also, the results of this study highlight the
positive impact of the educational training on nursing students’ breast cancer and breast self-exam knowledge, practice and health beliefs which have statistically significant differences found between students’ pretest and posttest BSE Knowledge, practice and beliefs.
Chapter Three

Methods and Materials

Study design:

This study was case-control community-based interventional study.

Study area and study setting:

The study was carried out in the Sudan in Sennar state mainly in two areas, Kassab Garby a rural area as a control group and in Madinat Elsalam an urban area as an interventional group. These two areas lack basic services have very poor population, with limited or sanitation that resulted in environmental deterioration and do not receive health education messages through public media, so women in these areas have never received any kind of health education about breast cancer.

Sinnar state Located in central Sudan between latitudes 05/12 to 05/14 and longitudes 32.9-35.4 bordered by Gezira state to the north, White Nile State to the west, Gedaref state to the east, Blue Nile and Upper Nile state to the South, with an area of 40.680 square kilometers. Sinnar state is composed of (7) seven localities.

Sinnar state is in the heart of Sudan and one of the 26 states of Sudan. It has an area of 37,844 km² and an estimated population of approximately 1,402,265 Persons. People in Sinnar state is a mix of Arab and African tribes and some tribes of western Sudan. The people of Sinnar state depend mainly on agriculture and pastorals and trade in crops in their livelihood. Sinja is the capital and largest city in the state. The main economic activity is agriculture with the irrigated scheme of Suki, the Sugar factory of Sennar and a number of fruit (including bananas and mangos) growers located on the banks of the Blue Nile. There are two towns bearing the name Sennar. Sennar Junction, the older one, which represents an actual continuation to the ancient Sennar, both in time and geographical location, the junction element came from the fact that many railways intersect there, it being in the heart of the country, which accompanied the invasion of Sudan during the British colonisation at the end of eighteenth century. The other is Sennar Al-Madeena (i.e. Sennar Town), 5km ESE of the Junction, located beside the Sennar Dam. It was built over the ruins of a small village called
Mok-waar which was notable in the former cultures of the tribes of African origins who lived there before the arrival of Arab tribes to the Sudan.

Sources’ Socio-economic and opportunity mapping Assessment report for Sinnar State Joint mission (NSDDRC-SC/ UNDP)

This study was done in Madinat Elsalam setting it was selected as the research setting. It lies to western south of Sennar. based on 2008 Sudan Population Census, the population is estimated to be 5643. The majority of the population are of low educational level, low income and have limited access to health services. It has two basic schools, a small market, khalwas, and a centre for women development, one health care centre, a central mosque and a church. It has electricity.

Madinat Elsalam was divided six blocks. Each block contains a number of household.

Kasab Garby rural lies in the Eastern side of the state, about 15 km from Sennar town. Based on 2008 Sudan Population Census, its population estimated to be 2280, with 380 households. The area is divided into three ethnically-based neighbourhoods: Fallata Malli, Gabiro and Hawsa. The area contains a number of khalwas, two mosques, and two basic schools but has no health care center. It has electricity and water supply

Figure 1: Sinnar State map

Source: https://commons.wikimedia.org/wiki/File:Sudan_adm_location_map.svg

Study Period:

The study was conducted during the period from August 2014 to February 2018.
Population of study:

Adult females, who lived in the study area during the study period (aged 18-90 years).

Sample size and Sampling technique:

Sampling size: The estimated sample size mounted to four hundred participants. To calculate the sample size, N was evaluated according to Sudan last census (2008):

\[
n^* = \frac{z^2 pq}{d^2}
\]

Where,

\[z = 1.96\text{ approx. 2.0}\]

\[p = \text{anticipated proportion (here, proportion of females who have knowledge about breast cancer and breast problems)}\]

\[q = 1 - p \text{ complement proportion (here, females who do not have knowledge about breast cancer and breast problems)}\]

\[d = \text{size of error}\]

By applying the above equation, the sample size of the study will be

\[n^* = \frac{4*50*50}{25} = 400\]

Table 1: Distribution of the study sample among Madinat Elsalam blocks

<table>
<thead>
<tr>
<th>Block</th>
<th>Number of Families</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>480</td>
<td>32</td>
</tr>
<tr>
<td>Block 2</td>
<td>272</td>
<td>19</td>
</tr>
<tr>
<td>Block 3</td>
<td>476</td>
<td>32</td>
</tr>
<tr>
<td>Block 4</td>
<td>472</td>
<td>31</td>
</tr>
<tr>
<td>Block 5</td>
<td>412</td>
<td>27</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Block 6</td>
<td>379</td>
<td>24</td>
</tr>
<tr>
<td>Block 6 (extend)</td>
<td>531</td>
<td>35</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3022</strong></td>
<td><strong>200</strong></td>
</tr>
</tbody>
</table>

*Source: Department of urban planning and public utility - Sinnar locality - Sinnar state.*

Each of the study area will have a sample of 200 women.

For *Madinat Elsalam*, the sample size was distributed among its six blocks as shown in the table 1 above:

For *Kassab Garby*, the 200 females was taken from its three neighborhoods: *Fallata Malli, Gabiro* and *Hawsa*. Each have a sample of approximately 67 females.

**Sampling technique:** Random sampling method was used to collect data from study. Sinnar town has 40/districts and 173/villages. *Madinat Elsalam* was chosen by lot to represent the neighborhoods of Sennar and *Kassab Garby* to represent the villages.

**Study Variables**

**Dependent Variable:**

Females practice of breast self-examination, and knowledge about breast cancer.

The operational definition of variables:

breast self-examination (BSE) is a screening method used in an attempt to detect early breast cancer. The method involves the woman herself looking at and feeling each breast for possible lumps, distortions or swelling. (Kösters, J. P. et al, 2003)


Behavior: According to Hornby, the behavior is the way that people function in a particular situation. (Béjoint, H., 2000).
**Independent Variable:**

Demographic Variables (age, sex …etc.)

Socio-economic variables such as income, marital status, and occupation.

Menarche.

Menopause

Breast feeding

Parity

Chemical treatment

Oral contraceptive

History of breast problem

**Target Population:**

All females who live in the selective area (aged 18-90 years) during this study

**Inclusion Criteria:**

All females aged 18 to 90 years who live in the selected areas was included in the study.

**Exclusion Criteria:**

Females not living in the study area and who are not in the age range specified above.

Who did not agree to participate in the study.

Who’s not fully attended the educational program among interventional group.
**Data Collection Tools:**

An interviewing questionnaire format used before and after the implementation of the training program to assess the knowledge, attitude, and practices (mainly breast self-examination) of the females regarding breast cancer prevention. It is composed of three parts:

**The first part** involved sociodemographic about females age, level education, monthly income, and marital status. (Appendix 1A)

**The second part** involved information about female's knowledge regarding breast cancer. (Appendix 1B)

Third part involved the knowledge about the timing, position, frequency and performance of BSE, sources of respondent knowledge, attitude and practices of breast self-examination. (Appendix1C)

**The four parts** involved information about the female's practices toward clinical presentation. (Appendix1D)

**Data Collection tools:**

The study was carried out in three phases

- **Phase I** pre-intervention Phase. Pretest/ assessment of female's knowledge, attitude, and practices (breast self-examination) regarding breast cancer prevention by using interview questionnaire (home visit). Data collectors by researcher, nursing department students in the Faculty of Medicine and health science, University of Sinnar 50/student and three lectures were well trained by the researcher on period of seven days

- **Phase II:** Implementation Phase health education program( Appendix2) was conducted by the researcher. in the form of Lectures, each participant attended 12/sessions three session per week/ for 4weeks, each session attended by the number of females (28-29) and spanned about1 hours, ending with an open discussion. The sessions mainly focused on Orientation about magnitude and impact of breast cancer, signs, symptoms and risk factors and frequency
and suitable age for starting BSE, and mammography as screening tool as well as teaching them how to perform BSE and seek medical help when notice any change in their breasts.

**Learning methods** (Appendix 2) used were lectures, poster(Appendix2A), power point, and intellectual discussion. Video to educate females how to perform breast self-examination Also, Pamphlet (Appendix2B) were prepared in simple Arabic language with simple local words.

The program conducted in different places (*Madinat Elsalam basic* school, Khalwah, mosques and Abbie health care center)

**Phase III**: Post intervention phase was carried out three months after the conduction of the intervention program from (October-december,2016) as a memory gap. Same preliminary questionnaire was used.

Data analysis:

The data obtained by questionnaires were analyzed based on the set of objectives of the study using (SPSS version 23) descriptive statistics with cross-tabulations. Frequencies were generated for Socio-demographic variables: age, occupation, marital status, education. chi-square tests were used to determine changes before and after the intervention in knowledge about breast cancer, risk factor, and early detection methods, BSE knowledge practice and performance. P value of <0.05 was considered significant.

**Ethical Considerations:**

Verbal informed consent sought from all respondents to participate in the study. Names of respondents were not used in the report. The confidentiality of the information gathered assured. Their rights of refusal to participate in the study respected. Involved official parties like State Ministry of Health, informed with regards to data collection and aims of the research
Chapter Four

Results

Table 2: Socio-demographic characteristics of the control and interventional group, N=400

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Control (%)</th>
<th>interventional (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age in years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;20 years old</td>
<td>7(3.5)</td>
<td>17(8.5)</td>
</tr>
<tr>
<td>20-39-year-old</td>
<td>88(44)</td>
<td>127(63.5)</td>
</tr>
<tr>
<td>&lt;40 years old</td>
<td>105(52.5)</td>
<td>56(28)</td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignorance</td>
<td>88(44)</td>
<td>77(38.5)</td>
</tr>
<tr>
<td>Khalwah</td>
<td>21(10.5)</td>
<td>32(16)</td>
</tr>
<tr>
<td>Primary</td>
<td>54(27)</td>
<td>42(21)</td>
</tr>
<tr>
<td>Secondary</td>
<td>25(12.5)</td>
<td>31(15.5)</td>
</tr>
<tr>
<td>Graduate</td>
<td>12(6)</td>
<td>16(8)</td>
</tr>
<tr>
<td>Post graduate</td>
<td>0(0)</td>
<td>2(1)</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>123(61.5)</td>
<td>141(70.5)</td>
</tr>
<tr>
<td>Worker</td>
<td>36(18)</td>
<td>23(11.5)</td>
</tr>
<tr>
<td>Student</td>
<td>3(1.5)</td>
<td>9(4.5)</td>
</tr>
<tr>
<td>Employee</td>
<td>13(6.5)</td>
<td>21(10.5)</td>
</tr>
<tr>
<td>Not working</td>
<td>25(12.5)</td>
<td>6(3)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>185(92.5)</td>
<td>171(85.5)</td>
</tr>
<tr>
<td>Unmarried</td>
<td>15(7.5)</td>
<td>29(14.5)</td>
</tr>
<tr>
<td><strong>Monthly income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;500</td>
<td>47(23.5)</td>
<td>70(35)</td>
</tr>
<tr>
<td>500-1000</td>
<td>146(73)</td>
<td>104(52)</td>
</tr>
<tr>
<td>&gt;1500</td>
<td>7(3.5)</td>
<td>26(13)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

A total of 400 participants (all female) 200 for kassab grapy (control group) and 200 for interventional group that received the education program. Demographic characteristics of control group and interventional group participants are summarized in (Table above).
Table 3: knowledge towards breast cancer among interventional and control groups, before and after the study N=400

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Interventions</th>
<th>Chi</th>
<th>df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever heard about breast cancer</td>
<td>Knowledgeable</td>
<td>200(100)</td>
<td>199(99.5)</td>
<td>.000</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>0(0.0)</td>
<td>0(0.0)</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Do you think that all the tumors that may appear on the breast are cancerous?</td>
<td>Knowledgeable</td>
<td>116(58)</td>
<td>173(86.5)</td>
<td>18.498</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>84(42)</td>
<td>27(13.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>breast cancer is only for women</td>
<td>Knowledgeable</td>
<td>47(23.5)</td>
<td>153(76.5)</td>
<td>76.379</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>153(76.5)</td>
<td>134(67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What strange sign worry you when conducting (BSE)</td>
<td>Knowledgeable</td>
<td>84(42)</td>
<td>98(49)</td>
<td>29.986</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>116(58)</td>
<td>102(51)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td></td>
</tr>
</tbody>
</table>

At baseline, the majority of participants had heard about breast cancer in two areas: control and interventional (100%), (99%) respectively change to 200(100), 200(100) posttest no beneficial change was observed.

In terms of changes to beliefs in breast cancer myths, there was significant increase in the proportion of these myths for example (women who believed that tumor that may appear on the breast are cancerous increase from (173(86.5) at baseline to 196( ) post intervention similarly high percentage of correct answers achieved post-education in another myths (women who thought that Breast cancer only for women without men and knowledge regarding clinical presentation) in the intervention group, while no beneficial change was observed in the control group for these 3 myths.
Table 4: knowledge towards risk factors of breast cancer among control and interventional groups, before and after the study, N=400

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Control</th>
<th>Interventionsnal</th>
<th>Interventionsnal</th>
<th>Chi</th>
<th>Df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre N(%)</td>
<td>Post N(%)</td>
<td>Pre N(%)</td>
<td>Post N(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relation between weight or obesity and breast cancer</td>
<td>Knowledgeable</td>
<td>41(21)</td>
<td>114(57)</td>
<td>94(47)</td>
<td>199(99.5)</td>
<td>140.0665</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>159(79.5)</td>
<td>86(43)</td>
<td>106(53)</td>
<td>1(.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity is harmful post menopause or premenopausal</td>
<td>Knowledgeable</td>
<td>81(40.5)</td>
<td>98(49)</td>
<td>52(26)</td>
<td>192(96)</td>
<td>205.969</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>119(59.5)</td>
<td>102(51)</td>
<td>148(74)</td>
<td>8(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship between alcohol and breast cancer</td>
<td>Knowledgeable</td>
<td>46(23)</td>
<td>112(56)</td>
<td>63(31.5)</td>
<td>187(93.5)</td>
<td>1640.011</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>154(77)</td>
<td>88(44)</td>
<td>137(68.5)</td>
<td>13(6.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant results were observed for 3 items about some risk factors of breast cancer for example (Relation between weight or obesity and breast cancer, Obesity is harmful after menopause or premenopausal, and Relationship between alcohol and breast cancer) in the study group While no beneficial change was observed in the control group for these 3 items.

Figure (2) : Source to receive information about breast cancer among control and interventional group, N=400

As for females' source of information, (Figure 2) illustrates that Medical field, Social media, Parents, Friend or community, and School were the common sources of information about breast cancer in two group control/study
Figure (3): Attitudes towards Risk Factors of breast cancer among control and interventional group, N=400

control group reported 105(52.5%) ages over forty, 21(10.5%) were reported had family history and 18(9.0%) reported early menarches. while interventional group reported 56(28.0%) ages over forty 35(17.5%) had family history,52(26%) reported early Menarche 3(1.5%) reported late First Pregnancy ,1(0.5%) that use of contraceptive hormone 1(.5%) infertility.
Figure (4): Attitudes towards Protective Factors of breast cancer among control and interventional groups N=400

In control group 182(91.0) reported late menarche, 177(88.5) reported early first pregnancy, 176(88.0) said breastfeeding, and 116(58.0) had regular exercise. While interventional group reported 148 (74.0) late menarche, 166 (83.0) reported early first pregnancy, 158 (79.0) said breastfeeding, and 79 (39.5) had regular exercise.

Figure (5-1): Respondents attitude towards breast examination among control and interventional groups, N=400
Figure (5-2) type of examination conducted by respondents among control and interventional groups, N=400

Figure (6): Barriers interfere to perform breast examination among control and interventional groups, N=400
### Table 5: Knowledge towards mammogram among control and interventional groups, before and after the study N=400

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Study</th>
<th>Chi</th>
<th>Df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre N(%)</td>
<td>Post N(%)</td>
<td>Pre N(%)</td>
<td>Post N(%)</td>
<td></td>
</tr>
<tr>
<td>Mammogram is one of the method for early detection breast cancer</td>
<td>Knowledgeable</td>
<td>54(27)</td>
<td>71(35.5)</td>
<td>32(16)</td>
<td>195(97.5)</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>146(73)</td>
<td>129(64.5)</td>
<td>168(84)</td>
<td>5(2.5)</td>
</tr>
<tr>
<td>On women after the age of forty and above that doing a mammogram at least yearly</td>
<td>Knowledgeable</td>
<td>23(11.5)</td>
<td>35(17.5)</td>
<td>15(7.5)</td>
<td>178(89)</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>177(88.5)</td>
<td>165(82.5)</td>
<td>185(92.5)</td>
<td>22(11)</td>
</tr>
<tr>
<td>Total</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td></td>
</tr>
</tbody>
</table>

It is clear from these tables the correct answers of the participants significantly increased from pretest measurement to posttest measurement P. value was (.000) for example beneficial changes in items about mammogram e.g. Mammogram is one of the method for early detection breast cancer, change from 32(16) to 195(97.5), also on women after the age of forty and above that doing a mammogram at least every year significant results were observed for 2 items in the study group While no beneficial change was observed in the control group for these 2 items.
Table 6: Demographic characteristics and female’s knowledge towards mammogram among interventional groups, N=200

<table>
<thead>
<tr>
<th>Mammogram is one of the method for early detection breast cancer</th>
<th>Knowledge able/ N (%)</th>
<th>Not knowledge able N (%)</th>
<th>Total</th>
<th>Chi</th>
<th>Df</th>
<th>Test of sig.</th>
<th>Knowledge able/ N (%)</th>
<th>Not knowledge able N (%)</th>
<th>Total</th>
<th>Chi</th>
<th>Df</th>
<th>Test of sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age /years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>16(8)</td>
<td>1(.5)</td>
<td>17</td>
<td>9.007</td>
<td>2</td>
<td>.006</td>
<td>16(8)</td>
<td>1(.5)</td>
<td>17</td>
<td>16(8)</td>
<td>1(.5)</td>
<td>17</td>
</tr>
<tr>
<td>20-39</td>
<td>127(63.5)</td>
<td>0(0)</td>
<td>127</td>
<td></td>
<td></td>
<td></td>
<td>120(60)</td>
<td>7(3.5)</td>
<td>127</td>
<td>120(60)</td>
<td>7(3.5)</td>
<td>127</td>
</tr>
<tr>
<td>&gt;40</td>
<td>52(26.5)</td>
<td>4(2)</td>
<td>56</td>
<td>8.191</td>
<td>5</td>
<td>.021</td>
<td>42(21)</td>
<td>14(7)</td>
<td>56</td>
<td>42(21)</td>
<td>14(7)</td>
<td>56</td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uneducated</td>
<td>72(36)</td>
<td>5(2.5)</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td>61</td>
<td>16</td>
<td>77</td>
<td>61</td>
<td>16</td>
<td>77</td>
</tr>
<tr>
<td>Khalwah</td>
<td>32(16)</td>
<td>0(0)</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td>29</td>
<td>3</td>
<td>32</td>
<td>29</td>
<td>3</td>
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</tr>
<tr>
<td>Primary</td>
<td>42(21)</td>
<td>0(0)</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td>2</td>
<td>42</td>
<td>40</td>
<td>2</td>
<td>42</td>
</tr>
<tr>
<td>Secondary</td>
<td>31(15.5)</td>
<td>0(0)</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td>31</td>
<td>0</td>
<td>31</td>
<td>31</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Graduate</td>
<td>16(8)</td>
<td>0(0)</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>1</td>
<td>16</td>
<td>15</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>post graduate</td>
<td>2(1)</td>
<td>0(0)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>166(83)</td>
<td>5(2.5)</td>
<td>171</td>
<td>.870</td>
<td>1</td>
<td>.208</td>
<td>153</td>
<td>18</td>
<td>171</td>
<td>153</td>
<td>18</td>
<td>171</td>
</tr>
<tr>
<td>Un Married</td>
<td>29(14.5)</td>
<td>0(0)</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td>25</td>
<td>4</td>
<td>29</td>
<td>25</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>Family history</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34(17)</td>
<td>1(.5)</td>
<td>35</td>
<td>.022</td>
<td>1</td>
<td>.622</td>
<td>32</td>
<td>3</td>
<td>35</td>
<td>32</td>
<td>3</td>
<td>35</td>
</tr>
<tr>
<td>No</td>
<td>161(80.5)</td>
<td>4(2)</td>
<td>165</td>
<td></td>
<td></td>
<td></td>
<td>146</td>
<td>19</td>
<td>165</td>
<td>146</td>
<td>19</td>
<td>165</td>
</tr>
</tbody>
</table>

**Female’s age / year:** The present study reported highly significant differences between female's age and knowledge towards mammogram p value was (.006).

The present study revealed that 17(8.5%) of females age > 20Year among them 16(8%) of females who had knowledge towards mammogram, compare to 1(,5%) who were not knowledge, 127(63.5%) females age between 20-39 years among them 127(63.5%) had knowledge compare to 0(0%) who were not knowledge. 56(28%) of females age among them 52(26.5%) females aged >40 who had knowledge compare to 4(2%) who were not knowledge.
Females' education: The current survey reported that there were significant differences between female’s knowledge towards mammogram and female’s education (P=.021).

The present study revealed that only 77(38.5%) of female’s un educated among them 72(36%) of Uneducated females had knowledge and 5(2.5%) females had not knowledge towards mammogram. 32(16%) of female’s level of education (Khalwah) among them 32(16%) Khalwah had knowledge compare to 0(0%) had not knowledge. 42(21%) of females had Primary level education among them 42(21%) Primary had knowledge compare to 0(0%) had not knowledge. 31(15.5%) of female’s Secondary levels among them 31(15.5%) Secondary had knowledge, compare to 0(0%) had not knowledge. 16(8%) of female’s Graduate levels among them 16(8%) Graduate had knowledge compare to 0(0%) females had not knowledge. 2(1%) of female’s post graduate levels among them 2(1%) post graduate had knowledge compare to 0(0%) had not knowledge.

Marital status: The current study revealed that no significant differences between marital status and knowledge towards mammogram where, p= (.208).

The study reported 171(85.5%) married females among them 166(83) of married had good towards mammogram, and 5(2.5) of married females had not knowledge. compared to 29(14.5) unmarried females had knowledge towards mammogram, and 0(0) of unmarried females had not knowledge.

Family history of breast cancer among females

The current study reported no significant relation between knowledge towards mammogram and past history and family history of breast cancer among females. where (P= .622)

165(82.5%) of our sample had no family history of breast cancer among them 161(80.5%) had knowledge towards mammogram. 4(2%) had not knowledge. While 35(17.5) of females had family history of breast cancer among them 34(17%) of females, who had history of breast cancer were knowledgeable. among them 1(.5) had not knowledge.
Table 7: knowledge towards breast self-examination among control and interventional groups, before and after the study  N=400

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control Pre N(%)</th>
<th>Control Post N(%)</th>
<th>Interventional Pre N(%)</th>
<th>Interventional Post N(%)</th>
<th>Chi df Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever heard about breast self-examination</td>
<td>Knowledgeable</td>
<td>1(0.5)</td>
<td>6(3)</td>
<td>8(4) 200(100)</td>
<td>369.231 1 .000</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>199(99.5)</td>
<td>194(97)</td>
<td>192(86) 0(0)</td>
<td></td>
</tr>
<tr>
<td>Breast self-examination important</td>
<td>Knowledgeable</td>
<td>1(0.5)</td>
<td>6(3)</td>
<td>7(3.5) 200(100)</td>
<td>369.237 2 .000</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>0(0.0)</td>
<td>0(0)</td>
<td>1(0.5) 0(0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Applicable</td>
<td>199(99.5)</td>
<td>194(97)</td>
<td>192(0) 0(0)</td>
<td></td>
</tr>
<tr>
<td>Report cause for benefit of breast self-examination</td>
<td>Knowledgeable</td>
<td>1(0.5)</td>
<td>4(2)</td>
<td>5(2.5) 199(99.5)</td>
<td>369.278 3 .000</td>
</tr>
<tr>
<td></td>
<td>Not knowledgeable</td>
<td>0</td>
<td>2(1)</td>
<td>3 1(0.5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td>199(99.5)</td>
<td>194(97)</td>
<td>192(86) 0(0)</td>
<td></td>
</tr>
<tr>
<td>Proper time to do breast self-examination</td>
<td>Knowledgeable</td>
<td>1(0.5)</td>
<td>5(2.5)</td>
<td>8(4) 198(99)</td>
<td>369.246 2 .000</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>0(0.0)</td>
<td>1(0.5)</td>
<td>0(0) 2(1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Applicable</td>
<td>199(99.5)</td>
<td>194(97)</td>
<td>192(96) 0(0)</td>
<td></td>
</tr>
<tr>
<td>Right position to perform breast self-examination</td>
<td>Knowledgeable</td>
<td>1(0.5)</td>
<td>3(1.5)</td>
<td>5(2.5) 137(68.5)</td>
<td>369.250 2 .000</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>0(0.0)</td>
<td>0(0)</td>
<td>3(1.5) 63(31.5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Applicable</td>
<td>199(99.5)</td>
<td>194(97)</td>
<td>192(96) 0(0)</td>
<td></td>
</tr>
<tr>
<td>Equipment require to perform breast self-examination</td>
<td>Knowledgeable</td>
<td>1(0.5)</td>
<td>6(3.0)</td>
<td>8(4) 196(98)</td>
<td>365.252 1 .000</td>
</tr>
<tr>
<td></td>
<td>Not Knowledgeable</td>
<td>0(0.0)</td>
<td>0(0)</td>
<td>0(0) 0(0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Applicable</td>
<td>199(99.5)</td>
<td>194(97)</td>
<td>192(96) 4(2)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>200(100)</td>
<td>200(100)</td>
<td>200(100)</td>
<td>200(100)</td>
<td></td>
</tr>
</tbody>
</table>

The interventional group showed a significantly increase in the proportion of female's knowledge about BSE six items (Ever heard about breast self-examination, importance of breast self-examination, benefit of breast self-examination, Proper time to do breast self-examination, Right position to perform breast self-examination, Equipment require to perform breast self-examination) While no beneficial change was observed in the control group for these items. Also, study group showed a significantly increase in the proportion of female’s practice toward BSE While no beneficial change was observed in the control group
Table 8: practice of breast self-examination among interventional and control groups, before and after the study , N=400

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Interventional</th>
<th>Chi</th>
<th>df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-N (%) - Post N (%)</td>
<td>Pre-N (%) - Post N (%)</td>
<td>df</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practice of BSE</td>
<td>Practiced</td>
<td>Not practised</td>
<td>Not Applicable</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pre-N (%)</td>
<td>Post N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practiced</td>
<td>0(0)</td>
<td>3(1.5)</td>
<td>5(2.5)</td>
<td>184(92.0)</td>
<td>369.529 2 .000</td>
</tr>
<tr>
<td>Not practised</td>
<td>1(,5)</td>
<td>3(1.5)</td>
<td>3(1.5)</td>
<td>16(8.0)</td>
<td></td>
</tr>
<tr>
<td>Not Applicable</td>
<td>199(99,5)</td>
<td>194(97.0)</td>
<td>192(96.0)</td>
<td>0(0.0)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Practices levels of breast self-examination significantly increase in the proportion in interventional group than control group

Figure (7): Number of practice breast self-examination during three months (memory gap) among interventional group N=200
Table 9: Demographic characteristics and practices towards BSE among interventional groups, N=200

| Variable                | Yes       | No        | Total | Chi   | Df | Test of sig. |
|------------------------|-----------|-----------|-------|-------|    |              |
|                        | N (%)     | N(%)      |       |       |    |              |
| Age /year              |           |           |       |       |    |              |
| <20                    | 16(8)     | 1(,5)     | 17    | 25.278 | 2  | 0.000        |
| 20-39                  | 126(63)   | 1(,5)     | 127   |       |    |              |
| >40                    | 44(22)    | 12(6)     | 56    |       |    |              |
| Educational level      |           |           |       |       |    |              |
| Uneducated              | 65(32,5)  | 12(6)     | 77    | 14.984 | 5  | .003         |
| Khalwah                | 32(16)    | 0         | 32    |       |    |              |
| Primary                | 41(20,5)  | 1(,5)     | 42    |       |    |              |
| Secondary              | 30(15)    | 1(,5)     | 31    |       |    |              |
| Graduate               | 15(7,5)   | 1(,5)     | 16    |       |    |              |
| post graduate          | 2(1)      | 0         | 2     |       |    |              |
| Marital status         |           |           |       |       |    |              |
| Married                | 158(79)   | 13(6,5)   | 171   | .001  | 1  | .667         |
| Un Married             | 27(13,5)  | 2(1)      | 29    |       |    |              |
| Family history         |           |           |       |       |    |              |
| Yes                    | 34(17)    | 1(,5)     | 35    | 1.134 | 1  | .255         |
| No                     | 152(76)   | 13(6,5)   | 164   |       |    |              |

Female's age\ year: The present study reported highly significant differences between female's age and BSE practice value was (0.000).

The present study revealed that 17(8.5%) of females age > 20Year among them 16(8%) of females who were practicing BSE compare to 1(,5%) who were not practicing BSE 126(62) females age between 20-39years among them 125(62,5) were practicing BSE compare to 1(.5) who were not were practicing BSE. 56(28%) of
females age among them 44(22) females aged >40 who were practicing BSE compare to 12(6) who were not were practicing BSE.

**Females' education:** The current survey reported that there were significant differences between BSE practicing and female’s education (P=0.0003).

The present study revealed that only 77(38.5%) of females’ un educated among them 65(32.5) of Uneducated females had practicing BSE regularly and 12(6) females had not practicing BSE regularly, 32(16%) of female’s level of education (Khalwah) among them 32(16%) Khalwah had practicing BSE regularly compare to 0(0%) had not practicing BSE regularly. 42(21%) of females had Primary level education among them 41(20.5) Primary had practicing BSE regularly compare to 1(.5%) had not practicing BSE regularly, 31(15.5%) of female’s Secondary levels among them 30(15) Secondary, had practicing BSE regularly, compare to 1(.5%) had not practicing BSE regularly. 16(8%) of female’s Graduate levels among them 15(7.5) Graduate had practicing BSE regularly compare to 1(.5%) females had not practicing BSE regularly, 2(1%) of female’s post graduate levels among them 2(1%) post graduate had practicing BSE regularly compare to 0(0%) had not practicing BSE regularly.

**Marital status:** The current study revealed that no significant differences between marital status and BSE Practice where (p=0.667).

The study reported 171(85.5%) married females among them 158(79) were practicing BCE, and 12(6.5) of them had not practicing BCE. compared to 29 (14.5) unmarried among them 27(13.5) were practicing BCE, and 2(1) of them had not practicing BCE.

**Family history** of breast cancer among females

The current study reported no significant relation between BSE practices and past history and family history of breast cancer where (P= 255).

165(82.5%) of females had no family history of breast cancer among them 152(76) had practicing BCE. 13(6.5) had not practicing BCE. While 35(17.5) of females had family history of breast cancer among them 34(17%) of females, who had history of breast cancer practicing BCE, among them 1(.5) had not practicing BCE.
Table 10: Practices levels towards clinical presentation of breast cancer among interventional and control groups before and after the study, N=400

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control Pre N (%)</th>
<th>Control Post N (%)</th>
<th>Interventional Pre N (%)</th>
<th>Interventional Post N (%)</th>
<th>Chi Df Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you do when you find secretion with strange color from nipple</td>
<td>Correct practice 83(41.5)</td>
<td>95(47.5)</td>
<td>51(25.5)</td>
<td>185(92.5)</td>
<td>186.607</td>
</tr>
<tr>
<td></td>
<td>Incorrect practice 117(58.5)</td>
<td>105(52.5)</td>
<td>149(74.5)</td>
<td>15(7.5)</td>
<td></td>
</tr>
<tr>
<td>What do you do when you feel pain in the breast?</td>
<td>Correct practice 52(26)</td>
<td>98(49)</td>
<td>40(20)</td>
<td>189(94.5)</td>
<td>235.728</td>
</tr>
<tr>
<td></td>
<td>Incorrect practice 148(74)</td>
<td>102(51)</td>
<td>160(80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What do you do when you see peel or sore in the nipple or breast?</td>
<td>Correct practice 28(14)</td>
<td>88(44)</td>
<td>40(20)</td>
<td>198(99)</td>
<td>333.012</td>
</tr>
<tr>
<td></td>
<td>Incorrect practice 172(86)</td>
<td>112(56)</td>
<td>160(80)</td>
<td>2(1)</td>
<td></td>
</tr>
<tr>
<td>What do you do when you see a roundish tumor or mokalkaa?</td>
<td>Correct practice 41(20.5)</td>
<td>110(55)</td>
<td>73(36.5)</td>
<td>179(88.5)</td>
<td>115.827</td>
</tr>
<tr>
<td></td>
<td>Incorrect practice 159(79.5)</td>
<td>90(45)</td>
<td>127(63.5)</td>
<td>21(11.5)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td>200(100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Table (10) indicate significant increase in the level of practices of the interventional group after attendance of the educational program. For example, Action take when Find secretion, strange color deranges from nipple Correct practice at baseline 51(25.5) increased to 185(92.5) post interventional programs, the chi square was 186.607 p-value (0.000) Significant results were observed for 3 anther items regarding females Practices levels towards clinical presentation.

In this study three participants (one at control and tow at intervention) identified changes in their breasts (breast swelling and nipple discharge) and were encouraged to visit Abbie Health Center. Examined by Trained midwives and were referred to sinnar teaching Hospital for further higher investigations and treatment.
Chapter Five

Discussion

To our knowledge, this study is the first reported community-based breast cancer education intervention among Females in Kasab Garby and Madinat Elsalam in Sinnar State. No reports of breast cancer education intervention or knowledge assessment among these subpopulation in the published literature. Most published national and international studies have reported low levels of awareness and knowledge about breast cancer among women from the general population. (Budakoglu, I.I. et al., 2007)

This study was carried out to test the research hypothesis that the implementation of an educational program will improve females’ knowledge, attitude and practices about breast cancer and breast self-examination. The study results lead to acceptance of this hypothesis since female’s knowledge improved significantly, and their attitude and practices has also improved due to the improvement of their knowledge.

The study reveals that a total of 400 females responded the questionnaire (response rate 100%) included two groups. The majority of females 105 (52.5%) at control group age >40, 88 (44%) ages between 20-39 years, 7 (3.5%) age > 20 years, 185 (92.5%) were married 15 (7.5%) un married 88 (44%) un educated ,21 (10.5%) Khalwah, 54 (27%) Primary, 25 (12.5%) Secondary, 12 (6%) Graduate, 0 (0%) Post graduates 123 (61.5%) house wife, 36 (18%) Worker, 3 (1.5%) Student, 13 (6.5%) Employee, 25 (12.5%) Not working, 21 (10.5%) had family history.

While interventional group 56 (28%) age >40, 127 (63.5%) age between 20-39 years 17 (8.5%) age > 20 years 171 (85.5%) were married, 29 (14.5%) un married, 77 (38.5%) un educated 32 (16%) Khalwah, 42 (21%) Primary, 31 (15.5%) 16 (8%) Secondary, 16 (8%) Graduate, 2 (1%) Post graduates, 141 (70.5%) house wife 23 (11.5%) Worker, 9 (4.5%) Student, 21 (10.5%) Employee, 6 (3%) Not working, 35 (17.5%) had family history. Table 2

No statistically significant differences existed between the control and intervention groups with regard to sociodemographic variables, bias may have occurred. For example, most participants do not have birth certificates and therefore their age were
approximations. This is especially true for elderly females. Put influencing our findings is minimized due to high participation rate (100%) in both groups.

From this study, majority of the respondents have heard About breast cancer in tow area control and interventional (100%), (99%) respectively which is higher than the study in Iraq, where about 69.1% of the respondents heard about breast cancer (Alwan, N.A.et al, 2012). The significant difference in this result could be explained by, in this study the main source of breast cancer information reported by participant, are friends and community 101(50.5%), generally people in Sudan known as social cohesion especially in the countryside this force which will facilitate the rapid spread of information between community members.

Statistically significant differences did not exist between the control and intervention groups for this item. (chi = .000) [df = 1], p (7.51).

In addition, this study revealed an overall less-than-optimal level (i.e., correct answers to less than half of the questions) of baseline knowledge of breast cancer among interventional group and control group. Although breast cancer knowledge at baseline was low across breast cancer topics in our study, weaknesses were most prominent for “disease biology” and “factors associated with risk” among both groups of participants These findings indicated that females in the two areas did not exposed to any structure educational programs with the aim of raising awareness, underscore the importance of our education intervention on these subpopulations. Other studies had also reported lack of prior education about breast cancer among university students and general population of women A large surveyed college/university students about their breast cancer knowledge in the US (Daley, C.M., 2007), (Estaville L.et al, 2012) and other countries [(Sait, W.A.et al,2010), (Sambanje MN.et al,2012) as well as studies which surveyed general population of women (Budakoglu, I.I.et al,2007), (Wang, C.et al,2010) reported that breast cancer was not commonly discussed in classrooms or among family and friends. Therefore, it is important to create awareness and educate the community and to remove the misconceptions associated with ignorance through community based educational/awareness campaign.

Assessment revealed that our education was effective in increasing knowledge and narrowing the range of percent correct answers across all educational levels. for
example item one see table (3) (women who believed that tumor that may appear on the breast are cancerous increase from (173(86.5%) at baseline to 196(98%) post intervention chi-esquire test =18.498  p-value (.000) similarly high percentage of correct answers achieved post-education in anther items (women who thought that Breast cancer only for women without men and knowledge regarding clinical presentation) in the intervention group, while no beneficial change was observed in the control group for these three items. This result support the feasibility and effectiveness of the community base Awareness programs intervention in increasing the knowledge of breast cancer

two international studies, conducted in an urban slum in Egypt (Kharboush, I.F.et al, 2011) and rural Turkey (Budakoglu, I.I.et al,2007) both found that education interventions dramatically improved participants’ breast cancer knowledge even among illiterate women with low levels of baseline information on breast cancer. Those result reflected the an important of the program it consider first step to raise women’s aware ness of breast cancer and BSE. Early detection of breast cancer could reduce mortality and more lives could be saved if women were aware of practices of breast health awareness.

Our educational tools consisted of Power Point presentations delivered in lectures catered to each participating group, and intellectual discussion. Also, Pamphlet were prepared in simple Arabic language with simple local words. Previous studies utilized a variety of interventions including presentations, seminars or workshops (Jandorf, L.et al, 2008) focused discussion groups (Calderón, J.L.et al,2010) video breast health kits (Wood, R.Y.et al, 2002) and culturally targeted booklets (Mishra, S.L.et al,2007).


In this study knowledge of certain risk factors among both groups of participants at baseline was low, this finding is consistent with the results of Previous studies among
female college students in three US universities [Early, J.et al,2011] and among women aged 40–74 years [Moser K.et al,2007], which reported low baseline knowledge of certain risk factors for breast cancer, this may be due to the shortage of BC-related health education programs in primary health care facilities and in the media.

assessment revealed that our education intervention was effective in increasing knowledge about breast cancer among demographically diverse populations with low baseline knowledge (Table 4) from these table. Significant results were observed for 3 items about some risk factors of breast cancer for example (Relation between weight or obesity and breast cancer 94(47%) at base line, change from 199(99.5%) chi - esquire test = 140.0665 p-value (0.000) post interventional programs Significant results were observed for 3 anther items (Obesity is harmful after menopause or premenopausal, and Relationship between alcohol and breast cancer) in the study group at base line. While no beneficial change was observed in the control group for these 3 items.

This shift in knowledge or attitudes can be interpreted as effectiveness of our education intervention in empowering the females by giving them the knowledge of modifiable risk factors for breast cancer (long-term oral contraceptive use, low levels of physical activity, etc.) and by inspiring proactive thinking with respect to public health prevention strategies.

Regarding source of breast cancer information. The main source of breast cancer information in this study reported by participant, are friends and community 101(50.5%), 75(37.5%) involved tow group control/study respectively these might be due to Many of the campaign materials are printed, and there is high percentage of females with (more than fifty) in our sample uneducated or literate - and they may not understand or have access to the information in this type of publication. Therefore, an educational intervention targeting these subpopulations has the potential to increase knowledge and motivation for making informed decisions with respect to primary prevention and risk reduction options.

Other source of breast cancer information in this study reported by participant, Social media 80(40%),71(35.5%) followed by 11(5.5%),37(18.5%) Medical, field 5(2.5%),16(8%) school and3(1.5%),1(.5%) parents. Figure 2

In national studies, (Hussien, R.A.et al,2017) demonstrated that women were received general information about breast cancer mainly from the media (73. 9%).

In international studies, the studies conducted by Oluwatosin and Oladepe (Oluwatosin, O.A.et al,2006). as well as Okobia and colleagues (Okobia, M.N.et al,2006), the major (31% vs. 5.4%) source of the respondent's breast cancer knowledge was the television whereas in (Maree, J.E.et al,2010), most of the respondents indicated primary healthcare as their chef source of information.

Breast cancer information leaflets and physicians were the main sources of breast cancer information in Okobia (Okobia, M.N.et al,2006). In contrast, studies conducted in Ghana and Tanzania [Morse, E.P.et al,2014, Opoku, S.Y.et al,2012] indicated radio (39.8% vs. 36.4%) as the main source of breast cancer knowledge among respondents. In (Pace, L.E.et al,2015), women obtained breast cancer information from community elders, neighbors and friends (15.4%) and from people who have had the disease in the past (5.2%).

In our study respondent’s attitude about the risk factors of breast cancer see figure 3: the majority of females 105(52.5%) at control group ages over forty, 21(10.5%) were reported had family history and 18(9%) reported early menarches. while interventional group reported 56(28%) of females ages over forty 35(17.5%) had
family history. 52(26%) reported early Menarche 3(1.5%) reported late First Pregnancy ,1(0.5%) that use of contraceptive hormone 1(5%) infertility.

Study conducted by (Ahmed, H.G.et al,2010) at Khartoum to correlate breast cancer by common breast cancer risk factors in the Sudan they found that Out of the 150 cases and 100 controls, 22 (14.7%) and 14(14%) were found with a family history of breast cancer (First degree mother side), as well as, 20 (13.3%) were detected as having a previous history of breast cancer, respectively. Practicing irregular physical activities was found among 44 (29.3%) and 26 (26%) of cases and controls, On the other hand, 43.3% and 57.7% of the cases have attended the menarage at the age of less than13 years and more than14 years, respectively, Moreover, only 14.5% of the controls have attended the menarche at the age of 13 years old or less. The significant difference in this result indicate that this risk may be influenced by lifestyle factors.

Regarding attitude towards protective factors against breast cancer figure (4). The present study reported that 182(91%) In control group reported late menarche, 177(88.5%) reported early first pregnancy, 176(88%) said breastfeeding (this result reflecting cultural and religious factors encouraging breastfeeding), and 116(58%) had regular exercise. While interventional group reported 148 (74%) late menarche, 148 (74.0) reported early first pregnancy, 166 (83%) said breastfeeding, and 79 (39.5%) had regular exercise.

Study conducted by (Ziuo, F.Y, et al,2014) Found that 88.5% of females at Benghazi said breastfeed, 65.15said regular exercise, 58.8% said low fat food and 37.1% vegetable oils and one tenth (10.2%) of female late menarche.

In addition, our study report that the majority 199(99.5%) of females at control group have never conducted breast examination. only 1(0.5%) conducted breast examinations by doctor. Among study group 195(97.5%) of females have never conducted breast examination. only 5(2.5%) conducted breast self- examinations. Figure (5-1), figure (5-2).

The commonest reason reported by participants for not conducting breast examination was lacks of knowledge139(69.5%) 101(50.5%) include control, interventional group respectively followed by 28(14%), 41(20.5%) no interest in early examination then 12(6%), 27(13.5%) ‘Lack of clinics offering free screening, 8(4%) ,14(7%) Rising
costs, 5(2.5%), 1(0.5%), Fear or anxiety of the examination, and 4(2%), 10(5%) Shame figure (6) These finding must be addressed in future breast cancer awareness efforts. lack of programs for early detection of breast tumors a responsibility of health authorities ends up negatively affecting patients who have their chances of cure reduced, experience greater mutilation and cause more suffering during treatment and to their family. In addition, there are further losses to the public sector with increased costs to treat cases that could have been early diagnosed. The implementation of an educational program targeting women's health and more specifically focusing on early diagnosis of breast cancer is the only action that could change the current situation.

Generality in Sudan lack of money and knowledge about cancer, as well as shame, conspire to keep women in rural communities from seeking medical care, even when they notice an actual lump in their breast, nipple discharge, or other signs of pathology. Women were ashamed to seek help and often do not do so until their cancer is very advanced. Some women never go for medical care at all (Ahmed, I.H.et al, 2013).

Similar reasons were also given in a previous study. (Secginli, S.et al, 2003, Muhammed, S.M.et al, 2007). study among Asian Indian women revealed that the main knowledge barrier identified by study participants was lack of information on the importance of early detection through screening and prevention of breast cancer. When they were asked about their perceptions about breast cancer, the emotion of fear was the most prominent within the two focus groups of Asian Indian women (Wu, T.Y.et al, 2012).

Also, in our study we found lack or poor knowledge (i.e., correct answers to less than half of the questions) towards mammogram among Bose groups (control /study), this result should be analyzed from two different aspects. First, there is a need for an ongoing program for early detection of breast cancer. It is essential to provide accurate information focusing on disease prevention, such as breast cancer prevention, to both the target population and health professionals working directly with them. Secondly There is a need of resources to identify breast tumors, provide better training on clinical breast examination and practical procedures and improve referral of suspected cases.
assessment revealed that our education intervention was effective in increasing knowledge about mammogram table (5)

It is clear from these tables the correct answers of the participants significantly increased from pretest measurement to posttest measurement P. value was (.000) for example beneficial changes in 2 items investigate female’s knowledge about mammogram e.g. Mammogram is one of the method for early detection breast cancer, baseline percentage of correct answers ranged from 32(16%) to 195(97,5%) after interventional programs chi esquire test = 270.622 p -value (0.0000) signifying a similar pattern of improvement in the overall knowledge and narrowing of the gap as mentioned above in other items , (on women after the age of forty and above that doing a mammogram at least every year), While no beneficial change was observed in the control group for these two items. this result indicates the importance of the interventional programs to increase awareness and utilization of screening services


Several factors have been identified as influencing the level of knowledge and utilization of screening services in general. Socio-demographic characteristics such as younger age group (Lee, K., Lim, H.T.et al,2010) and education (Okobia, M.N.et al,2006, Ojikutu, R.K.et al,2009) have been reported with higher levels of awareness and utilization of screening services commoner among the educated and those with high socioeconomic class.

Educated women are more likely to benefit from most messages concerning breast cancer knowledge and methods of prevention and thus more likely to learn about mammography.

In this study A chi squire test was done to measure the relationship between the age group and knowledge towards mammogram table (6) study reported highly significant differences between female's age and knowledge towards mammogram p value was (.006). The present study revealed that 17(8.5%) of females age > 20Year among
them 16(8%) of females who had knowledge towards mammogram, compare to 1(5%) who were not knowledge, 127(63.5%) females age between 20-39 years among them 127(63.5%) had knowledge compare to 0(0%) who were not knowledge. 56(28%) of females age among them 52(26.5%) females aged >40 who had knowledge compare to 4(2%) who were not knowledge.

Record show that the women most likely to benefit from mammography are those aged 50 to 69 years because of high prevalence of low breast density (Obajimi, M.O.et al,2012), however our study revealed that this age group demonstrated a very low level of mammography awareness.

In addition, our study reveals significant relationship between the educational level and knowledge towards mammogram, P. value was (.021).

The present study revealed that only 77(38.5%) of female’s un educated among them 72(36%) of Uneducated females had knowledge and 5(2.5%) females had not knowledge towards mammogram, 32(16%) of female’s level of education (Khalwah) among them 32(16%) Khalwah had knowledge compare to 0(0%) had not knowledge. 42(21%) of females had Primary level education among them 42(21%) Primary had knowledge compare to 0(0%) had not knowledge, 31(15.5%) of female’s Secondary levels among them 31(15.5%) Secondary, had knowledge, compare to 0(0%) had not knowledge. 16(8%) of female’s Graduate levels among them 16(8%) Graduate had knowledge compare to 0(0%) females had not knowledge, 2(1%) of female’s post graduate levels among them 2(1%) post graduate had knowledge compare to 0(0%) had not knowledge.

Similar finding was also reported by (Akinola, R.et al,2011) and (Lee, K. et al,2010).

Also, the current study revealed that no significant differences between marital status and knowledge towards mammogram where, p= (.208). The study reported 171(85.5%) married females among them 166(83) of married had good knowledge towards mammogram, and 5(2.5%) of married females had not knowledge. compared to 29(14.5%) unmarried females had knowledge towards mammogram, and 0(0%) of unmarried females had not knowledge.

Also, the current study reported no significant relation between knowledge towards mammogram and family history of breast cancer among females, where (P= .622)
165(82.5%) of our sample had no family history of breast cancer among them 161(80.5%) had knowledge towards mammogram. 4(2%) had not knowledge. While 35(17.5%) of females had family history of breast cancer among them 34(17%) of our sample, who had history of breast cancer were knowledgeable. Compare to 1(.5%) had not knowledge.

Similar results were found by (Akinola, R.et al,2011) and West et al. (West, D.S.et al,2003). One would have expected a higher level of anxiety among women with family history of breast cancer which should translate to a higher level of mammography awareness. However, fear of having a positive screening test could make utilization of breast cancer screening services low (Hailey, B.J.et al,1991).

Breast self-examination is very important and may be the only mean for identifying breast cancer at early stages in low- and middle-income countries, the study results illustrated that statistically significant difference in the knowledge attitude and practice of BSE, between baseline and 3months follow-up, Table 7: for example items one (Ever heard about breast self-examination baseline percentage of correct answers ranged from 8(4%) to 200(100%) after interventional programs chi esquire test = 369.231 p-value (0.0000) signifying a similar pattern of improvement in the overall knowledge and narrowing of the gap as mentioned above in other items (Breast self-examination important, importance of breast self-examination, benefit of breast self-examination, Proper time to do breast self-examination, Right position to perform breast self-examination, Equipment require to perform breast self-examination) While no beneficial change was observed in the control group for these items. After the intervention, the majority of participants were able to describe how and when to practice BSE. Most responded that they were willing to seek medical advice upon discovery of abnormal symptoms. Furthermore, we also provided reminders in the form of a health promotion (booklet) to improve the women’s practice of BSE, as forgetfulness was found to be a major barrier to performing it. Also, interventional group showed a significantly increase in the proportion of female’s practice toward breast self-examination. While no beneficial change was observed in the control group. Table 8

among interventional group 184(92%) practiced (BSE’) compared to 5(2.5%) pre-tests chi esquire test = 369.529 and p-value (0.000). while no beneficial change was
observed in females practiced (BSE) in the control group 3(1.5%) compared to 0(0.0%) pretests. Those result reflected the appreciation of the women to important of breast self-examination as early detection method. compare to previous study conducted in Alzagira state 2006 showed the rise in regular monthly BSE practicing from 37 (53.6%) to 62 (89.9%) after intervention (Hussien, R.A.et al,2017). The significant difference in this result could be explained by the effectiveness of intervention by volunteers that provide necessary reinforcement and support to them.

Higher level of education, younger age and higher knowledge score were significant determinants of BSE practice. in our study; marital status, a family history of breast cancer, and other demographic variables were not significantly related to BSE practice. Similar to our findings, other investigators have reported that demographic characteristics such as higher levels of education and income, marital status, younger age, social support, knowledge and preventive attitudes, a history of breast diseases, a family history of breast cancer, having a regular physician, ethnic background and residence area are significant determinants of adherence to BSE practice (Maxwell, C.J.et al,2001).

A chi squire test was done to measure the relationship between the age group and practices about breast self-examination, table 9

The present study reported highly significant differences between female's age and BSE practice p value was (0.000). The present study revealed that 17(8.5%) of females age > 20Year among them 16(8%) of females who were practicing BSE compare to 1(1.5%) who were not practicing BSE. 126(62%) females age between 20-39years among them 125(62.5%) were practicing BSE compare to 1(1.5%) who were not practicing BSE. 56(28%) of females age among them 44(22%) females aged >40 who were practicing BSE compare to 12(6%) who were not practicing BSE.

Our findings indicated that women with higher education was more likely to have prior practice of breast self-examination and to take care of their own health.

For example, 77(38.5%)of female’s un educated among them 65(32.5%) of Uneducated females had practicing BSE regularly and 12(6%) females had not practicing BSE regularly, 32(16%) of female’s level of education (Khalwah) among them 32(16%) Khalwah had practicing BSE regularly compare to 0(0%) had not
practicing BSE regularly. 42(21%) of females had Primary level education among them 41(20,5%) Primary had practicing BSE regularly compare to 1(.5%) had not practicing BSE regularly,31(15.5%)of female’s Secondary levels among them 30(15%) Secondary, had practicing BSE regularly, compare to 1(.5%) had not practicing BSE regularly. 16(8%)of female’s Graduate levels among them 15(7,5%) Graduate had practicing BSE regularly compare to 1(.5%) females had not practicing BSE regularly, 2(1%)of female’s post graduate levels among them 2(1%) post graduate had practicing BSE regularly compare to 0(0%) had not practicing BSE regularly. significant relationship P. value was (0.003).

Uneducated females might have lacked breast health knowledge and tended to underutilize health care services. The program provided an opportunity for them to clarify individualized questions, and hopefully resolved some barriers to breast self-examination through a direct dialogue with researcher.

In addition, the current study revealed that no significant differences between marital status and BSE Practice where, p=0.667). The study reported 171(85.5%) married females among them 158(79%) were practicing BCE, and 12(6,5%) of them had not practicing BCE. compared to 29 (14.5%) unmarried among them 27(13,5%) were practicing BCE, and 2(1%) of them had not practicing BCE

our results concur with findings of other educational interventions conducted within the Benghazi- Libya( Taher, Y.A.et al,2016) Abdel-Fattah, M.et al,2000

Also, the current study reported no significant relation between BSE practices and family history of breast cancer where (P= 255). 165(82.5%)of females had no family history of breast cancer among them 152(76%) had practicing BCE. 13(6,5%) had not practicing BCE. While 35(17.5) of females had family history of breast cancer among them 34(17%) of females, who had history of breast cancer practicing BCE, among them 1(.5%) had not practicing BCE.

Our results concur with findings of other educational interventions conducted within the Benghazi- Libya( Taher, Y.A.et al,2016) Abdel-Fattah, M.et al,2000 also studied the Breast self-examination practice and its impact on breast cancer diagnosis in Alexandria. BSE was positively associated with a higher educational level (P <
No association was found between BSE and marital status.

Regarding Change in Practices levels towards clinical presentation of breast cancer among study and control groups Table (10) indicate significant increase in the practices of the studied group after attendance of the educational program. For example, Action take when Find secretion, strange color deranges from nipple Correct practice at baseline 51(25.5%) increased to 185(92.5%) post interventional programs, the chi square was 186.607 p-value (0.000) Significant results were observed for 3 another items regarding females Practices levels towards clinical presentation.

The strengths of our study include the high level of participation (100% of Females participate) and the high response to follow-up (100%). In addition, demographic diversity of our study subjects, systematic delivery of education and collection of information, and community-based nature of the intervention. Community-based prevention programs were recently noted as particularly effective with respect to their scope of dissemination, which goes beyond clinical-based prevention programs, hence their independence from access to the health care system (Pronk, N.P.et al,2013). Although, our findings are not generalizable to the entire population of the sinnar state, they are interpretable. Furthermore, our findings with respect to baseline knowledge levels and effectiveness of education intervention are consistent with prior studies conducted in other populations, although, publication bias cannot be ruled out.

Limitations of our study include study was limited to only one area of Sudan, all of whom studied in sinnar State, from Kasab Garby and Madinat Elsalam, who were distributed into two equal groups. Thus, the scope for generalizability of the study results is limited and more extensive studies, using more diversified sample are recommended.
Chapter Six

Conclusion and Recommendations

Conclusion

The study concluded that:

- low levels of baseline knowledge of breast cancer among both participating groups control and interventional groups (i.e., correct answers to less than half of the questions).

Assessment revealed that the targeted education intervention was effective in improving knowledge about breast cancer post-education among interventional group significant result over all knowledge of breast cancer chi-esquire test =18.498 p-value (.000).

- interventional group showed statistically significant increases in practices of breast self-examination after implementation of the interventional programs compare to control group. chi esquire test =369.529 and p-value (0.000).

- highly significant relationship between the age group, educational level and female knowledge towards mammogram, chi-squire test 8.191, P. value was (.021).

No significant difference in the knowledge towards mammogram between those with family history of breast cancer and other females whom had no family history of breast cancer where (P=.622).

- study reported highly significant relationship between the age group and practices of breast self-examination, p value was (0.000).

significant relation between education and the knowledge and practices of BSE. P Value was (0.003). Literacy status of female is directly related to the awareness and practice of BSE along with her health seeking behavior.

-While no significant relationship between marital statues and practices of breast self-examination. p=0.667).
- Also, no significant relationship between the family history and practice of breast self-examination, where ($P = 255$).

- Knowledge deficits, Misconceptions about breast cancer, Fear or anxiety of the examination, Lack of clinics offering free screening, and rising costs all these barriers contribute to delay care seeking and early detection of breast cancer in tow setting (control/study) and must be addressed in future breast cancer awareness efforts.
Recommendations

This study suggests the following recommendations:

- Health education programs through various channels should be implemented for the females to increase the awareness and knowledge about breast cancer and promote early presentation. Working with communities and developing culturally appropriate materials may lessen taboos and stigma, raise awareness, increase discussion of breast cancer and promote prompt help-seeking behavior.

- The effective socio-demographic characteristics of breast cancer health beliefs of women should be considered in the design of breast health promotion and screening programs because they are likely to have a bearing on female’s attitudes regarding the value they perceive in cancer screening.

- The message regarding breast self-examination should be disseminated by “one to one approach” by organizing small groups at work place and small gatherings at village level, colleges etc.

- Considering the acute shortage of doctors in rural areas in our country, it is appropriate and necessary to train female health workers. This is possible as demonstrated by this study, wherein the female health workers were trained and they in turn, were successful in creating awareness among the rural women regarding breast cancer as well as motivating them to competently perform BSE, in order to get acquainted with their breasts.

- Also provide better training on clinical breast examination and practical procedures and improve referral of suspected cases.

- Healthy and positive attitude about breast self-examination should be encouraged in girls in the early school age rather than teaching it when grown up.

- All channels of the national mass media could efficiently be utilized to cultivate a healthy positive attitude toward BSE.

- Further research is recommended using a larger sample size with females in other urbans of the state, including the cost effectiveness of designing and implementing preventive care.
Our findings provide leads for public health prevention strategies in Kasab Garby and Madinat Elsalam and in other populations by identifying specific areas of knowledge gaps as well as specific subgroups of the population who could benefit the most from future targeted public health

We recommend the establishment of policy guidelines that will enhance adequate and urgent dissemination of information about breast cancer to all women
Reference


American cancer society, Breast cancer survival rates by stage,2016
http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-survival-by-stage


American Cancer Society. What are the risk factors for breast cancer?2015. Atlanta, Ga: American Cancer Society; 2015


Can breast cancer be found early? American Cancer Society. Available at:


http://en.wikipedia.org/wiki/Raising_awareness

http://medup.ir/uptodate/contents/UTD.htm?28/17/28954/abstract/6,7

http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-survival-by-stage

http://www.cancerresearchuk.org/cancer-info/cancerstats/types/breast/incidence/#age


National Cancer Institute What You Need to Know About™ Breast Cancer available at http://www.cancer.gov/publications1-800-4-CANCER (1-800-422-6237) access on October 2014


Parker S.L(1997). Cancer Statistics; 47: 5-


Smith, R.A., Caleffi, M., Albert, U.S., Chen, T.H., Duffy, S.W., Franceschi, D. and Nyström,


Susan G Komen. Warning Signs of Breast Cancer, 2015


Vainio, H., 2002. Weight control and physical activity (Vol. 6). Iarc


Appendix 1

Questionnaire


the virtuous sister we are a group of volunteers working for your safety and the safety of the next generation to spread health awareness among member of the community we hope you contribute to our efforts to successfully fill out this questionnaire and return it to us and we wish God to dress albisk health and wellness always praise God from us all the best

All information used in scientific purposes only and are dealing with it discreetly and will not look at it a non-working this search. Thank you for responding and for your time.

Personal data; -

Age
1. >20 years’ old ( )
2. 20-39-year-old ( )
3. <40year ( )

4. Educational level: -
a. Ignorance ( )
b. primary ( )
c. secondary ( )
d. graduate ( )
e. post graduate ( )

5. Occupation;-a) employee ( )
b) student ( )
c) house wife ( )
d) do not work ( )

6. Marital status; -
a) married ( )
b) unmarried ( )

7. Monthly income
a) enough ( )
b) not enough ( )
8. Ever heard about breast cancer?
   a) yes (   )
   b) no (   )

9. Source to receive information about breast cancer?
   a) Doctor (   )
   b) TV or radio (   )
   c) parents (   )
   d) friend and community (   )

10. Is there in your family history of breast cancer?
    a) yes ( )
    b) no ( )

11. If the answer yes Degree of relationship?
    a) mother (   )
    b) sister (   )
    c) aunt (   )
    d) other (   )

12. menarche -------------------------------

Special question to married:-

13. Number of pregnancies .................................................................

14. do you have any child .................................................................?

15. Are all children breastfed?
    a) Yes (   )
    b) No (   )

16. Duration that the breastfed?
    a) month and less (   )
    b) 4month to a year(   )
    c) 2years

17. Age at first child in pregnancy? --------------------------------------

18. Did you take any pills to prevent pregnancy?
    a) Yes (   )
    b) no (   )

19. If the answer is yes, the duration of which underwent for pills?

20. Have you ever conducted examination of the breast?
    a) Yes (   )
    b) no (   )

21. If the answer is yes, what kind of examination?
    a) Mammogram (   )
    b) ultrasound (   )
    c) manual routine check (   )

22. If the answer is no, what are the reasons?
    a) Fear or anxiety of the examination (   )
    b) I have no interest in early examination (   )
c) Rising costs (   )

d) Lack of clinics offering free screening (   )

e) shortage of time (   )

f) shame (   )

Mammogram is one of the method for early detection breast cancer?

a) yes (   )

b) no (   )

23. On women after the age of forty and above that doing a mammogram at least every?

a) 3 year (   )

b) 2 year (   )

c) 1 year (   )

d) monthly

24. Do you think that all the tumors that may appear on the breast are cancerous?

a) Yes (   )

b) no (   )

25. Do you agree that the breast cancer only for women without men?

a) Yes (   )

b) no (   )

26. Do you practice any kind of sport?

a) yes (   )

b) no (   )

27. Ever heard about breast self-examination?

28. Do you think breast self-examination is important?

a) Yes (   )

b) No (   )

29. If yes report cause for benefit of breast self-examination?

a) Early detection of breast cancer

b) Prevention of breast cancer

c) Early treatment of breast cancer

30. Are you doing breast self-examination every month?

a) Yes

b) no

31. If you answered yes, who taught you how to breast self-examination performed?

a) School

b) mother

c) sister

d) friendly

e) the media

f) Another--------------------------

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32. What is the proper time to do breast self-examination?
   a) The first day of the month
   b) Last day of the month
   c) After the end of the menstrual cycle
   d) When you sense something strange in the breast

33. What is the right position to perform breast self-examination?
   a) Sitting
   b) semi-sitting
   c) sleeping
   d) recumbent on the abdomen
   e) standing

34. What is the required equipment to perform breast self-examination?
   a) Mirror
   a) notebook
   b) pen and paper
   c) towel

35. What are the strange signs that worry you when conducting breast self-examination?
   a) tumor
   b) change in shape or size
   c) itching or pain in the nipple
   d) inverted nipple
   e) nipple discharge or pain
   f) I do not know

36. What do you do when you find secretions strange color drainage from the nipple?
   a) Wipe with a disinfectant
   b) squeeze the nipple
   c) Put gauze to absorb exudate
   d) Go to the doctor

37. What do you do when you feel of pain in the breast?
   a) Take painkiller
   b) Put warm water compresses
   c) Put cool water compresses
   d) Do not do anything
   e) Go to the doctor
   f) Another ---------------------------------------------

38. What do you do when you see peel or sores in the breast or nipple?
   a) Wash your chest
   b) Wipe the skin with moisturizer
   c) I put antibiotic
   d) Go to the doctor
   e) Another ---------------------------------------------

39. What do you do when you see foreign body in your chest rounded or macika?
   a) I put cream

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b) I'm trying squeeze it

c) Do not do anything

d) Go to the doctor

e) Another

40. Is there a question you think it serves this questionnaire did not remember mentioning and we hope to answer it

Reference:
