KNOWLEDGE OF BREAST CANCER AND PREFERENCE OF EARLY DETECTION SCREENING MEASURES AMONG FEMALE UNDERGRADUATE STUDENTS OF EKITI STATE UNIVERSITY, ADO EKITI, NIGERIA

BY

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DEDICATION

To the Almighty and the All-knowing God (The Omnipotence and Omniscience God),

The giver of life,

The sustainer,

For His love, mercy and grace

ABSTRACT

Breast cancer (BC) is the leading cause of cancer deaths among women and observed to be rising among younger women. Early detection is the best defense against morbidity and mortality from BC. Low disease knowledge, wrong perception and poor utilization of screening services have been shown to increase its morbidity and mortality. This study was designed to assess knowledge and perception of BC and preference of early detection measures (EDM) among female undergraduate students of Ekiti State University, Nigeria.

This is a descriptive and cross-sectional study. Using multi-stage random sampling technique, pre-tested semi-structured questionnaires were administered on 427 respondents to assess their socio-demographic characteristics, opinion about BC, knowledge of BC, perception of vulnerability, preference of early detection screening methods and what they would like to know about screening methods. Data collected was analyzed using SPSS version 20. One way ANOVA was used to assess relationship between dependent and independent variables.

Results showed that the respondents' mean age was 21.9 ± 1.88 years. Majority was single (90.3%). The highest education attained by the bulk of respondents was SSCE (91.3%). Most were Yoruba (91.4%) and Christians (90.3%). Majority (94.5%) was aware of BC and (92.3%) stated that it is a serious disease. Most (76.0%) did not perceive themselves vulnerable to BC and (81.1%) utilized divine protection through prayer to avoid it. Knowledge of pre-disposing factors for BC was low. The mean knowledge score of the respondents was 11.3 ± 5.1 out of 24-points BC knowledge score.

Age-group, marital status, parents' occupation and level of education were statistically significant with knowledge of BC. Majority (87.1%) agreed that early detection increases the chances of survival of BC. The most preferred early detection screening method was Breast Self-Examination (BSE) (32.6%), followed by Clinical Breast Examination (CBE) (12.6%). Only (30.6) and (23.3%) of the respondents have ever performed BSE and CBE respectively. Motivation for BSE utilization was fear of disease (31.3%) and school health registration, (66.3%) for CBE.

Although awareness of BC was high among the students, knowledge, perception of self-vulnerability and utilization of screening service were very poor. It is therefore recommended that educative programs on BC and early detection screening methods using preferred sources of information and training on how to perform BSE should be carried out among the study population.

Key words: Female undergraduate students, Breast cancer, knowledge, Early Detection and BSE and CBE.

Word Count: 375

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CERTIFICATION

I certify that the study was carried out by Olajumoke Precious Adako in the Department of Health Promotion and Education, Faculty of Public Health, College of medicine, University of Ibadan, Ibadan, Nigeria.

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LIST OF ABBREVIATIONS

ACS   American Cancer Society

BC   Breast Cancer

BRCA 1   Breast Cancer Gene One

BRCA 2   Breast Cancer Gene Two

BRECAN   Breast Cancer Association of Nigeria

BSE   Breast Self-Examination

CT   Computed Tomography

BUS   Breast Ultra Sound

CBE   Clinical Breast Examination

ERT   Estrogen Replacement Therapy

EKSU   Ekiti State University

FMOH   Federal Ministry of Health

HER   Hormone Estrogen Receptors

HBM   Health Belief Model

HOD   Head of Department

HRT   Hormone Replacement Therapy

LCIS   Lobular Carcinoma In-Situ

LMICS   Low Middle and Income Countries

MAMO   Mammography

PMHT   Post-Menopausal Hormone Therapy

OCPs   Oral Contraceptives

SEER   Surveillance Epidemiology and End Result

UCH   University College Hospital

WHO   World Health Organization

OPERATIONAL DEFINITION

Cancer: growth of malignant abnormal cells which can affect any part of the body, usually malignant because it acquires independent self-regulation, removing themselves from the normal body regulatory mechanism thereby causing serious harm to the body

Breast Cancer: malignant growth of the breast tissue. It can begin as a small painless fixed lump most frequently located in the upper outer quadrant of the breast

Malignant: body tumor that can invade or destroy nearby tissue and that may spread to other parts of the body, ending to be severe and become progressively worse

Metastasis: process by which cancer spreads from the place at which it first arose as a primary tumour to distant locations in the body

Lump/tumour: (also known as neoplasm) is an abnormal mass of tissue which may be solid or fluid filled. A tumor does not mean cancer, it can be benign (not cancerous), pre-malignant (pre-cancerous) or malignant (cancerous). It is a swelling which does not necessarily pose a health threat but requires further medical attention to ensure if it is harmful or not

Knowledge: it is what female undergraduate students know about the causes, sign, symptoms, risk factors, screenings and diagnosis, treatment and management of breast cancer

Practice: intervention undertaken by someone who aimed at preventing or identifying a disease at asymptomatic stage such as BSE, CBE, BUS and MAMO

Screening: process of looking for early signs of a disease in a healthy population

Breast Self-Examination: an autonomous preventive health behavior that is carried out on a monthly basis to detect changes, abnormalities, lump/tumour that may indicate the presence of cancer in the breast and accessory anatomic structures

Clinical Breast Examination: a physical examination of the breast done by a health professional, who is trained to recognize many different types of abnormalities and warning signs of breast cancer

Breast Ultrasound: the use of imaging technique to evaluate breast abnormalities that are found within screenings. It is non-invasive and involves no radiation

Mammography: breast screening procedure where an X-ray examination of the breast is used for early detection of developing tumours especially cancerous ones. It is the only diagnostic screening for breast cancer

Biopsy: the removal of a sample of tissue for examination under a microscope to check for cancer cells or other abnormalities

CHAPTER ONE

INTRODUCTION

1.1 The study background

The world is facing an emerging global epidemic: a rising incidence of breast cancer (BC) in almost all countries and regions of the world. By 2020, incidence and mortality due to BC are expected to increase from current rates by over 50 percent, with the highest rates in low- and middle-income countries (LMICs). Currently, women of reproductive age in these countries are more likely to die from complications of pregnancy and childbirth than from BC. However, within the next two decades, death rates from BC will equal, if not more than those from maternal causes (Napoles, 2013).

It is estimated that the prevalence of BC in Sub-Saharan African was 23.5 per 100,000 women in 2008, during which an estimated 35,247 women died from BC with a crude mortality rate of 12.8 per 100,000 women (Bi Suh et al, 2012). In Nigeria, incidence rate has increased from 13.8-15.3 per 100,000 in the 1980s, to 33.6 per 100,000 in 1992 and 116 per 100,000 in 2001 (Adebamowo and Ajayi 2001; BRECAN 2008). Presently, the absence of proper cancer data has made it difficult to determine the actual number of people that die from cancer and those that are currently suffering from the disease.

Reports have continued to indicate increases in cases annually. Statistics have shown that by 2020, cancer incidence for Nigerian males and females may hit 42 million and death rates may reach 72.7/100,000 and 76/100,000 respectively (Lakeshore Cancer Centre, 2014). BC presents a typical picture of the enormity of cancer burden on the Nigerian nation with characteristics such as increasing prevalence, afflicts relatively young women, runs an aggressive course, late presentation to hospital, bulky and scirrhous tumour (Ogundiran and Ezeome, 2009).

In Nigeria, majority of BC cases occurred in pre-menopausal women and some cases have been reported below 30 years (Banjo, 2004). The youngest age recorded for BC was 16 years from Lagos. The peak age of incidence is reported to be between 45 and 50 years, in contrast to Europe and America, where it was reported to be 65-75 years (Obaji et al, 2013). The youngest and worst so far is that of a ten year old girl in US (Obaji et al, 2013; Anon, 2009; Adetifa and

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Ojikutu, 2009; Makanjuola et al, 2013). Most of the total deaths from the disease are accounted for in the developing world.

From the distribution of cancers at the Morbid Anatomy Department in Lagos University Teaching Hospital in 2007, BC is the leading cancer and accounted for 38% in both sexes, 48% among the female and about 80-85% still present in advance stage III, with attendant poor outcome (Abdulkareem, 2009). In the recent Ekiti State Cancer Review, 85.3% of patients seen were symptomatic. Late presentation generally characterizes cancer diagnosis among Nigerian and other African women thereby diminishing chances of survival and more complicated by exorbitant cost of treatment, increasing mortality (Azubike and Okwuokei, 2013).

The Center for Disease Control (CDC), 2014, stated that early detection is the best defense against morbidity and mortality from BC. Preventive measures such as awareness and utilization of early screening detection methods would contribute to reduction of BC morbidity and mortality. Educating and empowering women with BC knowledge would assist them in modifying their behavior and seek early detection screening and medical assistances (Eittah, Awed and Bukhary, 2014). Early detection in order to improve BC outcome and survival remains the cornerstone of BC control (WHO, 2014).

Although there is strong evidence suggesting that women in the developing countries are more likely to delay their presentation with BC, there is data suggesting that factors related to women's knowledge and beliefs about BC and its management may contribute significantly to medical help-seeking behaviors (Okobia, 2006). The three screening methods recommended for BC include Breast Self-Examination (BSE), Clinical Breast Examination (CBE), and Mammography (MAMO). Unlike CBE and Mammography, which require hospital visit, specialized equipment and expertise, BSE is inexpensive and can be easily carried out (Mohammad et al, 2013).

Several studies, based on BC patient's retrospective self-report on their practices of the examination, have established that a positive association exists between performance of the examination and early detection of BC. There is also evidence that most of the early breast tumors are self-discovered and that the majority of early self-discoveries are by BSE performers. Yet, there are limitations to it and some women do not perform it for various reasons (Eittah, Awed and Bukhary, 2014). CBE is the checking of breast by health professional in the clinic.

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Various studies reported a very low utilization of CBE among women especially young women and even among female health practitioners.

1.2 The Statement of Problem

BC is the number one cancer killer of Nigerian women followed by cervical cancer. It is the commonest female cancer and most common cancer in both sexes. BC even among male in Nigeria represents 3.7 -8.6% of all BCs and is higher than the 1% recorded from other parts of the world. (Arulogun et al, 2013). According to Dr. Femi Olaleye, Optimal Cancer Care Foundation, 2013, the incidence of BC in Nigeria is one in twenty-five women.

The relative frequencies of BC among other female cancers, from Cancer Registries in Nigeria were 35.3% in Ibadan, 28.2% in Ife-Ijesha, 44.5% in Enugu, 17% in Eruwa, 37.5% in Lagos, 20.5% in Zaria and 29.8% in Calabar. In all the centers except Calabar and Eruwa, BC rated first among other cancers (Oluwatosin and Oladepo, 2006).

From a review of the data on patients diagnosed with cancers in Ekiti State as recorded in the database of the Cancer Registry of the Federal Medical Centre, Ido-Ekiti between 2007 and 2012. 612 cancer patients were diagnosed in the cancer registry record within the five-year period under review. Most (67.6%) were females and the site most commonly affected was the breast (14.6%) followed by the prostate gland (14.1%), cervix (6.9%), ovary (6.8%), uterus (3.1%) and the stomach (1%), (Babatunde, Elegbede, Ayodele, Abidoye, 2013).

Various studies have reported low level of knowledge about signs and symptoms of BC, and practice of early detection screening methods despite the associated benefits of timely treatment and chances of survival (Adejumo and Oluwatosin, 2009; Latif, 2014; Suleiman, 2014). It is not yet understood why women do not utilize these early detection screening methods and access breast health services, especially young women in the university who are educated. Women thus die unnecessarily from a disease that can be treated if detected at an early stage. BC is the most curable when detected at its earlier stages.

The Lagos State Ministry of Health documented that the annual 15% of the cases occur in women less than 30 years (Adetifa and Ojikutu, 2009). BC reduces the life expectancy of the population at risk, especially those between 31 and 50 years. There are social and economical

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consequences since these women both have the responsibility of the care of their families and are at the peak of their careers. Whereas less than one-third of women diagnosed with BC in developed countries die from the disease, this proportion reaches over two-thirds in developing countries and is directly related to income per capital (Howell 2010)

Annually many women die of the disease in Nigeria with majority of them presenting in the late stages of the disease when very little or nothing can be done to stop disease progression (Obajimi et al, 2013). In developing or low income countries, BC was characterized by late clinical presentation and in advance stage of the disease, when only chemotherapy and palliative care could be offered, and therefore associated with high mortality (Abiodun, et al 2012).

BC awareness in developing countries is not well documented, and what is known is far from encouraging as comparatively few women in these areas have adequate knowledge of the risk factors and preventive measures or screening techniques for early detection. The lack of knowledge and incorrectly held beliefs about BC prevention among females are responsible for the negative perception of the curability of cancer detected early and of the efficacy of the screening tests (Suleiman, 2014).

The death of the serving deputy governor of Ekiti State, Mrs Olufunmilayo Adunni Olayinka due to BC, on the 6th of April 2013 attracted the interest of the state government to confront the scourge of BC in the state. A BC diagnostic and wellness centre in memory of the deputy governor named Funmi Olayinka Cancer Diagnostic and Wellness Centre was established in the state capital, Ado Ekiti. It was established to help citizens and inhabitants of Ekiti State access modern facilities that aid early detection of cancer. Also, as part of programs and activities to mark one year remembrance of the death of the deputy governor, Breast Self-Examination kits were distributed to women.

However, abuse and misuse of the BSE kits has been observed by health workers in the state due to poor education on management and usefulness of the kit. Also, many women still cannot afford the cost of the BC screening which ranges from N5, 000 to N6, 500. At the Breast Cancer Clinic of University Teaching Hospital, Ekiti State, most women diagnosed of BC even at early stages when treatments count, are said to disappear due to the cost of treatment, resolving to fate and herbal medicine.

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BC is becoming increasing among young women. According to BRECAN 2008, (BC Association in Nigeria), BC is getting more common among Nigerians especially amid the younger people and it carries in its wake grave socio-economic consequences. BC incidence is becoming very common in Nigeria, with majority of patients young and premenopausal women, presenting in the advanced stages of cancer as well as poor treatment compliance, thereby leading to death of patients or lost to follow-up within a year of diagnosis, (Adesunkanmi, 2006).

Late presentation of patients at advanced stages when little or no benefit can be derived from any form of therapy is the hallmark of breast cancer in Nigerian women (Okobia, 2006). Yip CH, et al, 2011, reported that early detection programs are often hampered by logistical and financial problems, as well as socio-cultural barriers, despite improved public educational effort. In Nigeria, late presentation of BC cases has been consistent for more than three decades because there is no established national screening program for BC in the country, therefore, the tendency of Nigerian women to be screened for early identification and access prompt treatment of BC is very low, (Oluwatosin and Oladepo, 2006).

1.3 Justification for the Study

Undergraduate students especially females can have a major influence on their family and friends on several issues including health. They can positively influence their friends, family and relatives on early detection screening methods of BC. They can emphasise on the positive effects of prevention and early detection of the disease in schools among their friends, fellow students, and younger ones who see them as role models, thereby increasing awareness in other platforms that health workers such as nurse and doctor seldom function. Educating the youth on BC is a potential strategy for dissemination of such information in society (Ranasinghe et al, 2013). This study provides timely information on knowledge, perception and awareness on BC and its early detection measures.

Female undergraduates were chosen to be studied. This is because BC is mostly found among the female gender. According to Dr Remi Ajekigbe, the Head of Department of Radiotherapy and Oncology, LUTH, Lagos State, little or none is known about BC cases among the male folk and being a woman is the main risk factor for BC. While men also get the disease, it is about 100 times more common in women than men. In a study by Abiodun et al, 2012, in Ilorin Nigeria BC

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is low among males as M: F ratio is 1:80 which is similar to reports from other countries such as Finland, Norway and Philippine.

Information derived from this study has added to existing literature on the knowledge of female undergraduates about BC and their preferred early BC detection measures. It is anticipated that findings from this study will also suggest directions on how best to raise awareness and knowledge level and improve utilisation of BC early detection screening methods among this subject group and the general populace.

The research findings can also be useful in planning, organising and implementing interventions to fill up discovered gaps in knowledge of BC and ending poor behaviours, choice, practices, and perceptions increasing BC prevalence and mortality. So far, there is no published work found in Ekiti State that assesses female university students' knowledge of BC and preference of early detection screening methods. It is also important to assess preferred early detection measures (EDM) of young women who are not medically recommended for mammography. The study will provide answers to the research questions below.

1.4 Research questions

1. What is the level of knowledge of EKSU female undergraduate students about BC?

2. What is their perception of vulnerability to BC?

3. What is their level of utilization of BC early detection screening methods?

4. What is their preferred early BC detection screening method?

5. What are the reasons for their preferred BC early detection screening methods?

1.5 Objectives of the study

1.5.1 Broad objective

The broad objective of the research was to assess the knowledge of breast cancer among female undergraduate students in Ekiti State University, Ado Ekiti, Nigeria. It also aimed at determining their preferred early BC detection measures.

1.5.2 Specific objectives

The Specific objectives of this research were to:

1. Assess the female undergraduate students' knowledge about breast cancer

2. Explore the female undergraduate students' perception of vulnerability to breast cancer

3. Determine their level of utilization of breast cancer early detection screening methods

4. Assess their preferred breast cancer early detection measures

5. Identify reasons for their preferred breast cancer early detection screening method

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CHAPTER TWO

LITERATURE REVIEW

2.1 Breast Cancer Knowledge

2.1.1 Overview of the Structure of the Breast

In order to understand breast cancer, it is helpful to have some basic knowledge about the normal structure or parts of the breasts, as shown in Fig 2.1 below.

The female breast is made up mainly of glands that make breast milk (called lobules), ducts (small/tiny tubes that carry milk from the lobules to the nipple), stroma (fatty and connective tissues surrounding the ducts and lobules), blood vessels and lymph vessels. Most BCs begin in the cells that line the duct (ductile cancer), some begin in the lobules (lobular cancer), and a small number start in other tissues (Breastcancer.Org, ACS, 2014).
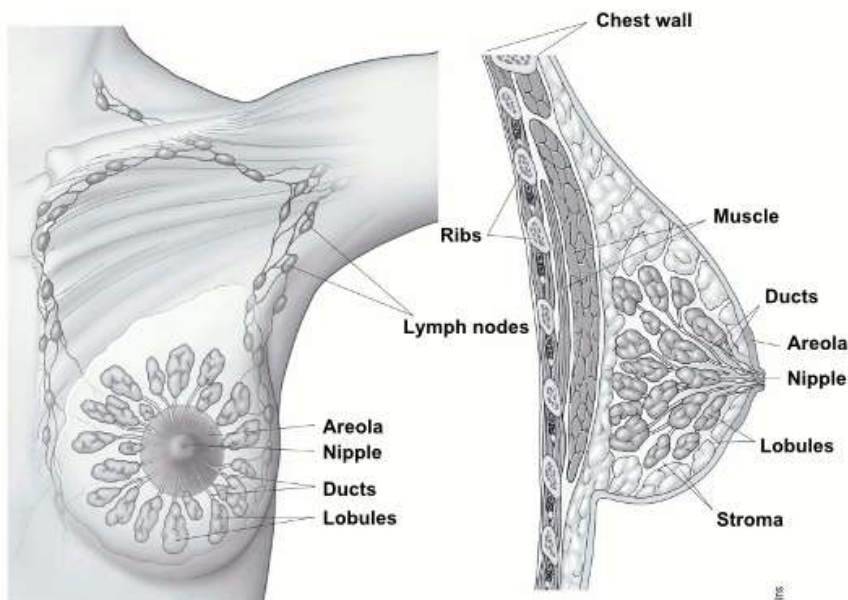
Figure 2.1 Structure of the breast
Source: ACS, 2014.

2.1.2 The Lymph (lymphatic) System of the Breast

The lymph system is important to understand because it is one way BCs can spread. This system has several parts.

Lymph nodes are small, bean-shaped collections of immune system cells (cells that are important in fighting infections) that are connected by lymphatic vessels. Lymphatic vessels are like small veins, except that they carry a clear fluid called *lymph* (instead of blood) away from the breast. Lymph contains tissue fluid and waste products, as well as immune system cells. Breast cancer cells can enter lymphatic vessels and begin to grow in lymph nodes. Most lymphatic vessels in the breast connect to lymph nodes under the arm (*axillary nodes*). Some lymphatic vessels connect to lymph nodes inside the chest (*internal mammary nodes*) and either above or below the collarbone (*supraclavicular or infraclavicular nodes*).

If BC cells reach the underarm lymph nodes and continue to grow, they cause the nodes to swell and when they have spread to lymph nodes, there is a higher chance that the cells could have also gotten into the bloodstream and spread (metastasized) to other sites in the body. The more lymph nodes with BC cells, the more likely it is that the cancer may be found in other organs as well. Because of this, finding cancer in one or more lymph nodes often affects the treatment plan. Still, not all women with cancer cells in their lymph nodes develop metastases, and some women can have no cancer cells in their lymph nodes and later develop metastases. (Breastcancer.Org, ACS, 2014).

2.1.3 Breast Cancer

Breast cancer is a malignant tumour that starts in the cells of the breast. A malignant tumour is a group of cancer cells that can grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body.

2.1.4 Types of Breast Growth

Benign Breast Growth: Most breast lumps are benign (not cancerous). Benign breast tumors are abnormal growths, but they are not cancerous and do not spread outside the breast to other organs. They are not life threatening. Still, some may need to be biopsied (sampled and viewed under a microscope) to prove they are not cancer. Most lumps turn out to be caused by fibrosis or

cysts, benign changes in the breast tissue that happen in many women at some time in their lives. (This is sometimes called *fibrocystic changes* and used to be called *fibrocystic disease*.) Fibrosis is the formation of scar-like (fibrous) tissue, and cysts are fluid-filled sacs. These conditions are most often diagnosed by a doctor based on symptoms, such as breast lumps, swelling, and tenderness or pain. These symptoms tend to be worse just before a woman's menstrual period is about to begin making breasts feel lumpy sometimes, a clear or slightly cloudy nipple discharge may be noticed. Some benign breast conditions are important because women with these conditions have a higher risk of developing BC. (Breastcancer.Org, ACS, 2014).

Malignant Breast Growth: BC is a malignant growth that starts in the cells of the breast. BC starts when the process that controls normal cell growth breakdown, enabling a single abnormal cell to multiply at a rapid rate (ACS, 2014). Every person has a cancer cells in the body. These cancer cells do not show up in the standard tests until they have multiplied to a few billion. When doctors tell cancer patients that there are no more cancer cells in their bodies after treatment, it means the tests are unable to detect the cancer cells because they have not reached the detectable size. Cancer cells occur between six to more than ten times in a person's life time (James, 2005).

2.1.5 Causes / Etiology of BC

The cause of BC is still unknown. However, some risk factors can determine a woman's chances of developing BC. Some women who have one or more risk factors never get BC while most women who do get BC do not have any risk factors (ACS, 2014).

2.1.6 BC Risk Factors

A risk factor is anything that affects your chance of getting a disease, such as cancer.

There are some risk factors that can not be changed such as a person's age or race. They are known as non-modifiable risk factors. Others are linked to the environment. Still, others are related to personal behaviours such as smoking, drinking and diet. They are known as modifiable risk factors (ACS, 2014).

Breast Cancer Non-modifiable risk factors

Being a female (Gender): Simply being a woman is the main risk factor for developing BC. Men can develop BC but the disease is about 100 times more common among women than in men. This is probably because men have less of the female hormones, oestrogen and progesterone which can promote BC growth (ACS, 2014).

Increasing age (Getting older): Several studies have reported that the risk of developing BC increases with age. About 1 out of 8 invasive BC are found among women younger than 45, while about 2 of 3 are found in older women (ACS, 2014).

History of BC (Genetics): About 5-10% of BC cases are thought to be hereditary, meaning that they result directly from gene defects called (mutation) inherited a parent. BC risk is higher among women whose close blood relatives have BC. Having one first degree relative (mother, sister or daughter) with BC approximately doubles a woman's risk. Having 2 first degree relatives increases her risk about 3-fold.   Also, women with history of BC in a father or brother also have increased risk of BC (ACS, 2014).

Abnormal genes in the body (BRCA 1, BRCA2 genes): The most common cause of hereditary BC 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. There is a high risk of developing BC in one's lifetime if a mutated copy is inherited. BC linked to these mutations occurs more often in younger women and more often affect both breasts than cancer not linked to these mutations. BC can also develop due to changes in other genes but cases are usually rare. Most 85% of women who get BC do not have a family history of BC (ACS, 2014).

Personal history of BC: A woman with cancer in one breast has a 3 to 4 fold increased chance of developing a new cancer in the other breast or in another part of the same breast. This is different from recurrence (return) of the first cancer (ACS, 2014).

Race and ethnicity: Overall, white women are slightly more likely to get BC than African-American women. African-American women, though, are more likely to die of BC. However, in women under 45 years of age, BC is more common in African women. Asian, Hispanic, and native-American women have a lower risk of developing and dying from BC (ACS, 2014).

Height: Taller than average women have a slightly higher likelihood of developing BC than shorter women. Experts are not sure why. Analysis of African breast cancer cases and controls studied in Ibadan showed an association with height (adjusted odds ratio 1.05, 95% confidence interval 1.01 to 1.08), a marker for nutrition in early life and with waist-hip ratio (adjusted odds ratio 2.67, 95% confidence interval 1.05 to 6.80) (ACS, 2014).

Dense breast tissue: Dense breast tissue means there is more gland tissue and less fatty tissue in a woman's breast. Women with denser breast tissue have a risk of BC that is 1.2 to 2 times that of women with average breast density of BC. Dense breast tissue can also make MAMO less accurate. A number of factors can affect breast density: age, pregnancy, genetics, certain medications, menopausal status, hormone therapy etc. (ACS, 2014).

Benign lumps/tumours: Women with certain benign lump or tumour in breast have an increased risk of BC. Some lumps conditions are more closely link to BC than others (ACS, 2014).

Lobular carcinoma in situ: In this condition, cells that look like cancer cells are in the milk-making glands (lobules), but do not grow through the wall of the lobules and cannot spread to other parts of the body. It is not a true cancer or pre-cancer, but having LCIS increases a woman's risk of getting cancer in either breast later (ACS, 2014).

Menstrual Periods: Women who have had more menstrual cycles because they started menstruating early before age 12 and on went through menopause later after age 55 have a slightly higher risk of BC. This may be due to a longer lifetime exposure to the hormones oestrogen and progesterone (ACS, 2014).

Previous chest exposure to radiation: women who have children or young adults had radiation therapy to the chest area have significantly increased risk of developing BC. The risk of developing BC from chest radiation is highest if the radiation was given during adolescence, when breasts were still developing. Also, undergoing X-rays and CT scans may raise a woman's risk of developing BC slightly (ACS, 2014).

Diethylstilbestrol exposure: Exposure to DES, a drug given to pregnant which lowers the chances of miscarriage slightly increased the risk of BC. Women whose mother took DES during pregnancy may also have a slightly higher risk of developing BC (ACS, 2014).

Some modifiable BC life-style related factors are;

Nulliparity/Late age at first pregnancy: Women who have not had children, or who had their first child after age 30, have a slightly higher risk of BC. Being pregnant more than once and at early age reduces BC risk. Having many pregnancies and becoming pregnant at young age reduce BC risk. Pregnancy reduces a woman's total number of lifetime menstrual cycles, which may be the reason for this effect. Still, the effect of pregnancy is different for different types of BC. For a certain BC type known as triple-negative, pregnancy seems to increase risk (ACS, 2014).

Birth control/Oral contraceptives: Women using OCPs have a slightly greater risk of BC than women who have never used them. Risk seems to go back to normal over time once the pills are stopped. Women who stopped using the pill more than ten years ago do not seem to have any increased risk. It's a good idea to talk to one's doctor about the risks and benefits of birth control pills (ACS, 2014).

Depot-medroxyprogesterone acetate (DMPA; Depo-Provera): Women using DMPA , an injectable form of progesterone given once in a month as birth control, have an increased risk of getting BC but risk lowers if the drug was used more than ten years back (ACS, 2014).

HRT (Hormone Replacement Therapy): HRT is a therapy used in relieving symptoms of menopause. It also helps to prevent osteoporosis. Women on HRT have an increased risk of developing BC. It may also increase the chances of dying from BC. Increase in risk can be seen with as little as two years. Combined hormone therapy also increases the likelihood that the cancer may be found at a more advanced stage. Risk from HTs appears to apply among current and recent users. Risk returns after within 5 years of stopping therapy (ACS, 2014).

Breastfeeding: Several studies have shown that breast feeding slightly lowers BC risk, especially if it lasts one and a half to two years. This could be because breast feeding lowers a woman's total number of menstrual periods as well as pregnancy. Breast feeding conferred

nearly a 60% lower risk of pre-menopausal BC on women who had a family history of the disease. In countries such as US, where breastfeeding for this long is uncommon, it has become a difficult area of study (ACS, 2014).

Alcohol consumption: The use of alcohol is clearly linked to an increased risk of developing BC. The risk increases with the amount of alcohol consumed. Even as little as one drink a day can increase risk. Compared with non-drinkers, women who consume 1 alcoholic drink a day have a very small increase in risk. Those who have 2-5 drinks daily have about one and a half times the risk of women who don't drink alcohol. Excessive alcohol consumption is also known to increase the risk of developing several other types of cancer (ACS, 2014).

Cigarette/Tobacco smoking: For a long time, studies found no link between BC and smoking. Recent studies have however found that long-term heavy smoking is linked to a higher risk of BC. Some studies have found that the risk is highest in certain groups, such as women who started smoking when they were young. An active focus is whether second hand smoking increases the risk of BC as both mainstream and second hand smoking contains chemical that in high concentrations, cause BC in rodents. Chemical in tobacco smoke reach breast tissue and are found in breast milk. A report from the California Environmental Protection Agency in 2005 concluded that evidence about second hand smoke and BC is consistent with a casual association in younger, mainly pre-menopausal women. This possible link to BC in any case is more reason to avoid second hand smoke (ACS, 2014).

Overweight/Obese: Being overweight or obese increase BC risk. Being overweight especially after menopause can increase chance of getting BC by raising oestrogen levels in the body. Also, women who are overweight tend to have higher blood insulin levels. Higher insulin levels have also been linked to some cancers, including BC (ACS, 2014). However, connection between BC risk and weight is complex. For example, the risk appears to be increased for women who gained weight as an adult but may not be increased among those who have been overweight since childhood. Also, excess fat in the waist area may affect risk more than the same amount of fat in the hips and thighs. It is believed by researchers that fat cells in various parts of the body have subtle differences that may explain this (ACS, 2014).

Physical activity: Evidence is growing that physical activity in the form of exercise reduces BC risk. The main question is how much of exercise is needed. In one study from Women's Health Initiative, as little as 1.25 to 2.5 hours per week of brisk walking reduced a woman's by 18%. Walking 10 hours a week reduced the risk a little more (ACS, 2014).

Dietary intake: Studies associating BC risk and what women eat has been so far conflicting, while some indicated that diet may play a role, others found no evidence that diet influences BC risk. Studies have also looked at vitamin levels with some inconsistent result. Most studies have found that BC is less common in countries where the typical diet is low in total fat, low in polyunsaturated fat, and low in saturated fat. But many studies in US have not linked BC risk to dietary fat intake.

Also, studies comparing diet and BC risk in different countries are complicated by other differences like; activity level, intake of other nutrients, genetic factors that may also affect BC risk (ACS, 2014). More research is needed to understand the effects of the types of fat eaten on BC risk. But it is clear that calories do count, and fat is a major source of calories. High fat diet has also been shown to influence the risk of several other types of cancer, and intake of certain types of fat is clearly related to heart disease risk (ACS, 2014).

2.1.7 Signs and Symptoms of BC

Early stages of BC commonly do not produce symptoms and is usually painless, it is therefore important to have monthly BSE, mammograms and CBE according to schedule because the earlier BC is found, the better the chances for successful treatment and then survival (ACS, 2013).

A sign is something the patient and others can detect. Different people have different warning signs for BC. Some people do not have any signs or symptoms at all. A person may find out they have BC after a routine mammogram but generally, the classic symptom for BC is a lump found in the breast or armpit (Eittah et al, 2014). According to the National Health Service, UK, 2014, some warning signs and symptoms of BC are:

- A lump in a breast

- A pain in the armpits or breast that does not seem to be related to the woman's menstrual period

- Pitting or redness of the skin of the breast

- A rash around or on one of the nipples

- A swelling (lump) in one of the armpits

- Thickening or swelling of part of the breast

- Irritation or dimpling of breast skin

- Redness or flaky skin in the nipple area or the breast

- Pulling in of the nipple or pain in the nipple area

- Nipple discharge other than breast milk that occurs without squeezing

- Any change in the size or the shape of the breast

It is to be noted that some of the signs and symptoms can happen with other conditions that are not cancer and women who detect any should inform their doctor.

2.1.8 Stages of BC

Staging of BC is the process of testing to find out if cancer cells have spread within the breast or to other parts of the body when diagnosed.

Cancer stage is based on four characteristics:

- the size of the cancer

- whether the cancer is invasive or non-invasive

- whether cancer is in the lymph nodes

- whether the cancer has spread to other parts of the body beyond the breast

Certain words are used to describe the stage of the breast cancer:

- **Local:** The cancer is confined within the breast

- **Regional:** The lymph nodes, primarily those in the armpit, are involved

- **Distant:** The cancer is found in other parts of the body as well (ACS, 2014).

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There are four major stages of BC (ACS, 2014), and are discussed below:

Stage 0: This is used to describe non-invasive breast cancers, such as DCIS (ductal carcinoma in situ). In stage 0, there is no evidence of cancer cells or non-cancerous abnormal cells breaking out of the part of the breast, in which they started, or getting through to or invading neighbouring normal tissue.

Stage I: This describes invasive BC (cancer cells are breaking through to or invading normal surrounding breast tissue) Stage I is divided into subcategories known as IA and IB.

Stage IA describes invasive breast cancer in which:

- the tumor measures up to 2 centimeters AND

- the cancer has not spread outside the breast; no lymph nodes are involved

Stage IB describes invasive breast cancer in which:

- there is no tumor in the breast; instead, small groups of cancer cells – larger than 0.2 millimeter but not larger than 2 millimeters – are found in the lymph nodes OR

- there is a tumor in the breast that is no larger than 2 centimeters, and there are small groups of cancer cells – larger than 0.2 millimeter but not larger than 2 millimeters – in the lymph nodes

Microscopic invasion is possible in stage I BC. In microscopic invasion, the cancer cells have just started to invade the tissue outside the lining of the duct or lobule, but the invading cancer cells can't measure more than 1 millimeter**.**

Stage II: This stage is divided into subcategories known as IIA and IIB.

Stage IIA describes invasive breast cancer in which:

- no tumor can be found in the breast, but cancer (larger than 2 millimeters) is found in 1 to 3 axillary lymph nodes (the lymph nodes under the arm) or in the lymph nodes near the breast bone (found during a sentinel node biopsy) OR

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- the tumor measures 2 centimeters or smaller and has spread to the axillary lymph nodes OR

- the tumor is larger than 2 centimeters but not larger than 5 centimeters and has not spread to the axillary lymph nodes

Stage IIB describes invasive breast cancer in which:

- the tumor is larger than 2 centimeters but no larger than 5 centimeters; small groups of breast cancer cells -- larger than 0.2 millimeter but not larger than 2 millimeters -- are found in the lymph nodes OR

- the tumor is larger than 2 centimeters but no larger than 5 centimeters; cancer has spread to 1 to 3 axillary lymph nodes or to lymph nodes near the breastbone (found during a sentinel node biopsy) OR

- the tumor is larger than 5 centimeters but has not spread to the axillary lymph nodes

Stage III: This is divided into subcategories known as IIIA, IIIB, and IIIC.

Stage IIIA describes invasive breast cancer in which either:

- no tumor is found in the breast or the tumor may be any size; cancer is found in 4 to 9 axillary lymph nodes or in the lymph nodes near the breastbone (found during imaging tests or a physical exam) OR

- the tumor is larger than 5 centimeters; small groups of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes OR

- the tumor is larger than 5 centimeters; cancer has spread to 1 to 3 axillary lymph nodes or to the lymph nodes near the breastbone (found during a sentinel lymph node biopsy)

Stage IIIB describes invasive breast cancer in which:

- the tumor may be any size and has spread to the chest wall and/or skin of the breast and caused swelling or an ulcer AND

- may have spread to up to 9 axillary lymph nodes OR

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- may have spread to lymph nodes near the breastbone

Inflammatory breast cancer is considered at least stage IIIB. Typical features of inflammatory breast cancer include:

- reddening of a large portion of the breast skin

- the breast feels warm and may be swollen

- cancer cells have spread to the lymph nodes and may be found in the skin

Stage IIIC describes invasive breast cancer in which:

- there may be no sign of cancer in the breast or, if there is a tumor, it may be any size and may have spread to the chest wall and/or the skin of the breast AND

- the cancer has spread to 10 or more axillary lymph nodes OR

- the cancer has spread to lymph nodes above or below the collarbone OR

- the cancer has spread to axillary lymph nodes or to lymph nodes near the breastbone

Stage IV: This stage describes invasive breast cancer that has spread beyond the breast and nearby lymph nodes to other organs of the body, such as the lungs, distant lymph nodes, skin, bones, liver, or brain. Words such as "advanced" and "metastatic" are used to describe stage IV breast cancer. Cancer may be stage IV at first diagnosis or it can be a recurrence of a previous breast cancer that has spread to other parts of the body (ACS, 2014). African women are reported to present their BC at stage III and IV when medical intervention is of no use.

2.2 Incidence and Prevalence of BC

Worldwide, as well as in Nigeria, BC is the leading cancer death among women. BC is the second leading cause of cancer globally when both sexes are considered after lung cancer Breast cancer is the most commonly diagnosed cancer and worldwide it is considered the leading cause of cancer death in females, accounting for 23% (1.38 million) of the total new cancer cases and 14% (458,400) of the total cancer deaths in 2008. Approximately half of the BC cases and 60% of the deaths are estimated to take place in developing countries (Boulos Ghali, 2014). BC is the

most common cancer in women both in the developed and less developed world. It is estimated that worldwide over 508, 000 women died in 2011 due to breast cancer. In 2013, it is estimated that over 230,000 women will be diagnosed with BC. While the incidence rate for invasive BC has increased slightly from 2005 to 2009, the death rate continues to steadily decline. BC is the most curable when detected at its earlier stages. More than 220,000 women will receive a diagnosis of BC in 2013 in the United States (Eittah, Awed, Bukhary, 2014).

In 2011, about 2140 cases of BC are expected to occur among men, accounting for about 1% of all breast cancers. In addition, approximately 450 men will die from breast cancer (American Cancer Society, 2011). It has been reported that each year over 1.5 million women worldwide are diagnosed with BC and 502,000 die from the disease. The incidence could go up by 50% i.e. 1.5 million by 2020 according to world cancer report 2008 (Iheanacho, 2013). The incidence of BC starts to increase at about the age of 20 years and rises rapidly to about the age of 50 years, when the rate of increase reduces somewhat, and by 75 years of age the incidence starts to decline (Akarolo- Anthony et al, 2010).

The incidence of BC varies between countries; the highest rates occur in the United States and Canada, while the lowest rate is found in Asia. The Nordic countries have recently reported a steady increase in the incidence of BC. A high prevalence rate of BC is noted among women living in Denmark, Finland and Sweden. The incidence rate of BC among Asian women has also increased in recent years and is likely related to life style change. In Egypt, BC is the most frequently diagnosed cancer among women, and it comprises 25.5% of all cancers in that country (Gebrehiwot, 2014).

BC accounts for 45% of all cancer in females aged 25–49 years and 34% of all cancer in the 50–74 year age group in the United Kingdom. The incidence in the age group between15–24 is 3.1 per million of population in the UK. In the United States, the probability of developing BC remains at 0.5% for women aged less than 39 years and 3.8% for women aged 40–59 years. The incidence of BC in Sri Lanka is 7.7 per 100,000. Approximately 1500 cases of BC are diagnosed annually, and many are diagnosed at late stages, due to lack of awareness and the lack of a formal screening program (Ranasinghe, 2013).

BC is the second most often occurring cancer next to cervical cancer among women in Ethiopia. It is estimated that around 10,000 Ethiopian women and men have breast cancer with thousands of more cases unreported as women living in rural areas often seek treatment from traditional healers before seeking help from the government health system (Gebrehiwot, 2014). BC is considered the most common implacable malignancy and metastases in the Kingdom of Saudi Arabia (KSA) and rate of represents the second leading cause of cancer deaths after lung cancer BC incidence in KSA was 19.8% of all the female cancers.

An earlier report according to Saudi National Cancer Registry reported an increasing proportion of BC among women of different ages. It is estimated that the prevalence of BC in women aged 15 and over in Sub-Saharan Africa was 23.5 per 100,000 women in 2008. The actual burden of BC in Nigeria is unknown due to lack of adequate cancer statistics (Makanjuola et al, 2013.) However, the prevalence rate of breast cancer in study in Nigeria was 116 per 100,000 and 27,840 cases were expected to occur in 1999.

In recent Ekiti State cancer review, 85.3% of patients seen were symptomatic with higher percentage of cases being BC. Late presentation generally characterizes cancer diagnosis among Nigerian and other African women African women thereby diminishing chances of survival and more complicated by exorbitant cost of treatment, increasing mortality (Azubike and Okwuokei, 2013). According to BRECAN Nigeria, (2008), BC is getting more common among Nigerian women especially amid the younger people and it carries a grave social and economical consequences.

Fig 2.2: Distribution of cancers among female in Nigeria (LUTH, 2007)
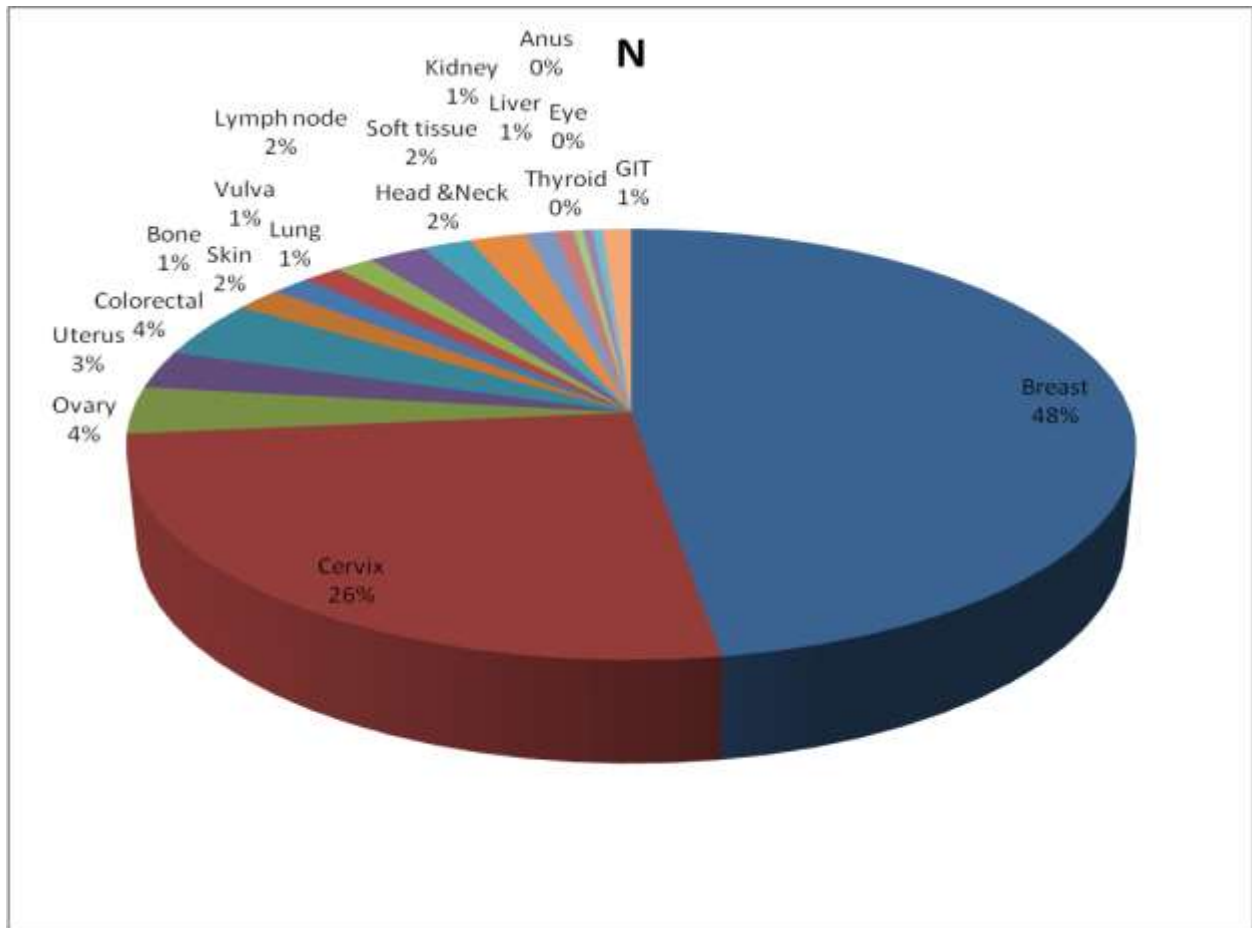
Source: Epidemiology and incidence of common cancers in Nigeria (Fatimah Abdulkareem, 2009).

Fig 2.3: Distribution of cancers generally in Nigeria (LUTH, 2007)
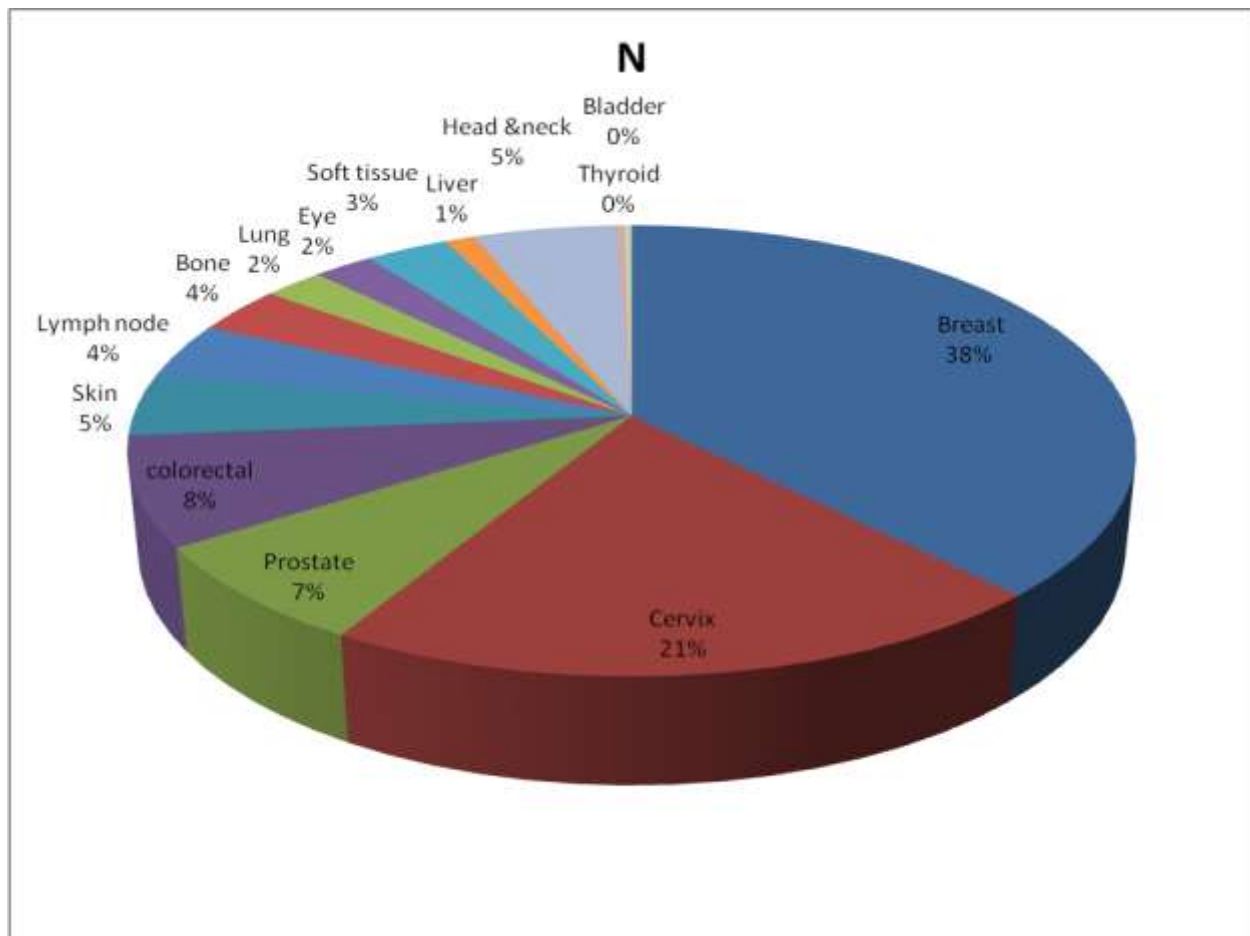
Source: Epidemiology and incidence of common cancers in Nigeria (Fatimah Abdulkareem, 2009)

BC in African women and Problem of Late Presentation

A study by Polite and Olopade, (2005) revealed BC in African women:

1. BC in African women develops more likely from basal like cells, rather than the inner milk secreting luminal cells which are the most common sources of BCs for US and European women. Tumors that arise from basal cells have a worse prognosis regard less of race.

2. BC in African women often lack estrogen receptors. These tumours do not depend on estrogen and thus will not respond to drugs like Taximofen, which are known to prevent estrogen from reaching the cancer cells.

3. BC in African women were slightly less likely to respond to the drug Herceptin (a monoclonal antibody which kill cells to produce a protein substance that enhances the effectiveness of chemotherapy), which was recently approved for metastatic

In Nigeria, late presentation of BC cases has been consistent for more than three decades because there is no established national screening program for BC in the country. Therefore, the tendency of Nigerian women to be screened for early identification and access prompt treatment of BC is very low, (Oluwatosin and Oladepo, 2006).

Despite reported increased awareness of BC in Nigeria, the incidence, morbidity and mortality due to the disease, continue to rise. According to Prof Millicent Obajimi, a consultant radiologist in the University College Hospital, Ibadan,

"Breast cancer incidence is increasing and not much is being done to match that increase. Breast cancer in the African woman is different from the breast cancer in the white woman, and the whites have been doing a lot of work, research and a lot of programs to combat it. But we are depending on their outcome of research, their own drug, which may not be totally agreeable to the black woman. Because the tendency now all over the world is personalized medicine-looking at the biology and trying to develop a particular drug in respect of that biology to help in care. And this is usually more effective than just giving a drug across board for everybody known to have breast cancer, which no longer works all over the world"

(Punch, Nigeria, Oct, 2014).

Fig 2.4: Picture of a Nigerian woman with breast cancer

Source: Epidemiology, clinical presentation and management of advanced cancer in Nigeria (Ogundiran and Ezeome, 2009).

"Late presentation of breast cancer at the advanced stage, when little or nothing can be achieved from all form of therapy is the hallmark of BC among Nigeria women" Okobia et al, 2006.

(A scenario of a breast cancer female patient and a doctor at the UCH, Ibadan, Nigeria August, 2014)

'THIS FINITE LIFE & THE PARABLE OF CANCER'

She held my hand tight, appreciative yet anxious…. She has had a chest tube inserted for malignant pleural effusion. Meaning: drainage of a large fluid collection in the right side of the chest arising from a spreading cancer. Few months ago she had hopes and dreams. An astute and hard-working banker, who despite journeys, in and out of the country to conquer an incurable growth, the disease remain ravaging, un-abating, That grip, the grip that jerks me up to reality of a finite life and my limited ability to help when patients need my help for advanced cancer. I've had loads of them – young and old, light-skinned or dark, rich or hard of means; vivacious with energy yesterday but emaciated and sapped at those moments. I asked myself why the mad rush for wealth or the arrogance in many human beings. Here I am despite 22 years of medical education and practice with exposures to training across four continents, yet powerless… That indeed is the dilemma that faces medical practitioners like me or our other colleagues in oncology – how do you reconcile yourself with the fact that you've got to say this to many patients: 'I cannot help further yet you need help'? Better left unsaid? Sure we can offer supportive or palliative care. We can relieve distress and pain. But to cure or to permanently remove pain gradually goes beyond our reach as the growth grows…. The sermon is crystal clear, the lessons remain poignant that - this life is finite, our knowledge and ability are limited – that is the parable of advanced cancer. We remain humble.

- *Dr. Mudasiru Salami.*

2.1.9 Screening and Diagnostic Methods for Detecting BC

Breast cancer screening means checking a woman's breasts for cancer before there are signs or symptoms of the disease. Screening is the process of looking for early signs of a disease in a healthy population. Three main tests are used to screen the breasts for cancer; CBE, BSE, MAMO. It is advisable to know the right test for one's age and when one should have them (CDC, 2014).

Screening tests: These are done or given routinely to people who appear to be healthy and not suspected of having BC. The purpose is to find BC early, before symptoms can develop and the cancer usually is easier to treat.

Diagnostic test: This is given to people who are suspected of having BC, either because of symptoms they may be experiencing or a screening test result. This test is used to determine whether BC is present and, if so, whether or not it has travelled outside the breast. Diagnostic test is also used to gather information about cancer to guide decisions about treatment. Mammography is a diagnostic test and not a screening test. It is the only diagnostic test for BC till date. The screening methods for BC are BSE, CBE and BUS, while MAMO is the only diagnostic test.

Expert Quote

"A screening test tries to find a disease before there are any symptoms. With breast cancer, there's a misconception that if you feel fine, don't have lump, and have no family history of breast cancer, you are okay. The truth is that three-quarters of women in whom we find breast cancer have no risk factors. So screening is important for everyone" …. Susan Greenstein Orel, M.D. (breastcancer.org 2014).

Breast Self-Examination

A breast self-exam is when you check your own breasts for lumps, changes in size or shape of the breast, or any other changes in the breasts or underarm (armpit) (CDC, 2014). BSE has been defined as preventive health behaviour, "an activity undertaken by a person who believes she is to be healthy, for the purpose of preventing disease or detecting disease in an asymptomatic state" (Ertem and Korcer, 2009). BSE involves examining one's own breast using a specific

palpation to detect any lump in the breast tissue. It involves a careful step by step approach to looking at and feeling one's breast. It is a tool that may help to learn that which is normal within the breast, it includes looking and feeling over the entire breast and chest area and as a general rule should be performed once in a month. The best time to conduct a BSE is about few days or a week after the beginning of the menstrual period, when the breast are lumpy and at their least tender state (ACS, 2014).

There are several studies emphasizing the advantages and positive effect of BSE as BC early detection screening method. ACS, (2008), recommended BSE for early detection of BC. Benefits attached to it are that; women become familiar with both the appearance and the feel of their breasts and detect any change in their breast as early as possible; makes women more "breast aware" which in turn may lead to an earlier diagnosis of BC (Iheanacho, 2013). A study by Boulos and Ghali, (2014) emphasized the practice of BSE among young women despite reported importance of BSE as controversial and effectiveness of it, not yet adequately quantified.

Doing monthly breast self-exam (BSE) is a great way to be familiar with the breasts' texture, cyclical changes, size, and skin condition. Breast self-examination (BSE) is a simple, quick, inexpensive, non-invasive and non-hazardous practice which enables a woman get acquainted with the topography of her breast and allows her notice changes to detect breast masses or lumps (Eittah, Awed, Bukhary, 2014). BSE is inexpensive and is carried out by women themselves. Iheanacho et al, (2013), reported that among young women, BSE education and adherence are health promotion behaviours which set the stage for adherence to clinical breast examination and mammography screening later in life for young women.

Several studies, based on breast cancer patient's retrospective self-report on their practices of the examination, have established that a positive association exists between performance of the exam and early detection of breast cancer. There is also evidence that most of the early breast tumors are self-discovered and that the majority of early self-discoveries are by BSE performers (Okobia, 2006). A study by Gwarzo et al, (2008), reported that BSE performers reported their symptoms to health personnel than other subjects. Sambanje and Mafuvadze, (2012), reported that most university students are at a stage where it is critical they at least perform BSE regularly and potentially detect any changes early.

The recommendations by the American College of Obstetricians and Gynaecologist (ACOG) and the American Cancer Society are for BSE to be performed monthly beginning at the age of 20 years and CBE annually beginning at the age of 18 years. Although the role of regular BSE has been debated, recent studies have suggested that BSE is a reliable screening tool when used as an adjunct to CBE and imaging study. Again, it can nevertheless be utilised in enhancing BC awareness among women. In fact, regular BSE has been suggested as part of an overall health promotion concept. It is important therefore to adequately motivate women to regularly carry out BSE so as to curtail the increasing mortality rate from BC (Obaji et al, 2013). Adesunkanmi et al, 2006, reported that most BC tumours were self-detected.

However, (Komen, 2014), of the National Cancer Institute, stated that BSE seemed although promising when first introduced, recent studies have however shown that it does not offer the early detection and survival benefits of other screening tests. A recent meta-analysis combined the results of the two largest randomized trials on BSE and it found no difference in women who did routine BSE and those who did not and there are more false positive results leading to nearly as many biopsies with benign lump as women who did not do (Kosters and Gotzsche, 2008).

BSE is associated with some limitations (Thomas et al, 2002), which include the following; Increased number of biopsies for benign breast lumps; Increased anxiety and physician visit with consequent access of scarce health resources, in addition to pain, scarring and disfiguring that may be associated with breast biopsies; Many false positive results; Worry about finding lump that may or may not be cancer; Guilt about not doing it at all; Guilt about not doing it right; Reward for excellent BSE is a disease, which is also perceived as a negative outcome.

Some women do not perform BSE because of the perception of complicated technique. Others see BSE as looking for non-existing problems. Others find BSE embarrassing while others have little confidence in performing it correctly. Eittah, Awed and Bukhary, (2014), reported that women in developing countries do not perform BSE for various reasons. Studies among Russian immigrant women, women in Israel and the United Arab Emirates indicate religion, culture, husband's attitude and fear as some of the barriers to performance of BSE.

According to Boulos and Ghali, (2014), studies revealed the low prevalence of youth monthly performing BSE all over the world. Studies among Russian immigrant young women, women in

Israel and the United Arab Emirates indicate religion, culture, husband's attitude and fear as some of the barriers to performance of BSE. Studies in Africa also revealed that knowledge and awareness of BSE was higher in women with tertiary education but practice was among older women. There is an indication that young women do not practice BSE even though they were aware. Reason identified was the perception that BC is a disease of the aged.

Clinical Breast Examination

A clinical breast examination (CBE) is another method of breast examination that is carried out by a health worker on a woman within the health care facility. It is done in a way to show respect for the privacy and comfort of the patient. It involves a systematic approach which starts with the patient in an upright position with careful inspection of masses, skin, nipple changes and asymmetries. Palpation includes checking all the breast quadrants, the nipple areola complex, the auxiliary tail and the axilla. Simple manoeuvres like stretching the arm high above the head, tensing the chest muscles may by the health professional may help accentuate asymmetries and dimpling. CBE is an examination by a doctor or nurse, who uses his or her hands to feel for lumps or other changes (CDC, 2014).

CBE is a physical examination done by a health care provider as part of a woman's regular medical check-up. It involves provider carefully feeling breasts and underarm for any changes or abnormalities such as lumps. It involves visually checking of breast while sitting up and physically examine breasts while lying down. It is important to ask for a CBE, if one is not offered during medical check-up. CBE should be performed by a healthcare provider well trained at the technique such as doctor/physician, nurse and other medical staff. CBE is a part of routine BC screening for women and should be complemented with other screenings. CBE should begin at age 20. In women younger than 40 who mammography is not recommended, CBE can be helpful in finding BC. In women ages 40 and older, CBE combined with MAMO may find more BCs than MAMO alone (ACS, 2014).

There is evidence suggesting that CBE detects most BCs found by MAMO particularly in young women. Only very few studies has been done on CBE. CBE can help women learn and update their knowledge of BSE performance. Despite CBE's benefits and recommendation for BC early detection screening, it remains an under researched area for an unknown reason.

Mammography

While BSE, CBE are screening methods of BC, mammography (MAMO) is the only diagnostic, most effective tool for detecting BC in its earliest stage. It is a special X- ray technique that is used to visualise soft tissues of the breast as a means for screening women for BC. Mammograms are the best method to detect breast cancer early when it is easier to treat and before it is big enough to feel or cause symptoms. Having regular mammograms can lower the risk of dying from breast cancer (CDC, 2014). The mammogram shows calcification (white dense fleck) in a cancerous tumour. The majority of BCs originate in the duct of the mammary or milk secreting gland. They can be used to find out more about breast lumps (mass), nipple discharge, or an area found on a screening mammogram that doesn't look normal. In some cases, special images known as cone views with magnification such as Imaging mammography, Dittography or Ultrasonography and MRI (Magnetic Resonance Imaging) are used to zoom in on a small area of already altered breast.

MAMO and CBE facilitate early detection and treatment of BC which is responsible for lower mortality rates for women in the developed worlds (Howell, 2010). MAMO and CBE are not part of routine medical check in Nigeria. It is used for patients at high risk (Oladepo and Oluwatosin, 2006). Women who practised BSE are advised to include CBE and MAMO at the appropriate age. MAMO screening is not the best in Nigeria for early detection in African women who get the disease and die of it in their 40s. For women of 50years and above, MAMO should be done annually. MAMO is recommended at the age of 40 with advice from a medical doctor. Studies have shown poor level of awareness and knowledge of MAMO in Nigeria especially among those with low education (Obajimi et al, 2013). A study by Domennigetti et al, (2003), on expected benefits of MAMO among selected developed countries, reported that a high proportion of women overestimated the benefits that can be expected from mammography screening. The findings raise doubts on informed consent procedures within BC screening programmes. There should be proper and adequate information on the benefits and side effects of a screening program especially MAMO. A meta-analysis study also showed an increase in mastectomies in MAMO screened women, and no reduction in all-cause mortality. Also, some women are reported to develop BC despite MAMO routine screenings. The promotion of population-based MAMO screening may result in unrealistic expectations, and truly informed

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consent may therefore be difficult to achieve. For example, women may erroneously believe that screening prevents breast cancer rather than detecting cancer at an earlier stage. According to the study, only few women accessed screening efficacy realistically (Domennigetti et al, 2003).

Ultrasonography

Ultrasound also known as sonography is an imaging method that uses high frequency sound waves to look into the parts of body. A handheld instrument placed on a skin transmits the sound wave through the breast. Echoes from the sound waves are translated by a computer into a picture that is displayed on the computer screen. The test is painless and does not expose to radiation. Breast ultrasound is used to evaluate breast problems that are found during a screening or diagnostic mammogram or on physical examination. Ultrasound is not routinely used for BC screening. BUS has become a valuable tool to use along MAMO, it is widely available, non-invasive and less expensive than other options such as breast biopsy, fine needle aspiration, Needle biopsy, surgical biopsy, lymph node test, etc. (ACS, 2010). Biopsy is a test that removes tissue or fluid from the breast to be looked at under a microscope for further testing. There is little or none studies on BUS as an early detection methods of BC.

2.3 Female undergraduate students' knowledge, perception of BC and practice of early detection screening methods from previous studies

Knowledge regarding BC and early detection screening methods has been shown to be better among the more educated, and is generally satisfactory in developed countries. Awareness and health seeking practices have been shown to be poor in many developing countries, necessitating the need for proper awareness programs. A study among adolescents in Sri-lanka confirmed poor knowledge of BC and early detection screening methods among adolescents (Ranasinghe, 2013). A study by Suleiman, (2014), among Jordan University students shows good awareness of BC but poor utilization of BSE. A study in Saudi Arabia by Latif, (2014), reported that female university students have mild knowledge of BC symptoms and management. They are also not clear about etiology and risk factors associated with BC. Practice of early detection screening methods was also reported to be rare. The study also stated the need to enhance their knowledge regarding BC and emphasize the need of BC early detection screening programs. Yip CH et al, (2011), reported that early detection programs are often hampered by logistical and financial

problems, as well as socio-cultural barriers, despite improved public educational efforts. Eittah, Awed and Bukhary, (2014), reported low practice of BSE among female in Saudi students which was improved after educational intervention. A study in Egypt by Boulos and Ghali, (2014), showed that there is low level of knowledge on BC risk factors, early warning signs and BSE among female university students and that only few students practice BSE monthly. Gebrehiwot et al, (2014),'s study of Mekelle University female undergraduate students in Ethiopia, reported limited knowledge of risk factors, signs and symptoms and means of diagnosis of BC; poor attitude about its curability and poor risk perception about the disease. A study by Sambanje and Mafuvadze (2012), among university students in Angola reported a very poor BC knowledge and awareness, and a significant association of BC awareness and knowledge of someone with BC. In Sudan, Idris et al, (2013),'s study among female medical students reported that the final year medical students have a non-satisfactory knowledge regarding BSE. The findings showed that the knowledge and practice of BSE is inadequate among young female medical students. The study emphasized the need of BSE inclusion in the curricula of both undergraduate and postgraduate medical schools. This is in contrast with a study by Akpor et al, (2009), among medical students in South-South Nigeria where knowledge and practice of BSE was good.

In South East Nigeria, Iheanacho et al, (2013),'s study showed that most students have little knowledge of BC risk factors and majority of female students do not practice BSE monthly. In South West Nigeria, a study by Olugbenga Bello et al, (2014), among female students in tertiary institutions shows good awareness of BC in conflict with the case in Angola's study by Sambanje and Mafuvadze, (2012), but poor practice of BC screenings especially CBE and even worse with screening with mammography. A study by Suleiman et al, 2012, in University of Ilorin, North Central Nigeria also confirmed good awareness of BC among female undergraduate students. A study by Gwarzo et al, (2008), in Ahmadu Bello University, Zaria, North West Nigeria, also reported good awareness and knowledge of BC and early detection screening methods but poor practice. This agrees with the study of Olugbenga et al, (2014), in South West Nigeria, among female students in tertiary institutions. A study among female undergraduate students of University of Ibadan, Nigeria by Adejumo and Oluwatosin, (2008), on awareness of BC screening, reported high level of awareness, poor knowledge of BSE, a very low utilisation of CBE and significant association between knowledge of MAMO and mother's occupation. This agrees with study of Gwarzo et al, (2008), in the North. In South-South Nigeria, Akpor,

(2009)'s study among Nigerian medical students, on BC knowledge and screening practice reported overall good knowledge of BC risk factors and performance of BSE but a very poor overall CBE utilisation. It also reported that an important barrier to participating in BC early detection screening as unwillingness of clinicians to perform CBE. The study disagrees with what is obtained in the United States, where 92% of the women participating in a similar study reported having a CBE performed by their physicians. In the United States, CBE is routinely included as part of a regular medical and health examination. CBE provides the opportunity for a woman and her healthcare provider to discuss changes in her breast tissue and also for a woman to update her knowledge of BSE. In Nigeria however, breast examination is not routinely done by physicians. O'Malley et al, (2001), has reported that physician endorsement of screening practices especially CBE, is more likely to encourage and promote BSE in women and women who received a CBE by their healthcare provider were more likely to remember to perform BSE. Several studies confirmed that awareness of BSE is more than CBE and general poor utilization of CBE. According to Akpor et al, (2009), further studies on a wider scale in Nigeria are needed to elucidate reasons why the young and elite women do not present themselves for CBE and why the physicians do not practice routine CBE as part of medical checks. Studies assessing perception of female perception of BC is very scarce. Akpor et al, (2009) study's reported that female undergraduate student's general knowledge of BC and its aetiology was fair, but the majority (55.6%) still thought that BC is caused by putting money between the breast and the brassiere.

2.4 Conceptual Framework

The conceptual framework for this research is based on the Health Belief Model (HBM).

2.4.1 Health Belief Model

The model was propounded by Kurt Lewin and further developed by Rosen stock in the 1950s. It attempts to explain preventive health behaviour, particularly the relationship of health behaviour to utilization of health services (Ross and Mica, 1980). It addresses an individual perception of the threat posed by a health problem (susceptibility, severity), the benefits of avoiding the threat and factors influencing the decision to acts barriers, cues to actions and self-efficacy. Simply put

the authors adduced that people's belief about whether or not they are susceptible to disease and their perception of the benefits of trying to avoid its influences and their readiness to act.

Six main constructs influence people decisions about whether to take action to prevent, screen for and control illness. In other words, people are ready to act if they

- Believe they are susceptible to the condition perceived susceptibility or vulnerability

- Believe the condition has serious consequences perceived severity

- Believe taking action would reduce their susceptibility/ vulnerability to the condition or its severity perceived benefits

- Believe cost of taking action perceived barriers far outweighed by the benefits

- Are exposed to factors that are prompt to action e. g health education cue to action

- Are confident in their ability to successfully perform an action self-efficacy

It is important to note that personal susceptibility to a disease condition varies from person to person, as well as perceived seriousness of the disease varies from person to person. The perception is also dependent on the level of knowledge about the health problem the modifying factors includes the demographic, socio psychological and structural variables. These modifying factors impinge on the level of knowledge and also awaken or subdue to take recommended action. Modifying factors enable the individual to evaluate the outcome expected in relation to the constraints. The individual is motivated to take recommended action. Individuals must be able to recognise certain important cues that prompt her to take necessary action. The health belief model was one of the first models to adapt theories from the behavioural sciences in order to examine health related problems. It is still one of the most widely recognized and used models in health behaviour applications. This model was originally introduced by a group of psychologists in the 1950s to help explain why people would or would not use available preventive services such as chest x-rays for tuberculosis screening and immunization for influenza.

According to HBM, a woman who perceives that she is susceptible to breast cancer and that breast cancer is a serious disease would be more likely to utilize breast cancer screening services. Similarly a woman who perceives more benefits from and fewer barriers to breast cancer screening services would be more likely to utilise breast cancer screening services. A woman

who has an internal cue e.g. the positive influence of a health care provider or the media would also be more readily to adopt BC screening services as would a woman who wants to improve her health, stay healthy and confident of positive results.

Female undergraduate university students with right knowledge and perception towards BC can persuade and positively influence other young ladies and women to practice and utilize BC early detection screenings and services.

Source: Rosenstock et al, (1988) Modified in relation with the research work.

Modifying factors

- Educational attainment
- Knowledge about BC and early detection screening methods
- Gender (common with females)
- Attitude – level of interest
- Strong family history
- Religious beliefs/lifestyles
- Age

Perceived threat
High for BC and consequently death

Benefits

- Early detection often results in good prognosis
- Early detection reduces cost of care
- Status of being Breast aware
- Prevention from worse outcomes
- Rest of mind
- Affordable cost of screening

Constraints

- Costs of screening
- Efficacy for BSE
- Fear of unknown
- Attitude of health workers
- Time constraint
- Faith healing or cheap alternative care

Perceived susceptibility

- Low – It is perceived to be the disease of the old and adult women
- perceived only to be a genetic or inherited disease
- demonic in nature, fate

Perceived seriousness
BC has no cure
BC is a death sentence
Increase mortality rate

Cues to action

- Experiences of victims of BC
- Lump in breast
- Increase death rate
- Advice from health workers, friends and significant others
- Preventive health education

Likelihood for taking action for early and consistent screening is moderately high

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CHAPTER THREE

METHODOLOGY

This chapter presents the design, scope of study, description of the study area and site, study population and study variables. It also describes the sample size and sampling techniques, methods and instruments for data collection, validity and reliability, data collection process, data management and analysis, ethical considerations and limitations of the study.

3.1 Study Design and Scope

A cross- sectional descriptive study was used to assess knowledge of breast cancer and preference of early detection measures among female undergraduate students of Ekiti State University, Nigeria.

3.2 Description of Study Area

The study site is Ado Ekiti, Ekiti State. It is a one town municipal local government that doubles as the state capital of Ekiti State and the administrative headquarter of Ado Ekiti local government, Ekiti State. The State created in 1996 is the 29th largest of Nigeria's 36 states, with a population of 2.4 million and an area of 6353 sq. km. The State prides itself as the land of honour – Ile Iyi, Ile Eye, connoting the sterling attributes of hard-work, integrity, honour and honesty. It is the most populous local government in Ekiti State going by the 2006 population census which put the population to 308,621 (NPC, 2006). The local government currently have a population density of 43,987 persons per kilometre. It is a major commercial, industrial and administrative centre. Geographically, it is bounded by the North and West by Ifelodun/Irepodun local government and East and South by Gbonyin, Ikere and Ekiti South West local governments. Its longest North South extent is 16km and the longest East West stretch is about 20km.

Ado Ekiti local government is divided into 13 wards in the ward creation by the Federal Government. The central city of Ado Ekiti carries 12 out of this, while the other villages make up the remaining ward. The local government is blessed with high population of skilled, semi-skilled and unskilled manpower and middle and high level manpower of the University of Ado Ekiti and the Federal Polytechnic and the several post primary institutions located within the city

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and villages and the federal/state ministries/institutions and private establishments which provide a wide range of job opportunities for various categories of vibrant workers. The major language spoken in Ado Ekiti is English, Yoruba, Ekiti and Pidgin. The inhabitants of the state are predominantly agrarian, mono-ethnic in language and culture and rich in human and natural resources. The state enjoys a beautiful tropical climate with distinct rainy season (April and October) and dry season (November–March), annual temperature range of 210C and 280C and high relative humidity.

There are 69 public primary schools, 97 private nursery and primary schools, 14 public junior and senior secondary schools, 27 private secondary schools in the local government. There are (6) six post-secondary institutions in the local governments namely: Ekiti State University, Ado Ekiti, Federal Polytechnic, Ado Ekiti, Government Technical College, School of Nursing, Ado Ekiti, Crown Polytechnic, Odo Ado, Ado Ekiti, Afe Babalola University, Ado Ekiti.

Television and radio stations in Ado-Ekiti include Nigerian Television Authority, Broadcasting Services of Ekiti State (BSES), EKTV, and Radio Nigeria. Few industries in addition to many small businesses, including flour milling, furniture making, soap making among others. There are also several local craft industries in the town that specialize in handicrafts like weaving, dyeing, pottery.

3.3 Description of Study Site

Ekiti State University, Ado Ekiti, Nigeria, known as EKSU, is a public comprehensive teaching and research institution, combining undergraduate, graduate and professional programmes in a residential setting. It is situated on a 3,500ha of land, approximately 12km, North of Ado-Ekiti, the capital city of Ekiti State, Nigeria. The university was established in 1982 as Obafemi Awolowo University and became Ekiti State University in July 2011 from the consolidation of the three erstwhile universities in Ekiti State namely: University of Ado Ekiti (UNAD), University of Science and Technology, Ifaki (USTI) and the University of Education, Ikere-Ekiti (TUNEDIK). The university started at inception with a handful of 136 students offering courses in the Arts, Sciences and Social Sciences. By 1997, less than two decades, the number had grown to 5,906 students, 229 academic staff and 130 non-academic staff in 6 faculties. Presently, the university has 550 academic and 1,390 non-academic staff from various linguistic and ethnic

backgrounds and nationalities and is structured into 11 Faculties, compromising 51 Departments and academic support units, College of Medicine and School of Postgraduate Studies. The Faculties are Arts, Sciences, Agricultural Sciences, Management Sciences, Engineering, Education, Law, Social Sciences, Basic Medical Sciences, Basic Clinical Sciences, and Clinical Sciences. EKSU offers 82 programmes over an annual two-semester academic calendar to 15,180 students, approximately a third of whom are postgraduate. The total number of students in EKSU is 25,000; undergraduates making 23,000 while postgraduate making 2,000.

The university has a health services unit, which provides broad based services to the students, staff, staff dependants and the community as a whole. The health centre is situated within the main campus. A director who is a medical doctor heads the University Health Services. The staff member includes doctors, nurses, pharmacist, radiographer, laboratory technician and other medical ancillary personnel.

The health centre is opened daily for general consultation and operates from 8:00 a.m. to 9:30 p.m. Besides these, there is a 24-hour emergency service provided by doctors and nurses daily, on weekends and public holiday. Patients are referred to Ekiti State Teaching Hospital when and if necessary for consultation and admissions. In addition to curative services, the clinic also offers preventive health services. Uncomplicated medical investigations such as x-rays and other laboratory services are also offered to patients. The university accommodates students and it has many halls of residents and hostels. Majority of students reside within the campus.

Ekiti state university is well balanced in academic and social activities. Academic activities apart from lectures and examinations include excursions, conferences, competitions, departmental weeks, faculty weeks, whereby students learn in a more relaxed environment. The social activities include the hall week, film shows at the popular Arts and Theatre, dinner, award and variety night shows, among others. Others social events include non-governmental organisations programs, raves and club parties organized by smaller group of students. It is worthy of note that many of the social activities hold attraction for a lot of students, both male and female students. This is because it provides opportunity to unwind and relax, away from school stress, and also get to know each other in a relaxed environment.

3.4 Study population

The study population consisted of female undergraduate students of Ekiti State University in September, 2014, when the study was conducted. The lecture theatres, hostels, faculty buildings and places where students were found, were used as the centre for recruitment of the study participants.

3.5 Study variables

The Health Belief Model (Rosenstock, 1974) frame was used as the conceptual frame work for understanding women's choice and willingness to undertake the recommended preventive health behaviour of BC prevention.

The independent variables explored in the study were:

- The socio-demographic characteristics of age, marital status, educational attainment, level of study, religion, parent's occupation and history of BC in the family.

The dependent variables investigated were:

- Knowledge of BC and screening methods

- Female undergraduate student's preference of screening methods

- Female undergraduate student's perceived vulnerability of BC

- Female undergraduate student's utilization of BC

3.6 Recruitment of study participants

The study involved all selected female undergraduate students of Ekiti State University. Both part time and full time students were included in the study. Post graduate students and male undergraduate students were not included in the study.

3.7 Sampling Procedure

    i.   Sample Size calculation

The sample size was calculated using assumed prevalence of 50%. The sample size was estimated using the Leslie Kish formula (1965) shown below:

$$N= \frac{(Z\alpha)^2\,P\,q}{d^2}$$

Where N is the minimum sample size

$Z\alpha$ = standard normal deviate corresponding to level of significance; 1.96 at α (Type 1 error)

$$= 5\%$$

P= assumed prevalence of breast cancer in Nigeria. Estimated at 50% = 0.5

q= 1-P = (1-0.5) = 0.5

d= desired level of precision = 5% = 0.05   (maximum sampling error allowed)

$$N= \frac{(1.96)^2 \times 0.5 \times 0.5}{0.05^2} = 384.16.$$

Anticipating 10% non- response rate (nr), the sample size = N× 1∕1-nr

384.16 × 1∕1-0.1 = 427

Sample size for the study will be 427 research respondents.

    ii.   Sampling technique and Sample selection

Multistage stratified random sampling technique was used to select the study population. There are 12 faculties in the university and the faculties were used as bases for grouping the study population to 10 major strata. The three faculties comprising of Basic Medical Science, Basic

Clinical Science and Medicine were grouped as College of Medicine due to their small population. The ten major strata are:

- Faculty of Arts
- Faculty of Agric. Science
- Faculty of Law
- Faculty of Engineering
- Faculty of law
- Faculty of Education
- Faculty of Social Science
- Faculty of Management Science
- Faculty of Science
- College of Medicine

A total number of 427 female undergraduate students were expected to participate in the study. The number (427) was divided by the ten major strata which the faculties were grouped into. A total number of 43 respondents were selected from each major stratum. The number of expected participants from each stratum (43) was further divided by the number of departments in each faculty to get the number of respondents from each department. The different departments in each major stratum were visited and students were selected from the different departments and different levels in each faculty.

3.9 Instrument for Data Collection

A self administered semi-structured questionnaire consisting of closed and open ended questions was used. (See Appendix 1) The questionnaire contained 50 items laid out in four sections A-D. The first section generated information on the demographic variables; the second section assessed respondents' knowledge about BC. The third section explored on their perceived vulnerability to breast cancer; while the fourth section assessed their preferred early detection measures.

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3.10 Instrument Validity

Five (5) steps were taken to ensure high validity and reliability of the survey instruments. Firstly, content validity was achieved through review of literature to develop a pool of questions. Secondly, the draft questionnaire was subjected to face validation by peers and colleagues. Thirdly, the supervisor critically examined the questions several times and made necessary corrections. Also, a public health physician in the University College Hospital, Ibadan, examined the instruments and finally the instruments were pre-tested among female undergraduate students at the Federal Polytechnic, Ado-Ekiti, a comparable group with similar characteristics to ensure validity.

3.11 Instrument Reliability

The internal consistency of the questionnaire was further tested with Cronbachs' alpha co-efficient analysis. This is a model of internal consistency based on the average inter-item correlation. When results show correlation coefficient greater than 0.5, they are said to be reliable. A correlation coefficient result of 0.7 was obtained using SPSS version 20.0.

3.12 Pre-Testing of Instrument

The questionnaires were developed in English Language and pre–tested at the Federal Polytechnic, Ado Ekiti. A total number of 43 draft questionnaires were administered during school hours, between 10.00am and 4.00pm. The respondents completed all the forty three draft questionnaires which were 10% of the sample size giving a 100% return rate. The respondents complained that the questions are too many. The respondents also approached the questionnaires as examination. Modifications were made on the questionnaires. For example, I don't know/ no idea options were added to questions 34-37. Question 42- 45 were reframed into a table. This was done to give clarity to questions. The questions were also reduced from 65 to 50 questions to make it less much and be as concise as possible.

3.12 Data Collection Procedure

Questionnaires were administered to a selected sample of 427 of the study population during school hours at the school area between 9.00am and 4.00pm. Five trained female research assistants administered the questionnaires under the supervision of the investigator. Female

research assistants were used because the topic of interest is a feminine one and some respondents may not trust or feel comfortable to discuss it with male interviewers. Respondents were selected from various faculties, departments and level of study in the university. Each interview lasted for about 20 minutes. Data collection was completed within the periods of four weeks in the month of September, 2014.

3.13 Data Management and Analysis

The investigator sorted and cleaned up the data obtained via the questionnaire to ensure that each was properly filled and completed. The questionnaires were numbered for easy identification. A coding guide was developed to facilitate data entry. Each question was coded, entered and analysed using the Statistical Package for Social Sciences (SPSS) version 20.0 software. The information obtained were presented in frequency tables, charts and graphs for better understanding while descriptive and Analysis of Variance (ANOVA) were used as statistic methods for analysis. A p-value less than 0.05 was considered to be statistically significant.

Knowledge score of BC was calculated for each respondent using a 24-point knowledge scale assessing aetiology, signs and symptoms, risk factors, early detection screening and diagnosis, treatments of BC. Each correct answer had a score of 1, and incorrect answer or undecided response had a score of 0. The scores were then summed up to give a composite knowledge score for each respondent. The higher the score, the higher the knowledge and vice-versa. Using the 75th percentile, a score above 18 was categorized as good knowledge score while a score from 12-17 was considered fair and scores below 12 was categorized as poor knowledge score about BC.

3.14 Ethical considerations

The following ethical procedures were adopted in conducting the research:

1. First, approval was obtained from the Ekiti State Ethical Research Committee in the Ekiti State Ministry of Health Data Bank. (Appendix I)

2. Secondly, approval was provided by the Head of Department, Health Promotion and Education, University of Ibadan. (Appendix II)

3. Informed consent was obtained from each female undergraduate student after explaining to them the purpose of the study and their liberty to choose to participate or not in the research work. (Appendix III)

4. Confidentiality was maintained by ensuring that names of the participants were not written on the questionnaire to ensure anonymity and the data collected was kept in a secured place where public access was restricted.

3.15 Limitations to the study

Students were difficult to assess because examination was going on during the period of data collection while some students were on SIWES (Student Industrial Experience Workshop Scheme). The investigator sought approval and assistance from lecturers, examiners and class governors and representatives in order to assess the students.

Some respondents approached the questionnaire like examination while most potential respondents did not want to have anything to do with breast cancer including related questionnaires. Also, few respondents had the feelings that their privacy was violated. The investigator briefly provided needed information and education about the study to the respondents in order to clear their doubts.

The study was limited to only the female undergraduate students.

Dearth of published materials was found relating to CBE and preference of early detection screening measures.

CHAPTER FOUR

RESULTS

The results of the study are presented in this chapter. Distribution tables and charts are used to present detailed results of the survey. Relevant statistical tests were used to test the result of the study formulated on female undergraduate student's knowledge of BC, perception of vulnerability to BC and preference of early detection measures of BC. It consists of four sections which include:

- Socio-demographic characteristics
- Awareness and Knowledge about BC
- Perceived vulnerability to BC
- Preference of early detection measures of BC

4.1 Socio-demographic characteristics of the respondents

Four hundred and three out of 427 eligible subjects properly filled and returned their questionnaires, giving a response rate of 94.3%. The ages of the respondents ranged from 15 to 45years with a mean age of 21.9±1.88 years. Approximately 73% fell between 20-24 years age group. About (91.3%) of the respondents were single and majority of the respondents were Christians (89.6%). Virtually all the respondents were Yoruba (90.3%). The highest educational qualification of the majority of the respondents was Senior Secondary School Education (SSCE) (91.8%) while few have OND/NCE and its equivalents. Majority of the respondents were full time students (81.4%) while few were part time students (18.6%). (28.5%) of the respondents were in 300 level followed by (24.8) who were in 400 level. On respondent's residence location, 47.4% resides off campus. (See detail in Table 4.1). Most respondents (35.0%) had fathers who worked as civil servants. Most of their mothers were self-employed (36.2%) followed by mothers who were civil servants (28%). For few that were married, majority had spouses who were self-employed (80%). Majority of the respondents had fathers who had tertiary education (70.2%). Only few had primary education (2.5%). Most respondents mothers also had tertiary education (61%) followed by mothers with secondary education (19.9%) while few had primary education (12%). (See detail in Table 4.2)

Table 4.1 Socio-demographic characteristics of respondents (N=403)

Variables	No	%
Age (grouped) in years		
< 19	81	20.1
20-24	292	72.5
25-29	25	6.2
30>	5	1.2
Marital Status		
Single	368	91.3
Co-habiting	21	5.2
Married	14	3.5
Religion		
Christianity	361	89.6
Islam	40	9.9
Traditional	0	0
Others	2	0.5
Ethnicity		
Yoruba	364	90.3
Ibo	16	4.0
Hausa	1	0.2
Others	22	5.5
Highest educational level		
SSCE/Equivalent	370	91.8
OND/Equivalent	22	5.5
HND/BSc	8	2.0
Others	3	0.7
Level of Study		
100	76	18.9
200	77	19.1
300	115	28.5
400	100	24.8
500	34	8.4
Others	1	0.2
Residence location		
Off campus	191	47.4
Within campus	96	23.8
Hostel	98	24.3
From home	18	4.5

Mean age = 21.9±1.88 Others-Religion: It's complicated. Ethnic group: south-south and middle belt. Level of study: pre degree. Highest educational level: school of nursing

Table 4.2 Respondents' Parents and spouse's Occupation and level of Education

(N=403) Spouse (N=10)

Occupation	Father		Mother		Spouse	
	No	%	No	%	No	%
Civil servant	141	35.0	113	28	3	30
Banking and finance	10	2.5	5	1.2	2	20
Science and technology	29	7.2	2	0.5	-	-
Self employed	75	18.6	146	36.2	5	50
Medical & Paramedical	14	3.5	24	6.0	-	-
Teaching	45	11.2	66	16.4	-	-
Artisans	2	0.5	1	0.2	-	-
Others	31	7.7	6	1.5	-	-
Politicians	4	1.0	0	0	-	-
None	52	12.9	40	9.8	-	-
Level of Education						
Tertiary	238	70.2	246	61	8	80
Secondary	40	9.9	80	19.9	1	10
Primary	10	2.5	12	3	0	0
None	70	17.4	65	16.1	1	10

Others include soldiers, retirees, clergymen/women, farmer and social worker

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4.2 Awareness and Knowledge about BC

Majority 381 (94.5%) of the respondents were aware that there is an illness called BC while 27 (5.5%) were unaware. Only 3 (0.7%) of the respondents mentioned correctly that BC is a malignant tumour of the breast. (See detail in table 4.3). Majority of the respondents (73.9%) had not participated in any BC health program. Most respondents' BC program organizer is NGO (38.1%). Majority of the respondents 76.4% agreed that BC is the number one cancer killer of Nigerian women. Other responses are found in Table 4.3. Majority of the respondents (69.5%) identified that the age group of women commonly affected with BC is 40-69 years. Majority of the respondents (34.5%) did not know the category of women more vulnerable to BC. (See detail in Table 4.3). The respondents' knowledge of causes, risk factors, signs and symptoms, early screening and diagnosis and treatments are reported in mean scores. The overall mean score for BC knowledge is 11.3 ± 5.1 out of 24 points. The respondents mean knowledge score about causes of BC was 12.0 ± 0.8, about early signs and symptoms of BC, a mean knowledge score of 11.0 ± 0.9 was observed. The respondents mean knowledge score about the risk factors associated with the development of BC was 12.0 ± 1.6. Their mean knowledge score about recommended methods for screening and diagnosing BC was 10.0 ± 0.9 while their mean score about treatment for BC was 11.5 ± 0.9 (See detail in Table 4.7). The most common source of information about BC among the respondents was television and radio (media) (17.0%) (See detail in table 4.6).

Table 4.3 Knowledge about BC (N=403)

Which cancer is Number one killer among women in Nigeria	No	%
Cervical cancer	29	7.2
Breast cancer**	308	76.4
Ovarian cancer	16	4.0
Others*	2	0.5
Don't know	48	11.9
What is BC		
Lump/tumour in the breast	97	24.1
Breast disease	89	22.1
Virus eating up the breast	23	5.7
Sore/fluid in breast	14	3.5
Abnormal growth in the breast	16	4.0
Deadly disease	17	4.2
Don't know	135	33.5
Hole in the breast	5	1.2
Terminal disease	4	1.0
Malignant tumour in the breast**	3	0.7
Categories of women mostly affected with BC		
Null-parity**	60	14.9
Multi parity	116	28.8
Women who breast fed their babies for a long time	88	21.8
Don't know	139	34.5
Age group commonly affected with BC		
20-39	61	15.1
40-69**	280	69.5
70 and above	3	0.7
Don't know	59	14.6

*lung cancer   **correct answer

Table 4.4 Respondents' knowledge of appropriate age to start BC screening methods (N=403)

BC Screening methods	No	%
Breast Self-Examination		
10-19yrs	64	15.9
20-29yrs	60	14.9
30-39yrs	8	2.0
40 and above	0	0.0
No idea	271	67.2
Clinical Breast Examination		
10-19yrs	6	1.5
20-29yrs	37	9.2
30-39yrs	30	7.4
40 and above	16	4.0
No idea	314	77.9
Breast Ultra Sound		
10-19yrs	6	1.5
20-29yrs	20	5.0
30-39yrs	25	6.2
40 and above	12	3.0
No idea	340	84.4
Mammography		
10-19yrs	7	1.7
20-29yrs	15	3.7
30-39yrs	11	2.7
40 and above	22	5.5
No idea	348	86.4

Table 4.5 Respondents' knowledge of time interval for BC screening methods (N=403)

BC screening methods	No	%
Breast Self-Examination		
Once in a year	34	8.4
Once in a month	45	11.2
No idea	324	80.4
Clinical Breast Examination		
Once in a year	27	6.7
Once in a month	31	7.7
No idea	345	85.6
Breast Ultra Sound		
Once in a year	24	6.0
Once in a month	22	5.5
No idea	357	88.6
Mammography		
Once in a year	21	5.2
Once in a month	14	3.5
No idea	368	91.3

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Table 4.6 Respondents' sources of information about BC (N=403)

Sources of information	No	%
School area/Classroom	49	6.3
Newspaper/Magazine	68	8.8
Television/Radio	132	17.0
Internet/Phone	92	11.8
IEC materials (posters, billboard)	41	5.3
Health worker/Centre	56	7.2
Health program	96	12.3
Friends/Colleagues	106	13.6
Families/Relatives	75	9.6
Mosque/Church	43	5.5
None	19	2.4

*Multiple responses

Table 4.7 Respondents' mean, knowledge score about causes, risk factors, signs, symptoms, screening and diagnosis and treatment of BC (N=403)

Variables	No	Mean	Standard deviation
Overall mean knowledge score about BC	403	11.3	5.1
Knowledge about causes of BC	403	2.4	0.8
Knowledge of risk factors to BC	403	2.4	1.6
Knowledge of signs and symptoms of BC	403	2.2	0.9
Knowledge of screening and diagnosis of BC	403	2.0	0.9
Knowledge of treatment of BC	403	2.3	0.9

Knowledge score of BC was calculated for each respondent using a 24-point knowledge scale assessing aetiology, signs and symptoms, risk factors, early detection screening and diagnosis, treatments of BC. Each correct answer had a score of 1, and incorrect answer or undecided response had a score of 0. The scores were then summed up to give a composite knowledge score for each respondent. The higher the score, the higher the knowledge of BC and vice-versa. Using the 75th percentile, a score above 18 was categorized as good knowledge score while a score from 12-17 was considered fair and scores below 12 was categorized as poor knowledge score about BC.

4.3 Comparison of BC mean knowledge score by some socio-demographic characteristics

The overall mean knowledge score about BC obtained by the respondents was 11.3±5.1 of 24 points score, with a range of 22.0±2.4. Mean knowledge score by age group of respondents was found to be statistically significant (p-value<0.05). The <19 age group had the highest mean score 12±0.7 while the age group 30> had the lowest mean score 7.0±0.8. Highest level of education attained by the respondents was also found to be statistically significant (p-value<0.05). The other educational qualification which is "School of Nursing" had the highest score 13.0±0.5 while the HND/BSc had the lowest mean score 8.5±0.9. Marital status of the respondents was also found to be statistically significant p-value (<0.05). The single had the highest mean score 11.5±0.7 while the married had the lowest score 8.5±0.8. Level of study of respondents was statistically significant (p-value<0.05). The 400 level had the highest mean score 12.5±0.6 while the 300 level had the lowest mean score10.0±0.8. The mode of study of the respondents was found to be statistically significant (p-value<0.05). The full-time respondents had the highest mean score 12±0.7 while the part time students had the lowest mean score 9.5±0.8. The residence location of respondents was statistically significant (p-value<0.05). The respondents residing in the hostel had the highest mean score 12.5±0.7 while respondents residing outside campus had the lowest mean score 9.5±0.8. Fathers' occupation, mothers' occupation, fathers' level of education, mothers' level of education, history of BC in family, religion, health program participation and income were found not to be statistically significant. Their p-values are greater than 0.05.

Table 4.8 Comparison between knowledge of BC by some socio-demographic characteristics

Variable	No	Mean	SD	Df	F-ratio	P-value
Age-group					2.807	0.025
< 19	81	12.0	0.7	3		
20-24	292	11.5	0.7			
25-29	25	11.0	0.8			
30>	5	7.0	0.8			
Highest Level of Education					3.926	0.040
SSCE/Equivalent	370	11.5	0.7	3		
OND/Equivalent	22	9.0	0.8			
HND/BSc	8	8.5	0.9			
Other (School of Nursing)	3	13.0	0.5			
Marital Status					4.121	0.017
Single	368	11.5	0.7	2		
Co-habiting	21	10.5	0.7			
Married	14	8.5	0.8			
Level of study					4.367	0.001
100	76	12.0	0.7	4		
200	77	11.5	0.8			
300	115	10.0	0.8			
400	100	12.5	0.6			
500	34	11.0	0.8			
Mode of study					2.224	0.006
Full time	328	12.0	0.7	1		
Part time	75	9.5	0.8			
Residence Location					9.881	0.001
Outside campus	191	9.0	0.8	3		
Within campus	96	10.5	0.6			
Hostel	98	12.5	0.7			
From home	16	11.5	0.8			
Father's occupation					0.374	0.947
Civil servant	141	11.5	0.8	8		
Banking & finance	10	11.5	0.8			
Science & Technology	29	11.5	0.8			
Self employed	75	11.5	0.7			
Medical & Paramedical	14	10.0	0.7			
Teaching	45	11.0	0.7			
Artisans	2	12.5	0.8			
Others	31	12.0	0.7			
None	52	11.5	0.8			

Table 4.9 Relationship between knowledge of BC and some socio-demographic characteristics CONTD.

Variable	No	Mean	SD	Df	F-ratio	P-value
Mother's occupation					1.000	0.435
Civil servant	113	11.5	0.8	8		
Banking & finance	5	13.0	0.5			
Science & Technology	2	7.5	0.7			
Self employed	146	11.0	0.8			
Medical & Paramedical	24	11.5	0.7			
Teaching	66	11.5	0.8			
Artisans	1	10.0	0.5			
Others	6	13.0	0.8			
None	40	11.0	0.7			
Father's level of Education					0.433	0.729
Tertiary	283	11.5	0.8	3		
Secondary	40	11.5	0.8			
Primary	10	11.5	0.9			
None	70	12.0	0.7			
Mother's level of Education					1.830	0.141
Tertiary	246	11.5	0.8	3		
Secondary	80	11.0	0.8			
Primary	12	11.0	0.9			
None	65	12.5	0.7			
History of BC in family		12.0	0.8	1	0.624	0.430
Yes	43	11.5	0.7			
No	360					
Health Program Participation					0.052	0.820
Yes	105	11.5	0.8	1		
No	298	11.5	0.8			
Religion						
Christianity	361	11.5	0.8	2	0.241	0.780
Islam	40	11.5	0.7			
Others	2	10.0	1.4			

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4.4 Perception of vulnerability to BC

Only 19.9% of the respondents agreed that simply being a female makes them vulnerable to developing BC. Majority of the respondents 60.8% were of the view that they cannot develop BC because they are divinely protected. About 22.1% of the respondents were of the opinion that they are too young to worry about BC. Majority of the respondents (60%) perceived themselves to be at risk of developing BC if any of their relatives has been diagnosed of the disease. Only 39.7% said that they can be diagnosed of BC whether or not they have the risk factor for it. Most of the respondents 87.1% agreed that early detection increases the chances of survival of BC. Majority 72.7% of the respondents said that the thought of BC always scare them. Most of the respondents 76.9% said BC is preventable. About 48.4% of the respondents said BC is a disease of adult and old women. About 41.4% agreed that BC is a disease for the rich and wealthy people. Few of the respondents 15.4% said that BC can be transmitted from one person to the other. Majority 71.5% agreed that the disease is better managed in hospitals. About 21% said that traditional medicine is the best for BC treatment. More than half of the respondents 59.1% disagreed that BC screening can worsen case of the disease. Almost all the respondents 81.1% agreed that prayer can deliver one from BC (See details in Table 4.11). About severity of BC, majority of the respondents 92.3% agreed that BC is a very serious health problem affecting women globally. Half of the respondents 50.1 said that BC is a disease that has no cure. About 66.3% of the respondents said that women who are diagnosed with BC hardly survive it (See table 4.10 for details). Concerning perceived cause of BC, 55.8% said that BC is demonic in nature. 32.5% of the respondents were of the opinion that wearing clothes that exposes breast can lead to cancer. Majority of the respondents 77.2% agreed that bleaching of skin can lead to BC. Majority 83.6% said saving money in side brassieres can lead to BC. About half 56.6% agreed that wearing second hand brassieres can cause BC. See table 4.12 below for details.

Table 4.10 Respondents perceived notion of severity of BC

Statement	True	False	Don't know	Total
	No	No	No	No
	%	%	%	%
BC is a serious health problem affecting women globally	372	19	12	403
	92.3%	4.7%	3.0%	100%
BC is a disease that has no cure	202	139	66	403
	50.1%	34.5%	15.4%	100%
Women who are diagnosed with BC hardly survive it	267	93	43	403
	66.3%	23.1%	10.7%	100%

Table 4.11 Respondents perception of vulnerability to BC

Statement	True No %	False No %	Don't know No %	Total No %
I can develop BC simply because I'm a female	80 19.9%	240 59.7%	83 20.4%	403 100%
I cannot develop BC because I'm divinely protected	245 60.8%	138 34.2%	20 5.0%	403 100%
I am too young to worry about BC	89 22.1%	238 71%	28 6.9%	403 100%
I am at risk of developing BC if any of my relative has been diagnosed with it	242 60%	104 25.8%	57 14.1%	403 100%
Whether or not I have the risk factor for BC, I can be diagnosed of it	160 39.7%	170 42.2%	73 18.1%	403 100%
Early detection increases the chance of survival from BC	351 87.1%	21 5.2%	31 7.7%	403 100%
The thought of BC always scares me	293 72.7%	86 21.3%	24 6.0%	403 100%
BC is preventable	310 76.9%	45 11.2%	48 11.9%	403 100%
BC is a disease of adult and old women	195 48.4%	158 39.2%	50 12.4%	403 100%
BC is a disease of the rich and wealthy	167 41.4%	192 47.6%	44 10.9%	403 100%
BC is a disease of the white people	38 9.4%	311 77.2%	54 13.4%	403 100%
BC can be transmitted from one person to another	62 15.4%	245 60.8%	96 23.8%	403 100%
BC is better managed in hospital	288 71.5%	41 10.2%	74 18.4%	403 100%
Traditional medicine is the best for BC treatment	92 22.8%	183 45.4%	128 31.8%	403 100%
BC screening can worsen case of the disease	43 10.7%	238 59.1%	122 30.3%	403 100%
Prayer can deliver one from BC	327 81.1%	28 6.9%	48 11.9%	403 100%

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Table 4.12 Respondents perceived causes of BC

Statement	True No %	False No %	Don't know No %	Total No %
BC is demonic in nature	225	127	51	403
	55.8%	31.5%	12.7%	100%
Bleaching of skin	311	20	72	403
	77.2%	5.0%	17.9%	100%
Wearing cloth that exposes breast	131	195	77	403
	32.5%	48.4%	19.1%	100%
Wearing second hand (Okrika) undies and dress	228	98	77	403
	56.6%	24.3%	19.1%	100%
Saving money inside brassieres	337	27	39	403
	83.6%	6.7%	9.7%	100%
BC is a curse	61	272	70	403
	15.1%	67.5%	17.4%	100%

Total scores obtained in the perception of vulnerability by the respondents were graded. A point each was allocated to each question, totaling 16–points score. 75th percentile was used to grade the performance of the respondents as follows: 12-16 points score was considered as those who perceived themselves vulnerable and 0-11 points for those who did not. A large percentage (75.9%) had not perceived themselves to be vulnerable to BC while only few (24.1%) perceived themselves vulnerable to BC. See detail in the figure 4.1.1 below.

Perception of vulnerability to BC
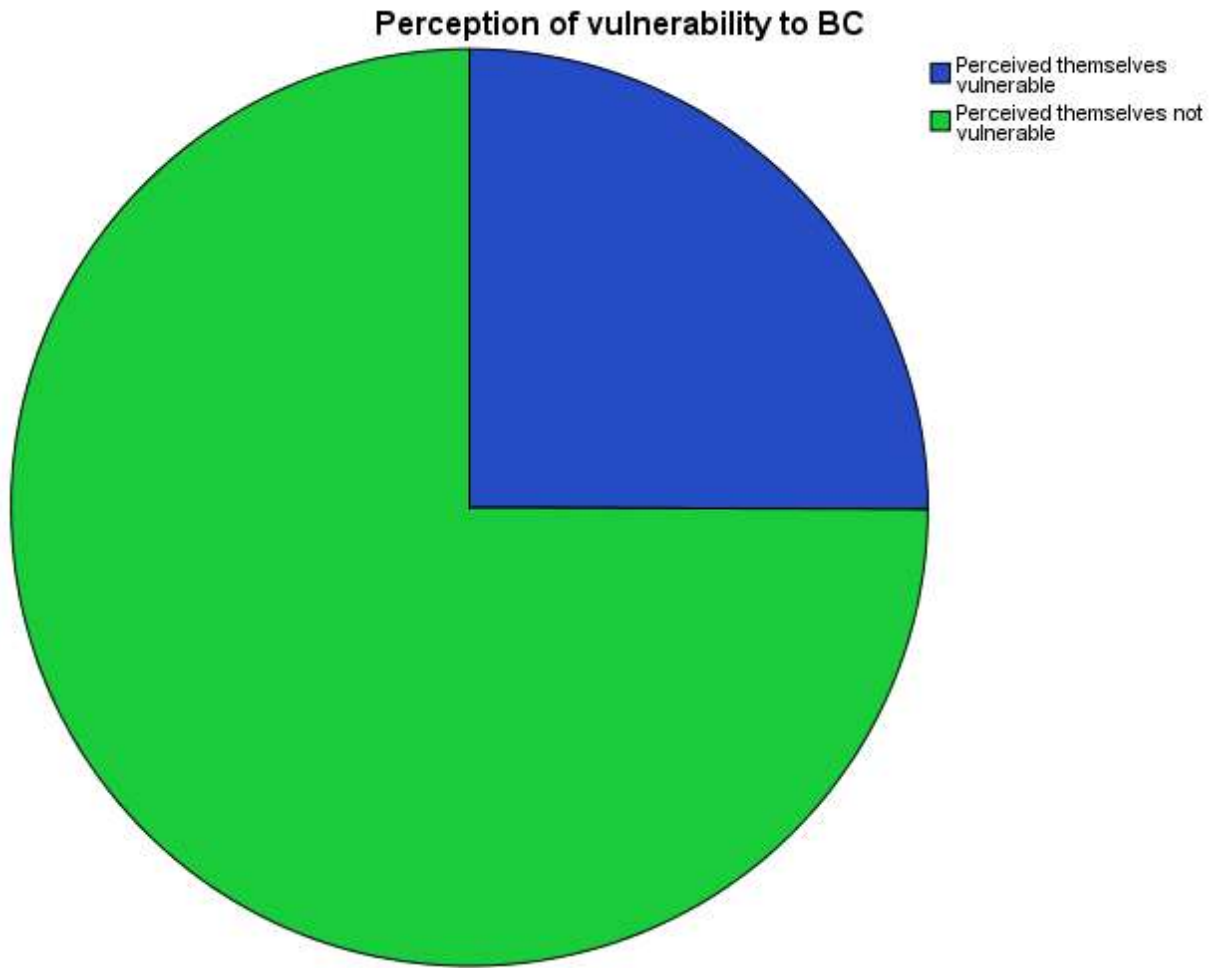
Blue-:   24% perceived themselves not vulnerable

Green-:   76% perceived themselves vulnerable

Figure 4.1.1: Respondents perception of vulnerability to breast cancer.

4.4 Relationship between perceptions of vulnerability to BC and some demographic characteristics

Age-group of respondents was found to be statistically significant with their perception of vulnerability (p-value<0.05). Although, all the age-groups were found to have a poor perception of vulnerability, the poorest perception was found among those aged 30>. Level of study of respondents was significant (p-value<0.05). The 300 level students had a fair perception followed by the 500 level. 200 level students were found to have the poorest perception. The mode of study of the respondents was also found to be statistically significant (p-value<0.05), with the good perception was among full time students and poor perception was seen among part time students. Father's occupation was statistically significant (p-value<0.05). Respondents with science and technology fathers had the highest perception while those without father had the poorest perception.

Father's level of education was also found to be statistically significant (p-value<0.05). Respondents with fathers that have tertiary education had highest perception of vulnerability to BC while those without fathers had the poorest perception. Mothers' level of education was also found to be statistically significant (p-value<0.05). Respondents with mothers who had secondary education had highest perception of vulnerability while respondents without mothers had poorest perception.

Table 4.13 Relationship between perceptions of vulnerability to BC and some socio-demographic characteristics

Variable	No	Mean	SD	Df	F-ratio	P-value
Age-group						
< 19	81	1.65	0.47	3	3.314	0.011
20-24	292	1.78	0.40			
25-29	25	1.68	0.95			
30>	5	1.40	0.24			
Highest Level of Education					0.594	0.667
SSCE/Equivalent	370	1.74	0.43	3		
OND/Equivalent	22	1.77	0.42			
HND/BSc	8	1.55	0.50			
Other (School of Nursing)	3	2.00	0.00			
Marital Status						
Single	368	1.76	0.42	1	2.402	0.092
Co-habiting	21	1.56	0.50			
Married	14	1.64	0.49			
Level of study					3.945	0.002
100	76	1.77	0.41	4		
200	77	1.58	0.49			
300	115	1.85	0.35			
400	100	1.72	0.45			
500	34	1.79	0.41			
Mode of study					4.555	0.033
Full time	328	1.77	0.42	1		
Part time	75	1.65	0.47			
Residence Location					1.7626	0.161
Outside campus	191	1.73	0.44	3		
Within campus	96	1.80	0.40			
Hostel	98	1.75	0.43			
From home	16	1.55	0.51			
Father's occupation					3.011	0.002
Civil servant	141	1.79	0.40	8		
Banking & finance	10	1.80	0.42			
Science & Technology	29	1.89	0.30			
Self employed	75	1.82	0.38			
Medical & Paramedical	14	1.57	0.51			
Teaching	45	1.73	0.44			
Artisans	2	0.00	0.00			
Others	31	1.67	0.47			
None	52	1.51	0.50			

Table 4.14 Relationship between perceptions of vulnerability to BC and some socio-demographic characteristics CONTD.

Variable	No	Mean	SD	Df	F-ratio	P-value
Mother's occupation					2.370	0.006
Civil servant	113	1.70	0.41	8		
Banking & finance	5	1.80	0.44			
Science & Technology	2	1.00	0.00			
Self employed	146	1.80	0.39			
Medical & Paramedical	24	1.70	0.46			
Teaching	66	1.70	0.44			
Artisans	1	1.00	0.00			
Others	6	1.60	0.51			
None	40	1.50	0.50			
Father's level of Education					7.914	0.001
Tertiary	283	1.80	0.40	3		
Secondary	40	1.77	0.42			
Primary	10	1.70	0.48			
None	70	1.52	0.50			
Mother's level of Education					6.599	0.001
Tertiary	246	1.78	0.41	3		
Secondary	80	1.82	0.38			
Primary	12	1.58	0.51			
None	65	1.55	0.50			
History of BC in family					0.436	0.510
Yes	43	1.79	0.41	1		
No	360	1.74	0.43			
Health Program Participation					0.194	0.660
Yes	105	1.73	0.44	1		
No	298	1.75	0.43			
Religion						
Christianity	361	1.76	0.42	2	1.538	0.216
Islam	40	1.64	0.48			
Others	2	2.00	0.00			

4.5 Preferred BC screening early detection measures

About steps taken to avoid BC, there were multiple responses. Majority of the respondents 35.5% said they pray against it. BSE was next 32.6%, followed by nothing, 14.1%, then CBE, 12.6%. Others are shown in Table 4.15 below.

Table 4.15 Steps taken by respondents to avoid BC

Steps taken	No	%
BSE	178	32.6
CBE	69	12.6
BUS	14	2.7
MAMO	3	0.5
Drink herbs	0	0.0
Prayer	194	35.5
Nothing	77	14.1
Others*	11	2.0

*   Personal hygiene of the breast

Concerning BC early detection screening ever utilized, majority 30.6% responded BSE, followed by CBE 23.3%. Others are shown in the table below

Table 4.16 BC early detection screening methods ever utilized by respondents (N=403)

BC screening methods	No	%
BSE	137	30.6
CBE	104	23.3
BUS	13	2.9
MAMO	4	0.9
NONE	189	42.3

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When respondents were asked questions on when last they utilized the screening, for BSE, about half 51.8% said less than 3 months followed by less than a year 19.7%, then less than 6 months, 17.5% while 10.9% responded over a year. See Table 4.17 below for details. Responses for other screening methods (CBE, BUS, and MAMO) are also found in the table.

Table 4.17 Respondent's time of utilization of BC screening methods

When last done	No	%
Breast Self-Examination (N=137)		
Less than three months	71	51.8
Less than six months	24	17.5
Less than a year	27	19.7
Over a year	15	10.9
Clinical Breast Examination (N=104)		
Less than a year	5	4.8
Over a year	99	95.1
Breast Ultra Sound (N=13)		
Less than a year	1	7.7
Over a year	12	92.3
Mammography (N=4)		
Less than a year	1	25
Over a year	3	75

On what motivated respondents to utilize screening, for BSE, friends and colleagues (31.3%) tops the list followed by fear of the disease (22.6%). For CBE, school health registration 66.3% was the main motivation followed by BC family history. For BUS, main motivations were medical advice of BC, followed by family history of BC with 61.5% and 15.3% respectively. For MAMO, health worker/medical advice and family history of BC both have 50%. Details of motivation for early BC screening are shown in the Table 4.18 below.

Table 4.18 Respondents' motivation for utilization of BC screening methods

Motivation	No	%
BSE (N=137)		
Awareness and health information	9	6.6
Fear of the disease	43	31.3
Health program on BC	14	5.9
Family history of BC	4	2.9
Friends/colleagues	9	6.6
Family/relatives	11	8.0
Health worker/Medical advice	13	9.4
Self	3	2.2
Pain and changes in breast	31	22.6
CBE (N=104)		
School health registration	69	66.3
Health program on BC	4	3.8
Family history of BC	16	15.3
Family/relatives	2	1.9
Lumps, pain and changes in breast	13	12.5
BUS (N=13)		
Family history of BC	2	15.3
Family/relatives	3	23.0
Health-worker/Medical advice	8	61.5
MAMO (N=4)		
Family history of BC	2	50
Health-worker/Medical advice	2	50

About what influenced respondent's decision to utilize early detection screening, for BSE, most, 34.3% responded self, followed by friends and colleagues 22.6%, then parents 16.7%. See table for details. For CBE, many respondents 71.1% said school authority followed by health program 16.3% then health professional 10.5%. Others and influence for BUS and MAMO are found in the Table 4.19 below.

Table 4.19 what influence respondents to utilize BC early screening method

Influence	No	%
BSE (N=137)		
Awareness and health information	13	9.5
Health worker	9	6.6
Family/Parents/Relatives	23	16.7
Friends/colleagues	47	34.3
Health program on BC	14	10.2
Self	31	34.3
CBE (N=104)		
Awareness and health information	2	1.9
Health program	17	16.3
Health professional	11	10.5
School authority	74	71.1
BUS (N=13)		
Medical advice	2	15.4
BC history	8	61.5
Family and relatives	3	23.0
MAMO (N=4)		
Health worker	2	50
Family history of BC	2	50

About the outcome of early BC screening methods utilized, for BSE, majority 84.6% responded negative result i.e. okay/no lump. 11.7% responded fair followed by 3.6% who said positive i.e. lumps found. For CBE, most 87.5% said negative, followed by fair 5.9% and positive 6.7 (lumps found). Others are shown in the Table 4.20 below.

Table 4.20 Respondents' outcome of the BC screening method(s) utilized

Outcome	No	%
BSE (N=137)		
Positive	5	3.6
Negative	116	84.6
Fair	16	11.7
CBE N=104		
Positive	7	6.7
Negative	91	87.5
Fair	6	5.8
BUS N=13		
Positive	1	0.7
Negative	12	92
Fair	0	0.0
MAMO (N=4)		
Positive	1	25
Negative	3	75
Fair	0	0.0

On reasons for BC early detection screening choice, for BSE, less expensive tops list with 35.2% followed by easier done 31.5%, then privacy. See table for other reasons. For CBE, professional was the main reason given 52.3% followed by reliable 21.4%. See table for other reasons. For BUS, detailed was major the major reason 73.3%. For MAMO, confirmation was the major reason given 75%. See the table below for details

Table 4.21 Respondents' preferred BC early detection screening method (N=403)

BC Screening Method	No	%
Breast Self-Examination	216	54
Clinical Breast Examination	126	31
Breast Ultra Sound	15	3.7
Mammography	4	0.9
Others (Prayer)	33	8.0
None	9	2.2

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4.22 Respondents' reasons for their choice BC early detection screening

Reasons given	No	%
BSE (N= 216)		
Less expensive	76	35.2
Privacy	69	31.5
Easily accessible	29	13.4
Easier done	19	8.7
No response	23	10.6
CBE (N=126)		
Professional	66	52.3
Rest of Mind	27	21.4
Reliable	21	16.7
Assurance	12	9.5
BUS (N=15)		
Detailed	11	73.3
Convenient	3	20
Comprehensive	1	6.7
MAMO (N=4)		
Confirmation	3	75
Accuracy	1	25
Others Prayer (N=33)		
All things are possible with God	6	18.2
No response	27	81.2

When asked reasons for not utilizing BC early detection screening methods, there were multiple responses. About 15.7% citing I don't see any need to, followed by "I don't know about it" 14% then procedures 12.4%, then "lack of time" 12.2%, forgetfulness/lackadaisical 11.3, then cost, 8.3%. See Table 4.23 below for other reasons given

4.23 Respondents' reasons for non-utilization of BC screening methods

Reasons for non-utilization	No	%
I don't know about it	61	14.0
I don't see any need to	68	17.7
Procedures	54	12.4
Attitude of health worker	39	9.0
Forgetfulness/lackadaisical	49	11.3
Lack of time	53	12.2
Cost	36	8.3
Fear of result	25	5.7
I don't visit hospital	43	10.0
Others*	5	1.2

*Faith in God ** Multiple responses

When respondents were asked what they want to know about BC early detection screening methods, majority, 27.4% said "age limit for different age group, followed by, everything, 16.3%, then, procedures 15.7%. Other reasons are found in the Table 4.24 below.

4.24 What respondents want to know about BC early detection screening methods?

About BC screening method	No	%
Time it takes	64	12.7
Efficacy in detection	42	8.3
Procedures	79	15.7
What next after detection	15	3.0
Side effect	37	7.4
Age limit for different age group	138	27.4
All of the above	82	16.3
Nothing	46	9.1

* Multiple responses

Concerning ways to increase BC early detection screening, most respondents 41.2% said media campaign, followed by free medical screening, 30%, then public enlightenment and counseling, 10.1%. See Table 4.25 for detail.

Table 4.25 Respondents suggested ways of increasing utilization of BC early screening methods

Suggested ways of increasing utilization of BC	No	%
Free medical screening	121	30.0
Media campaign	166	41.2
More awareness	21	5.2
Public enlightenment & Counseling	44	10.1
Don't know	27	6.7
No response	24	6.0

Concerning preferred sources of information for BC screening methods, there were multiple responses, television and radio tops list 20.8%, followed by health program, 17.3% then, internet/phone/social media, 10.3%. See Table 4.26 below for detail.

4.26 Respondents preferred sources of information on BC screening methods

Sources of Information	No	%
Internet/phone/ social media	74	10.3
Television/radio	149	20.8
Newspaper/magazine	88	12.3
Church/mosque	31	4.3
IEC materials	65	9.2
Health programs	124	17.3
Health workers	67	9.4
Friends and colleagues	62	8.7
School	53	7.4
Others*	2	0.3

* Family ** Multiple responses

4.6 Comparison of BSE screening preference and socio demographic characteristics

There is a significant relationship between the age group of respondents and BSE preference (p-value<0.05). Age group 25-29 had highest preference of BSE with 2.0±0.0 mean score while age group 19 below had the least preference 1.36±0.48. Residence location of respondents was statistically significant (p-value<0.05). Respondents staying off campus prefer BSE most with 1.5±0.5 mean score while the respondents residing in the hostel had the least preference 1.33±0.4. Mothers' occupation was statistically significant (p-value< 0.05). Respondents with medic and paramedic mothers had the highest preference 1.61±0.49, while respondents with banking and finance mothers had the least preference 1.2±0.42. Mothers' level of education was also found to be statistically significant (p-value<0.05). Respondents with mothers who had tertiary education had the highest preference 1.57±0.48 while respondents without mothers had the least preference 1.38±0.5. See Table 4.27 below for details.

Table 4.27 Comparisons of socio-demographic characteristics and BSE preference

Variable	No	Mean	SD	Df	F-Ratio	P-value
Age-group						
< 19	81	1.36	0.48	3	2.512	0.041
20-24	292	1.45	0.40			
25-29	25	2.00	0.00			
30>	5	1.37	0.48			
Highest level of education						
SSCE/Equivalent	370	1.45	0.49	3	1.008	0.403
OND/Equivalent	22	1.45	0.50			
HND/BSc	8	1.25	0.50			
Others	3	1.30	0.57			
Marital status						
Single	368	1.44	0.49	2	2.196	0.113
Co-habiting	21	1.28	0.46			
Married	14	1.64	0.49			
Level of study						
100	76	1.27	0.45	4	3.301	0.006
200	77	1.58	0.49			
300	115	1.46	0.50			
400	100	1.43	0.49			
500	34	1.47	0.50			
Residence Location						
Outside campus	191	1.50	0.50	3	2.499	0.049
Within campus	96	1.43	0.47			
Hostel	98	1.33	0.49			
From home	16	1.44	0.51			
Mother's occupation					1.987	0.040
Civil servant	113	1.42	0.49	8		
Banking and finance	5	1.20	0.42			
Science and technology	2	1.41	0.50			
Self employed	146	1.49	0.50			
Medical & Paramedical	24	1.61	0.49			
Teaching	66	1.26	0.44			
Artisans	1	1.50	0.70			
Others	6	1.48	0.50			
None	40	1.35	0.49			

Table 4.28 Comparisons of socio-demographic characteristics and BSE preference CONTD.

Variable	No	Mean	SD	Df	F-Ratio	P-value
Father's level of education					1.975	0.117
Tertiary	283	1.40	0.49	3		
Secondary	40	1.60	0.90			
Primary	10	1.50	0.52			
None	70	1.48	0.50			
Mother's level of education						
Tertiary	246	1.57	0.48	3	3.266	0.021
Secondary	80	1.49	0.49			
Primary	12	1.50	0.52			
None	65	1.38	0.50			
History of BC in family						
Yes	43	1.45	0.47	1	2.943	0.089
No	360	1.32	0.49			
Health-program participation				1	1.657	0.199
Yes	105	1.39	0.49			
No	298	1.46	0.50			
Religion						
Christianity	361	1.4	0.49	2	1.656	0.192
Islam	40	1.3	0.49			
Others	2	2.0	0.60			

4.7 Comparison of CBE screening preference and socio-demographic characteristics

There is a significant relationship between the age group of respondents and preference of CBE (p-value< 0.05). Age group 30 and above had the highest preference 1.78±0.44 while age group 19 below had the least preference 1.2±0.41. There is also a relationship between highest level of education attained and preference of CBE (p-value< 0.05). Respondents with HND/B.Sc. preferred CBE most 2.00±2.0 while others (School of Nursing) had the least preference 1.58±0.56. Marital status was found to be statistically significant (p-value<0.05). Single had the highest preference 1.68±0.46 while the married had the least preference 1.57±0.51. History of BC in family was also found to be statistically significant (p-value<0.05). Those with BC history in their family had the highest preference 1.74±0.44 while those without had least preference 1.67±0.41. See Table 4.29 below for detail.

Table 4.29 Comparison of CBE screening preference and relationship with socio-demographic characteristics

Variable	No	Mean	SD	Df	F-Ratio	P-value
Age-group					3.214	0.013
< 19	81	1.20	0.41	3		
20-24	292	1.65	0.47			
25-29	25	1.76	0.43			
30>	5	1.78	0.44			
Highest level of education					1.144	0.033
SSCE/Equivalent	370	1.68	0.46	3		
OND/Equivalent	22	1.59	1.57			
HND/BSc	8	2.00	2.00			
Others	3	1.58	0.50			
Marital status					3.214	0.013
Single	368	1.68	0.46	2		
Co-habiting	21	1.66	0.48			
Married	14	1.57	0.51			
Level of study					2.025	0.074
100	76	1.82	0.37	4		
200	77	1.64	0.48			
300	115	1.64	0.48			
400	100	1.64	0.48			
500	34	1.60	0.47			
Mode of study					0.761	0.383
Full time	328	1.69	0.46	1		
Part time	75	1.64	0.48			
Residence Location					0.938	0.422
Outside campus	191	1.64	0.47	3		
Within campus	96	1.72	0.44			
Hostel	98	1.71	0.45			
From home	16	1.61	0.46			

Table 4.30 Comparison of CBE screening preference and relationship with socio-demographic characteristics contd.

Variable	No	Mean	SD	Df	F-Ratio	P-value
Father's occupation	141	1.65	0.47	8	1.721	0.082
Civil servant	10	2.00	0.00			
Banking and finance	29	1.80	0.38			
Science and technology	75	1.60	0.49			
Self employed	14	1.71	0.46			
Medical & Paramedical	45	1.80	0.40			
Teaching	2	2.00	0.00			
Artisans	31	1.64	0.57			
Others	52	1.65	0.46			
None						
Mother's occupation					1.185	0.307
Civil servant	113	1.68	0.47	8		
Banking and finance	5	1.80	0.44			
Science and technology	2	1.50	0.70			
Self employed	146	1.65	0.47			
Medical & Paramedical	24	1.58	0.50			
Teaching	66	1.81	0.38			
Artisans	1	2.0	0.51			
Others	6	1.6	0.49			
None	40	1.6	0.46			
Father's level of education					2.533	0.057
Tertiary	283	1.69	0.45	3		
Secondary	40	1.50	0.50			
Primary	10	1.60	0.51			
None	70	1.72	0.44			
Mother's level of education					0.841	0.472
Tertiary	246	1.70	0.45	3		
Secondary	80	1.61	0.49			
Primary	12	1.66	0.49			
None	65	1.67	0.47			
History of BC in family					3.210	0.012
Yes	43	1.74	0.44	1		
No	360	1.67	0.41			
Health-program participation					2.398	0.122
Yes	105	1.74	0.43	1		
No	298	1.66	0.47			
Religion					0.182	0.834
Christianity	361	1.68	0.46	2		
Islam	40	1.70	0.46			
Others	2	1.50	0.70			

4.8 Comparison of BUS screening preference and some socio-demographic characteristics

Only the respondents' mothers' level of education of education was found to be statistically significant in BUS screening preference. Respondents with mothers who had tertiary education had the highest preference with 2.1±0.1 while respondents without mothers had the least preference 1.7±0.2. Others socio-demographic characteristics were found not to be statistically significant. See the table below for details.

Table 4.31 Comparison of BUS screening preference and relationship with socio-demographic characteristics

Variable	No	Mean	SD	Df	F-Ratio	P-value
Age-group					0.207	0.935
< 19	81	1.9	2.4	3		
20-24	292	2.0	1.1			
25-29	25	2.0	0.0			
30>	5	1.8	0.4			
Highest level of education					0.068	0.991
SSCE/Equivalent	370	2.0	1.0	3		
OND/Equivalent	22	2.0	0.0			
HND/BSc	8	1.7	0.5			
Others	3	2.0	0.0			
Marital status						
Single	368	2.0	1.0	2	0.052	0.950
Co-habiting	21	2.0	0.0			
Married	14	1.9	0.2			
Level of study					0.823	0.534
100	76	2.0	0.2	4		
200	77	2.0	0.2			
300	115	2.0	0.2			
400	100	2.0	2.0			
500	34	2.0	0.2			
Mode of study					0.760	0.384
Full time	328	2.0	1.1	1		
Part time	75	1.9	0.2			
Residence Location					0.281	0.839
Outside campus	191	2.0	1.5	3		
Within campus	96	2.0	0.1			
Hostel	98	2.0	0.1			
From home	16	2.0	0.3			

Table 4.32 Comparison of BUS screening preference and relationship with socio-demographic characteristics contd.

Variable	No	Mean	SD	Df	F-Ratio	P-value
Father's occupation					0.702	0.707
Civil servant	141	2.0	0.2	8		
Banking and finance	10	2.0	0.3			
Science and technology	29	2.0	0.3			
Self employed	75	2.0	2.3			
Medical & Paramedical	14	2.0	0.0			
Teaching	45	2.0	0.1			
Artisans	2	2.0	0.7			
Others	31	2.0	0.2			
None	52	2.0	0.0			
Mother's occupation						
Civil servant	113	2.0	0.0	8	0.348	0.946
Banking and finance	5	2.0	0.0			
Science and technology	2	2.0	0.0			
Self employed	146	2.0	0.1			
Medical & Paramedical	24	2.0	0.0			
Teaching	66	2.0	0.0			
Artisans	1	2.0	0.0			
Others	6	2.0	0.0			
None	40	3.0	4.1			
Father's level of education					1.081	0.357
Tertiary	283	2.0	0.2	3		
Secondary	40	2.4	3.1			
Primary	10	2.0	0.0			
None	70	2.0	0.2			
Mother's level of education					2.786	0.041
Tertiary	246	2.1	0.1	3		
Secondary	80	2.0	2.2			
Primary	12	1.8	0.3			
None	65	1.7	0.2			
History of BC in family					0.350	0.554
Yes	43	1.9	1.9	1		
No	360	2.0	2.1			
Health-program participation					0.624	0.430
Yes	105	1.9	0.2	1		
No	298	2.0	1.0			
Religion					0.288	0.750
Christianity	361	2.0	1.0	2		
Islam	40	1.9	0.2			
Others	2	1.5	0.7			

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4.9 Comparison of MAMO screening preference and some socio-demographic characteristics

For MAMO preference, only mothers' occupation and mothers' level of education were found to be statistically significant with their p-values greater than 0.05. Respondents without mothers preferred MAMO most 3.0±4.4 while others' mothers' occupation had the same level of preference 2.0±0.0. Also, respondents without mothers or with no education at all preferred MAMO most while respondents with mothers who had tertiary education preferred MAMO least. See the table below for details.

Table 4.33 Comparison of MAMO screening preference and relationship with socio-demographic characteristics

Variable	No	Mean	SD	Df	F-Ratio	P-value
Age-group					0.225	0.925
< 19	81	1.9	0.1	3		
20-24	292	2.1	1.6			
25-29	25	2.0	0.2			
30>	5	2.0	0.0			
Highest level of education					0.036	0.997
SSCE/Equivalent	370	2.0	1.4	3		
OND/Equivalent	22	2.0	0.0			
HND/BSc	8	2.0	0.2			
Others	3	2.0	1.4			
Marital status					0.145	0.865
Single	368	2.1	1.4	2		
Co-habiting	21	20	0.0			
Married	14	19	0.2			
Level of study					0.357	0.878
100	76	2.0	0.0	4		
200	77	1.9	0.1			
300	115	2.1	1.8			
400	100	2.1	2.0			
500	34	1.9	1.8			
Mode of study					0.779	0.378
Full time	328	2.9	1.1	1		
Part time	75	1.9	0.2			
Residence Location					0.375	0.771
Outside campus	191	2.0	1.5	3		
Within campus	96	2.2	2.0			
Hostel	98	1.9	0.1			
From home	16	2.0	0.0			

Table 4.32 Comparison of MAMO screening preference and relationship with socio-demographic characteristics contd.

Variable	No	Mean	SD	Df	F-Ratio	P-value
Father's occupation					1.576	0.120
Civil servant	141	2.0	0.1	8		
Banking and finance	10	2.0	0.0			
Science and technology	29	2.0	0.0			
Self employed	75	2.0	0.1			
Medical & Paramedical	14	2.0	0.3			
Teaching	45	2.0	0.0			
Artisans	2	2.0	0.0			
Others	31	2.0	0.1			
None		3.0	3.9			
Mother's occupation					2.345	0.018
Civil servant	113	2.0	0.0	8		
Banking and finance	5	2.0	0.0			
Science and technology	2	2.0	0.0			
Self employed	146	2.0	0.1			
Medical & Paramedical	24	2.0	0.0			
Teaching	66	2.0	0.1			
Artisans	1	2.0	0.0			
Others	6	2.0	0.0			
None	40	3.0	4.4			
Father's level of education					3.608	0.140
Tertiary	283	1.9	0.1	3		
Secondary	40	2.0	0.0			
Primary	10	2.0	0.0			
None	70	2.5	3.4			
Mother's level of education					3.421	0.017
Tertiary	246	1.9	0.0	3		
Secondary	80	1.9	0.1			
Primary	12	2.0	0.0			
None	65	2.6	3.4			
History of BC in family					0.195	0.659
Yes	43	2.0	0.0	1		
No	360	2.1	1.5			
Health-program participation					0.624	0.430
Yes	105	2.1	1.9	1		
No	298	2.0	1.1			
Religion					0.435	0.127
Christianity	361	2.0	1.0	2		
Islam	40	2.0	0.0			
Others	2	2.0	0.0			

CHAPTER FIVE

DISCUSSION

This study explored the knowledge of BC and preference of early detection measures among female undergraduate students of Ekiti State University, Ado Ekiti. In this chapter, explanation is given regarding the results presented in the previous chapter. The socio-demographic characteristics of the respondents, knowledge about BC, perception of vulnerability to BC and preference of early detection measures were explored.

5.1 Socio-Demographic Characteristics

In this study, the ages of the respondents ranged from 15-45 years with a mean age of 21.9±1.88 years. The implication of this mean age is that the female students are in the age group where early detection and screening practices can help a great deal in reducing morbidity and mortality due to BC. The study revealed that majority of the respondents' highest educational qualification was SSCE. Only few had OND, NCE and its equivalent.

Majority of the respondents were Yoruba and Christians. This is probably because the university is located in Ado Ekiti, a south-western city in Nigeria. The south-western parts of Nigeria are majorly Yoruba and Christians. Majority of the respondents were single and nulliparous. This was expected being university undergraduate students pursuing career and education in the university.

Majority of the respondents in this study were full time students. This is because full time students were more easily accessible during data collection. Most respondents had civil servant fathers and self employed mothers. Most respondents had fathers and mothers with tertiary level of education.

5.2 Awareness and Knowledge about BC

The findings from this study revealed a high level of awareness but poor knowledge of BC. Majority of the students 94.5% were aware of a disease called BC. The finding disagrees with a study by Ranasinghe, (2013), which reported poor awareness in developing countries. The

reason for this high awareness level could be attributed to several awareness campaigns about BC in the state.

In this study, majority of the students 76.4% agreed that BC is the number one cancer killer of Nigerian women. Despite the high level of awareness, only 0.7% defined correctly what BC is. Only 14.9% knew the appropriate age to start BSE. Few 6.2% and 5.5% knew the appropriate age to start BUS and MAMO respectively. Only 11.2% knew the time interval to practice BSE, and very few 6.7% knew the time interval for CBE utilisation while very few 6.0% and 5.2% knew the time interval for BUS and MAMO utilisation.

Respondents' overall knowledge mean score about BC was 11.3±5.1 out of 24 points knowledge score which accessed causes, signs and symptoms, risk factors, early screening and diagnosis and treatment of BC. This implies a poor knowledge of BC. However, in order to ensure effective and increased practices and utilisation of early detection BC screening methods, young women of this group must possess relevant knowledge as well as appropriate choice of early detection measures of the disease.

This finding in this study (high awareness poor knowledge) is consistent with several similar studies; Adejumo et al, (2008), among female undergraduate students of University of Ibadan, Nigeria; Salaudeen et al, (2012), among female undergraduate students of University in Ilorin; Olugbenga Bello et al, (2014), among female students in a tertiary institution in south western Nigeria; Iheanacho et al, (2013), among female undergraduate students of University of Nigeria, Enugu Campus; A study among female students in Jordan, by Suleiman et al, (2014); A study in Sudan by Idris et al, (2013), among final year medical students; Boulos and Ghali, (2013), study among similar study group in Ain Shams University, Egypt; Gebrehiwot et al, (2014), among female undergraduate students in Mekele University, Ethiopia; A school based study in Sri Lanka among female adolescent students and Akhtari-Zavare et al, (2013), study among female undergraduates in Malaysia Public University. There are similar studies among different study groups such as health worker, teachers, rural women, market women, community women etc., which in congruence with this study, have also shown good awareness but poor knowledge of BC especially the risk factors (Makanjuola et al, 2014, Azubuike and Okwuokei, 2013, Faronbi and Abolade, 2012, Oluwatosin and Oladepo, 2006, Okobia et al, 2006 and Obaji et al, 2013).

The finding in this study however contrasts that of Sambanje and Mafuvadze, (2012), among female students in Angola University where both awareness and knowledge of BC were reported to be poor. It also conflicts that of Gwarzo et al, (2008), among female undergraduate students of Ahmadu Bello University, Northern Nigeria where high level of awareness and knowledge was reported. It also conflicts with the study by Akpo et al, (2009), among female medical students in south-south University in Nigeria, where fair knowledge was revealed. This may be due to the small study population size and the fact that they are medical students. This study's finding also contradicts that of Latif, (2014), among female students in Saudi- Arabia where a very good knowledge was reported.

According to Obaji et al, (2013), awareness and level of knowledge are two different levels of health education aims, and it is easier to gain awareness but not knowledge, which requires one to systematically be 'taught' or systematically look for information. From findings in this study, more structured educational campaigns focusing on knowledge of BC should be the priority of health programs on BC. Female university students are important target group for promotion of proper health habit including breast health.

From this study, the student's major source of information on BC is TV/Radio. This agrees with similar studies by Adejumo et al, (2008); Eittah, et al, (2014); Boulos and Ghali, (2013); Iheanacho et al, (2013); Gebrehiwot et al, (2014) and other several studies on BC but different study groups. It however disagrees with similar study by Suleiman, (2014), in Jordan where friends and health workers top list of BC information source. It's also not in line with a study by Ibrahim and Odusanya, (2001), where health worker was the main BC information source.

In this study, the major people the students discuss their health related issues with (in descending order) are mother, health professional and friends. This is because mothers are sweet, loving and compassionate. They easily show sympathy and empathy. It is also easier for female children to discuss their health issues with their mothers because they can easily identify with them since they share the same body system and anatomy.

According to Akhigbe and Omuemu, (2009), healthcare workers are direct source of medical information to the public. They are usually looked upon by the society as people knowledgeable about health and medical matters including BC. This is expected due to their training and

discipline. Also female folks are relational in nature. They like chatting and discussing several issues. It is not uncommon for them to discuss their health-related issues including BC. Several studies have reported friends as main source of information on BC.

Findings from this study also showed NGOs and religious institutions (churches and mosques) as the commonest organisers of BC health program which the students have participated. There is a need for more committed health NGOs. NGOs help bridging the gaps where governments are incapacitated. Also, religious institutions such as churches and mosques, with the influence of religious leaders (significant others) are good health promoting setting where people can be more aware, sensitized and knowledgeable about health issues such as BC and thereby, make informed decision and choice regarding their health.

From this study, there is a significant relationship between age-group and knowledge of BC. The age-group <19, had more knowledge while the age-group 30> showed the least knowledge. This is because the younger people access information more easily and are generally more inquisitive than the older people. Also, Age-group 30> in this study were majorly part time students and mode of study was statistically significant with BC knowledge. The full time having more knowledge while part time had the least knowledge. This contrasts with a study by Hana-Taha et al, study in Jordan, (2010), where older people showed more knowledge than the younger people.

Highest level of education attained was also found to be statistically significant with knowledge of BC. Other educational qualification such as (School of Nursing) showed more knowledge. This is expected because of the training and exposure to health issues in nursing school. Those who have had BSc/HND showed least knowledge. This could be that their courses are not science and health oriented. It is important to include health issues such as cancer in the General Studies Curriculum of undergraduate students in Nigeria so that they can have at least, basic knowledge about health issues. Other independent variables found to be statistically significant with BC knowledge are marital status with single and married having 11.5 and 8.5 knowledge mean scores respectively; Level of study (400L 12.5, 300L 10.0) residence location (hostel 12.5, off campus 9.0)

5.3 Perception of Vulnerability to BC among Respondents

Majority of the students in this study 92.3% perceived BC as a serious global health problem affecting women. This perceived seriousness does not reflect in the student's level of utilisation of BC screening because majority said they did nothing but prayer, as steps taken to avoid BC. Majority also reported that they have never utilised any early BC detection screening. This may be due to their poor perception of vulnerability to BC. Majority 74.9% did not perceive themselves to be vulnerable to BC.

About half 50.1% of the respondents said that BC is a disease that has no cure. About 66.3% of the respondents said people diagnosed of the disease hardly survived it. This misconception could be due to increase death due to BC even among the affluent who were expected to be able to afford cost of treatments. In developing countries, the majority of women diagnosed with BC do not survive because their cancer is detected too late (WHO Bulletin, 2012). Breast cancer is the most curable when detected at its earlier stages (Eittah, et al 2013).

Felicia Knaul, director of the Harvard Global Equity Initiative, Secretariat of the Global Task Force on Expanded Access to Cancer Care and Control in Developing Countries, says, "Survival rates are improving. With earlier detection and treatment, evidence from around the world demonstrates tremendous hope for survival and for many years of healthy life." Only 45.4% does not believe that traditional medicine is best for BC. When people presents at advanced stage, where medical help are of little or no importance, people resolve to traditional cure. This can also be attributed to the belief that BC is demonic in nature. Also, many people cannot afford the cost of treatments even if earlier diagnosed.

Only 31.5% of the respondents said BC is not demonic in nature. 77.2% said bleaching of skin causes BC. About 48.4% agreed that wearing cloth that exposes is not the cause of BC. Only 24.3% believed that wearing second hand brassieres is not the cause of BC. Majority 83.6% were of the belief that saving money inside brassieres causes BC. This consents with the study by Akpo et al, (2009), among female medical students in south-south Nigeria where BC was also perceived to be caused by putting money between the breast and the brassiere. Majority 67.5% agreed that BC is not a curse. According to ACS and breastcancer.org, 2014, experts are yet to ascertain the cause of BC.

In this study, there are other various misconceptions which exist among the respondents about BC. Only a few 19.9% of the respondents believed that being a female automatically makes them vulnerable to BC. However, it has been documented that every woman is at risk of developing the disease (ACS, 2014). Majority 60.8% said they are divinely protected. This is however true but faith without work (early detection screening practices) is dead. Majority 72.7% are scared by the thought of BC. This could be as a result of severity and fatality of the disease but one should embrace situation and challenge with action and solution rather than fear. Fear kills.

About 42.2% of the students in this study did not believe that they are at risk of developing BC if any of their relatives has been diagnosed of it. According to ACS, 2014 history of BC in family is a high risk factor especially first degree relative. Only 39.7% believed that they can be diagnosed whether or not they have the risk factor for it. This is true because the causes of BC is yet to be ascertained although, several risk factors had been associated with it but the presence or absence of these risk factors does not mean that a person will get the disease. Some who have one or more of the risk factors never get the disease and most women who do get BC do not have any of the risk factors (ACS 2014).

About 48.4% students in this study stated that BC is for adult and old women. This is consistent with a study carried out by Olopade et al, 2005, about ancestry and BC. It was found out that BC hits women earlier and harder in their forties. Similarly, a study carried out by Adesunkanmi et al, 2006, about the severity, outcomes and challenges of BC in Nigeria revealed that 66.7% of women that came down with BC were premenopausal 35-39. According to ACS, 2014, age is the most important risk factor for BC; women are ten times as likely to develop BC in their 30s forty times as likely in their 40s. However, ACS, 2014, stressed that as with many other diseases the risk of getting BC goes up as one gets older.

Since age is a factor that cannot be changed, younger women should see themselves as the adult of tomorrow rather than ascribing BC to adult women. Also, this so called "adult women" (35-45 years) diagnosed of BC at level 3 and 4 (advanced stages) have harboured the cancerous cells since when they were young which if earlier detected could have saved their lives, reduce the cost of treatment and afford them partial mastectomy or simple lumpectomy (removal of cancerous cells).

More importantly, studies have reported increased incidence of cases of BC among younger women of less than 30 years old. According to a nurse in the Breast Cancer Clinic of the University Teaching Hospital, Ado Ekiti, Ekiti State, death due to BC is from age 30 and above. Also 47.6% of the respondents believed that BC is not the disease of the affluent or celebrity. This is because when poor or average people died of BC, nobody knows or hears except their family and small circle of friends, whereas when affluent women died of BC especially at a very prime age, the news will be everywhere.

Majority of the respondents 87.1% believed that early detection increases the chance of survival from BC. This is a good perception. Several studies documented that early detection plays a major role in the prognosis of BC. Majority 81.1% believed that prayer can deliver from BC. This supports the reactions of Nigerian women in an article by Vanguard Nigeria, 2013, where they were asked to react to preventive double mastectomy by America Hollywood actress Angelina Jolie when she had not developed any lump at all. Majority said she could have prayed against it and have faith in God. This perception may be attributed to the belief that BC is demonic in nature.

Majority of the students in this study, 76.9% said BC is preventable. WHO, 2013 estimates that One third of cancers be prevented, one third can be cured and another one third effectively palliated. This may be true to some extent i.e., by avoiding BC risk factors but with non-modifiable risk factors such as getting older, being a female etc. nothing can be prevented except practicing and utilising early detection screening methods which will not prevent the BC but increase chances of survival if BC develops, which can make treatment counts.

Some women misconceived early detection screening especially mammography as prevention. This however does not oppose the fact that healthy diet, body exercise, maintaining good body weight etc., help in fighting against disease generally. In this study, some respondents mentioned personal hygiene of the breast as step taken to avoid BC. So far there are no studies emphasizing on personal hygiene of the breast as a way to prevent BC. In this study, age group of respondents, parent's occupation, and parents' level of education were found to be statistically significant with perception of vulnerability to BC. Respondents with fathers and mothers with tertiary education had good perception of BC while those without had poor perception.

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5.4 Early BC detection screening preference and utilisation

More than half of the respondents in this study 54% preferred BSE early detection screening method. This could be due to much awareness on BSE. Little or nothing has been done on CBE. The major reasons why BSE was mostly preferred are that; it is less expensive, privacy, easily accessible and easily done. About 42.3% of the respondents have never utilized any BC early detection screening methods. Only few 3.7% preferred BUS. Reasons given are detailed/comprehensive results and convenience. Very few prefer MAMO. Reasons given are confirmation and accuracy. It is left to thought whether the students who prefer BUS and MAMO knew that it is recommended for people above 30 years and 40 years old respectively.

Larger percentage of the respondents wants to know the age limit for different groups, procedures and everything about BC screening. Majority of the respondents also stated free medical screening coupled with increased media campaign as ways to increase utilisation of BC screening. Major preferred sources of information on BC are; TV/Radio, health programs, social media/internet/phone and printed media (Newspaper and Magazines). Television is a medium that provides audio visual information to a large number of people within a relatively short period of time at the same time. Several studies have demonstrated the role of radio and television in providing health information, which can lead to positive change in behaviour. Social media are also important medium for disseminating public health information.

5.5 Implications of findings for Health Promotion and Education

The findings of this study have reiterated the fact that knowledge of BC and utilization of early detection screening methods among female undergraduates as a means to reduce morbidity and mortality due to BC is very inadequate. This may be due to wrong perception and misconceptions about BC. Information about BC was mostly from TV/Radio and friends/ relatives. Information from TV/Radio may not be comprehensive enough. It can also be limited due to time constraint while information from friends and relatives can be biased and inaccurate and may not be from a reliable source.

Information and services relating to BC and its early detection screening methods made available in hospitals are very limited due to the burden of other medical problems and emergencies, and are not accessible to all women especially young women. Majority of young women are living

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lifestyles that are associated with the risk of breast cancer and are ignorant of the warning signs and symptoms of BC. They are not aware of how and why they should perform BSE to earlier detect lumps in their breasts so as to access prompt medical services. There is urgent need to intensify education on BC and its early detection screening measures, considering the fact that young women have little or no knowledge of BC risk factors and its early detection screening methods which in return leads to increase in morbidity and mortality rate owing to late presentation to hospital when medical intervention does little or nothing. Also, the implementations of BC services tailored to enable young women detect breast cancer earlier during medical checks and through the media are particularly advocated.

Health education is a combination of learning experiences designed to facilitate voluntary adaptation of behaviour conducive to health (Green, Krenter, Deeds and Patridge 1980). It is concerned with reinforcing and changing knowledge, attitudes and behaviour of people through effective communication of factual information, with the aim of helping them to ensure an optimum well-being.

Health education can therefore be used to bridge the gap between health information on awareness and negative perceptions and attitude within the context of BC. Health professionals need to ensure that adequate information is not limited to older women but younger women on the risk factors associated with breast cancer. Also information on the need for BC must be accurate and imparted at a level that is appropriate to the women concerned. This can be done by organising health programmes tailored to fill the existing gap of knowledge regarding BC using preferred sources of information. This will empower young women to make informed decision on issues relating to their health so that they can achieve an optimum healthy life in the future.

Wrong perception is also a major challenge in the fight to reduce morbidity and mortality due to BC. Despite regarding BC as a serious disease, agreeing that early detection increases chances of survival and being aware of risk factors associated with BC, some of the respondents maintained that they are not susceptible to the disease because they are divinely protected. Results from past studies show that inaccurate cultural perceptions of BC were most likely to be associated with young women's non-utilization of early detection screening measures. This feeling and belief of invulnerability could hinder commitment to behaviour change.

Breast cancer programmes should not only focus on awareness, indications and advantages but also on changing negative perceptions. Well-designed public enlightenment programmes and

effective BC education in which significant others are also involved could be used to address the problem of negative attitude and perception. There is need for programmes to increase the knowledge of young women and that of the community in general on understanding and perceptions of early detection screening methods of BC as in order to prevent its morbidity and mortality. Scientists are yet to ascertain the causes of BC. Although some risk factors are associated with it, while some are modifiable, some are non- modifiable. An important fact is that the presence or absence of risk factors does not determine who gets the disease. Since it is therefore impossible to predict all those women who will have breast cancer, it is imperative that information on BC should not be limited to some group of women or older women alone.

In this study, majority of respondents said they have never utilized any early detection screening measures of BC despite agreeing that BC is a serious disease. Studies have shown that an appropriate perception of risk is insufficient to guarantee the adoption of protective behavior (Adedimeji, 2005; Blum, McNeely and Nonnemaker 2002). Therefore, successful reduction of problems associated with non-utilization of BC early screening methods and poor perception of self-vulnerability, among female undergraduates in Nigeria, especially in Ekiti State depends on the extent to which programmes and policy interventions address peculiar cultural and environmental circumstances compelling young women to engage in modifiable risky behaviours that are associated with BC. The implication is that the reduction of morbidity and mortality of BC due to late presentation at advanced stages requires a holistic approach.

The findings of this study have revealed that majority of the respondents did nothing except prayer as step taken to avoid BC and have never utilised any BC early detection screening before. Majority of the respondents believe that BC has no cure and that those diagnosed of the disease hardly survive it. Majority were also of the opinion that the disease is demonic in nature and some were of the belief that traditional medicine is the best way to cure it. To this end, women diagnosed with BC go extra miles seeking the services of alternative practitioners and faith healers for a way out. All these options could further endanger the life of those diagnosed with BC hence there is a need for continuous education of women on BC. It is only when they are properly knowledgeable that they will become more empowered to make right decisions and choices. Interventions such as giving routine health information and education in the communities on BC are useful health promotion and education strategies that could be used.

About half of the respondents said they prefer BSE to other BC screening methods. Major reasons given are that it is less expensive, privacy, easily accessible and easier done. Therefore, a conscious health education on how to carry out breast self-examination is needed. The major concern expressed by respondents in this study for non-utilization of BC early detection screening measures are that they don't know about it, they don't see any need to, procedures, lack of time and fear of result. These findings emphasize the need for health professionals to educate young women to the actual risks that are associated with BC, to sensitize them and to answer any question they may have about early screening methods of BC. There should also be women empowerment through non-discriminatory effective community education and the priority is to direct attention at the young women especially who are future mothers and are also in the stage when early detection really counts, so that they can understand the importance of timely detection of BC for quick medical intervention.

Men, women and the community as a whole have crucial roles to play in eradicating wrong perception and increase knowledge about BC, thereby reducing morbidity and mortality rate which is majorly directly proportional to late presentation to hospital at advanced stages when medical intervention does not count. A strategic principle that should be employed is to examine more carefully the role of health education in disabusing the mind of young women of wrong beliefs and perceptions, and also to increase women and community's understanding and correct their perceptions of BC and its early detection screening methods as a means to reduce its morbidity and mortality.

There are three major components of health promotion as defined in the National Health Promotion and Education Policy and its strategic framework plan. These include Health Education, Service improvement and Advocacy (FMOH, 2007). Through the health education component, information is directed to individuals, families and communities to influence their knowledge, perception attitudes and skills. Service improvement could be achieved through improvement in quality and quantity of service availability, outreach and input supplies; and advocacy which involves activities directed at policy makers to influence laws and policies concerning the direction of services and enforcements of laws.

The impact of information and communication on behaviour change cannot be overemphasized. Information, Education and Communication materials can be designed to address the gaps

between knowledge about BC and screening methods. Continuing health education programs should be targeted to young women generally on the importance of early detection in the prevention and treatment of BC. This can be implemented through training, seminars, workshop including the mass media.

Service improvement can be achieved through the establishment of health education units in all levels of the healthcare delivery systems. There should be accessibility to all BC screening programmes and these services should be made available and affordable for proper utilization.

5.6 Conclusion

This study highlights the need for the female undergraduate students in Ekiti state university who are young women between 15 and 45 years to get more of knowledge of BC and early detection measures as it has been found to be deficient. It is apparent that there is a huge knowledge gap to be filled in terms of risk factors, symptoms, causes, treatment and early detection screenings. Young women particularly those in higher institutions should be knowledgeable about health issues such as BC and early detection screening so that they can enjoy optimum health in future. Low disease knowledge coupled with wrong perceived causes and susceptibility has resulted in their poor screening behaviour, attitude, choice and preference of screenings. This is largely due to poor access to correct information about the causes and prevention of the disease and lack of National established Breast Cancer Care Centre. There is therefore an urgent need to provide health education to this group of people to provide health education in order to correct false and assumed notions and improve protective and early detection screening behaviours. There is a need to identify culturally appropriate methods to teach women how to perform BSE and enhance their self-efficacy in using this method since majority preferred it. Interventions to promote culturally sensitive public health programs designed to provide information and services that cut across different age groups, educational levels and cultures should also be developed and implemented.

5.7 Recommendations

It is necessary to enlighten women of this age group on BC risk factors and early detection measures. Developing proper health practices should commence as early as possible and should lead to lifetime maintenance of good health (Ranasinghe, 2013). Informing youth about BC is both a challenge and a key investment in the health of future generations of women (Boulos and Ghali, 2014).

From the findings obtained in the study, the following recommendations have been made:

1. Health education on BC should be provided to students in tertiary institutions through formal teaching in the school and informally through campaigns and health programs among students.

2. There is a need for radio and television programmes dedicated to enlightening and educating people about BC early detection screening methods, since it is the preferred information source on BC.

3. Equip health education units in university health centres and government hospitals so that all information and educative programmes on BC can be easily accessed by students and staff members of the school.

4. Health educators should continue to collaborate with the non-governmental health organisations to conduct more health programmes on BC among female undergraduate students.

5. Improvement on the existing health facilities by the government as well as establishment of BC cancer screening centres in all the states and local government areas.

6. Free or affordable charges for BC early detection and diagnostic screening and treatment

7. Training of female undergraduate students on how to carry out BSE.

5.8 Suggestion for further studies

1. The findings of this study indicate the need for more research in areas related to BC knowledge and screening practices among educated Nigerian women.

2. Impact of health education intervention on BC knowledge and preference of early detection measures among female university students

3. CBE calls for further studies, apart from little or no research about it, there is a need to elucidate reasons for poor utilization among the educated group. Further research should also look into factors contributing to low rates of CBE performance by physicians during medical checks

4. Research on innovative culturally acceptable BC detection and diagnostic screening techniques for young women

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KNOWLEDGE OF BREAST CANCER AND PREFERENCE OF EARLY DETECTION MEASURES AMONG FEMALE UNDERGRADUATE STUDENTS OF EKITI STATE UNIVERSITY

Dear fellow student,

I am a postgraduate student of Public Health, University of Ibadan. I am conducting a research on the above subject matter. I will like to know your opinion about breast cancer and your preference of early detection measures. The information will help in promoting breast cancer prevention. I plead with you to be very truthful in your responses and endeavour to answer all the questions as applicable to you. The responses provided will be kept confidential and are strictly for academic purpose only. Your name is not required and participation is voluntary. Thank you.

QUESTIONNAIRE IDENTIFICATION NO …………… INSTRUCTION: Please kindly respond the questions by ticking (√) in the available options or by completing the blank spaces provided.

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Faculty: ………………………………………………………………

2. Department: ……………………………………………………….

3. Degree in view: …………………………………………………...

4. Age (in years) as at last birthday: ………………….…..……………….

5. Marital status: (1) Single (2) Co-habiting (3) Married (4) Separated (5) Divorced (6) Widow

6. Religion: (1) Christianity (2) Islam (3) Traditional (4) Others (specify)…………………………

7. Ethnic group: (1) Yoruba (2) Ibo (3) Hausa (4) Others (specify)…………….

8. Highest Level of Education: (1) SSCE/Equivalent (2) OND/Equivalent (3) HND (4) Bachelor degree (5) Others (specify)…………………………………..

9. Level of Study: (1) 100 (2) 200 (3) 300 (4) 400 (5) 500 (6) others specify…………………

10. How much do you obtain in a month from all sources: ………………………............

11. Mode of Study: (1) Full time (2) Part time

12. Residence location: (1) Outside Campus (2) Within Campus (3) Hostel (4) From Home (5) Others specify……………………………………………………………

13. Fathers occupation and level of education: ………………………………………

14. Mother's occupation and level of education: ………………………………………

15. If married, what is your spouse's occupation and level of education: …………………

16. Have you ever been pregnant: (1) Yes (2) No

17. How many children do you have both alive and dead: ………………………............

18. For how long did you breastfeed your last baby? ....

19. Which of the following did you discuss health related issues with? (tick as many as applicable to you) (1) Doctor/health professional (2) Father (3) Mother (4) Husband/Partner (5) Siblings (6) Colleagues/Friends (7) Religious leaders (8) Others Specify……………………………..

20. Which of the following sources have you ever sought advice or treatment on health related issues?*(Tick as many as applicable to you)* (1) Government Hospital (2) University health centre (3) Private Hospital/Clinic (4) Private Doctor (5) Pharmacy (6) Traditional Practitioner (7) Teaching Hospital (8) Friends and colleagues (9) herbal drink sellers (10) Do not seek health advice/treatment (11) others specify…………………………………………………………

21. Have you participated or attended any health education/training/seminar or programme on breast cancer before? (1) Yes (2) No *(if no, go to question 21)*

    If yes, where………………………………………………………………………......

22. Do you know anyone that has breast cancer or has died of it? (1) Yes (ii) No

23. Do you have any family member or friend that has or has died of breast cancer?

    (1)Yes (2) No

SECTION B: BREAST CANCER KNOWLEDGE

23. Have you ever heard about breast cancer? (1) Yes (2) No

24. What is breast cancer?

25. What is the number one cancer killer of Nigerian women? (1) Cervical cancer (2) Breast cancer (3) Ovarian cancer (4) others (specify)……………………………………….

26. Where did you get information on breast cancer from? *(**Tick as many as applicable to you**)*(i) School area/Classroom (ii) Newspaper/Magazines (iii) Radio (iv) Television (v) Internet (vi) Posters (vii) Handbill/Billboard (viii) Health worker/centre (ix) Health programs: seminar, conferences, talks, workshop, awareness campaign, etc. (x) Friends/Colleague (xi) Families and relatives (xii) Mosque/Church (xii) Workplace (xii) others (specify)………………………

27. Which age group of women is mostly affected with breast cancer? (1) 20-39 years (2) 40-69years (3) 70 and above years

28. The category of women mostly affected with breast cancer is (1) Null Para (women having no child) (2) Multi Para (women having many children) (3) Women that have breast fed for a long period

Answer the following statements by ticking (√) as appropriate to you

	Statement	True		know
uses	cancer can be caused by:			
	own cause			
k Factor	llowing are some risk factor for breast cancer:			
	king			
	nking alcohol			
	ent use of birth control pills			
	t having children or having them later in life			
	breast feeding			
	erweight/obesity			
	st-menopausal hormone therapy			
	emales with history of breast cancer in family			
	nale that run night shift duties			
ns and symptoms	llowing are early signs and symptoms of breast cancer:			
	less breast lump			
	nge in size and shape of breast			
	raction of the nipple			
	lness or scaling of the nipple			
	ple discharge			
eening and diagnosis	cancer can be detected through the following:			
	st self-examination			
	ical breast examination			
	mmography			
	asonography (Breast Ultrasound)			
eatment	llowing are treatment options for breast cancer			
	motherapy (use of drugs)			
	iation therapy (use of radiation to kill cancerous cells)			
	rmone therapy(use of body chemicals to kill abnormal cells)			
	trition therapy (use of nutrition)			
	tectomy (surgery)			

Choose the best option for questions 34-37 as appropriate to you

Age: (1) 10-19yrs (2) 20-29yrs (3) 30-40yrs (4) 40 and above yrs. (5) No idea **/ Time interval:** (i) Once in a year (ii) Once in a month (iii) No idea

What is the appropriate age and time interval for the following breast screening methods?

Choose the best age option from the following age groups(1) 10-19yrs (2) 20-29yrs (3) 30-40yrs (4) 40 and above yrs. (5) No idea / Time interval: (i) Once in a year (ii) Once in a month (iii) No idea

34. Breast self-examination(Age group)………………. .(Time Interval)………………………

35. Clinical breast examination (Age-group)…………... (Time Interval)………………………

36.Breast ultrasound(Age-group)…………………………(Time Interval) ………………………

37. Mammography (Age group) ………………………… (Time Interval) ………………………

SECTION C: PERCEPTION OF VULNERABILITY TO BREAST CANCER

38. Answer the question by ticking (√) as appropriate to you

nent			know
...evelop breast cancer simply because I'm a female			
...cancer is a serious health problem affecting women globally			
...ot develop breast cancer because I am divinely protected			
...oo young to worry about breast cancer			
...t risk of developing breast cancer if any of my relative has been diagnosed with breast cancer			
...er or not I have the risk factor for breast cancer, I can be diagnosed of it			
...detection increases the chances of survival of breast cancer patient			
...n who are diagnosed with breast cancer hardly survive it			
...ought of breast cancer always scares me			
...cancer is demonic in nature			
...cancer is preventable			
...ng clothes that exposes breast to can lead to breast cancer			
...ing of skin can lead to breast cancer			
...ng second hand (Okrika) undies and dress can cause breast cancer			
...or putting money in brassieres can lead to breast cancer			
...g with breast can leads to breast cancer			
...cancer is a disease for the rich and wealthy people			
...cancer is a disease of the white people			
...cancer is a disease for adult and old women			
...cancer can be transmitted from one person to the other			
...cancer is better managed in hospitals			
...ional medicine is best for the treatment of breast cancer			
...cancer is a disease that has no cure			
...can deliver one from breast cancer			
...cancer screening can worsen case of the disease			

SECTION D: PREFERRED EARLY DETECTION MEASURES

39. What steps have you ever taken to avoid breast cancer?(*Please tick as many as applicable to you)* (i) I pray against it (ii) breast self examination (iii) clinical breast examination (iv) breast ultrasound (v) Mammography (v) I drink herbs (vi) nothing (vii) Others(specify) ………………………………

40. Which of these breast cancer screening methods do you know? (*Please tick as many as applicable to you)* (i) Breast self examination (ii) Clinical breast examination (iii) Breast ultrasound (iv) Mammography (v)Others (specify) …………………..

41. Which of these breast cancer screening methods have you utilised before? *(Please tick as many applicable to you)* (1) Breast self examination (2) Clinical Breast examination (3) Breast ultrasound (4) Mammography (5) None (6) Others specify …………………..

Kindly fill in the table below as appropriate to you.

Cancer ing Methods	en last did you do it	t motivated you to do it	influenced your decision	at is the Outcome of the exam	el of satisfaction
lf breast nation					
nical breast examination					
ast ultrasound					
mmography					

46a. Which of the breast cancer screening methods listed above do you prefer? ……………………... ....

b. Why……………………………………………………………………………………

47 If you have not done any of the screenings before, what is your reason? (1) I don't know about it (2) I don't see any need to (3) I don't visit and like hospital (4) Attitude of health workers (5) Fear of result (6) Lack of time (7) lackadaisical/forgetfulness (8) Procedure (9) Cost (10) Others specify……..

48. What would you like to know, (a). About breast cancer screening methods (i) time it takes to conduct (ii) efficacy in breast cancer detection (iii) procedures (iv) what next after detection (v) side effect (vi) age limit for different types (vii) others specify…………………………

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49. What can be done to increase utilisation of breast cancer early detection examinations?

……………………………………………………………………………………………………

50. From which source of information do you wish to learn about breast cancer? (Please tick as many answers as you find suitable) (1) Internet/Social media (2) TV/Radio (3) Newspaper/Magazines (4) Health Centres/Workers (5) Churches/Mosques (6) Posters/ Billboards (7) Health Talks/Programmes (8) Friends and colleagues (9) School (10) Others specify…………………………………………

Appendix II

LETTER OF INTRODUCTION

Appendix III

ETHICAL APPROVAL