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KNOWLEDGE ON EARLY DETECTION PRACTICES OF BREAST CANCER
AMONG WOMEN WITH A FAMILY HISTORY,
AT THE KORLE-BU TEACHING HOSPITAL

BY

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DECLARATION

I hereby declare that excluding precise references which have been acknowledged duly, this is a submission of my own research work done under supervision towards dissertation in MPH, and contains no materials submitted or published elsewhere for another degree to the best of my knowledge

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Date:.....

DEDICATION

To my entire family (specially mum, who passed on a year ago), friends and colleagues who have done your very best whilst leaving no stone unturned in ensuring my education to this level, I am daily grateful.

To all women living with breast cancer and their relatives, especially to Sophia and her mother may God strengthen you always.

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God bless you all.

ABSTRACT

Background: Breast cancer (BC) continues to remain a major cause of morbidity and mortality among women globally. There seem to be an unchanging trend in the causes of death over the past few decades as more and more women report late with BC to the hospital. Unfortunately this includes women who have a family history of the disease.

Objective: To determine the level of knowledge on Breast Cancer, assess attitudes and perceptions regarding early detection practices and reporting of the disease among women with a family history.

Methods: A cross-sectional study of women having a family history of BC and visiting the National Centre for Radiotherapy and Nuclear Medicine of the Korle-Bu Teaching Hospital was done. A structured questionnaire was administered for data collection, STATA 14 software was used to analyse the data. The level of knowledge was described by use of a statistic tertile, while attitudes and perception were described with proportions.

Results: There were a total of 202 respondents. Their ages were from 18 to 75 years, with a median age of 44 years. The study found a moderate-to-high (24% to 75%) level of knowledge on BC among the respondents, while attitudes to early detection practices and perceptions towards early reporting differed greatly among the population. Twenty percent (n=41) had poor attitude towards early detection practices whilst 47% (n=95) of respondents had poor perception

towards BC reporting. The level of one's education was found to be significantly associated with respondents' level of knowledge on BC ($X^2=278.155$; $P<0.01$). Religion was significantly associated with both respondents' attitude ($X^2 = 19.406$; $P<0.01$) and perception ($X^2 = 8.651$; $P = 0.013$) towards BC.

Conclusion: The current study found that knowledge on breast cancer and early detection practices among women with a family history was high which is good. However, their attitudes to early detection practices and early reporting to a health facility for treatment was not the best requiring the need to incorporate and plan for these attitudes and perceptions during Breast Cancer control programs.

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ABBREVIATIONS

1. AJCC American Joint Committee for Cancer
2. BC Breast Cancer
3. BSE Breast Self-Examination
4. CBE Clinical Breast Examination
5. GAEC Ghana Atomic Energy Commission
6. IAEA International Atomic Energy Agency
7. IRB Institutional review board
8. KBTH Korle-Bu Teaching Hospital
9. LMIC Lower, middle income countries
10. NCRNM National Centre For Radiotherapy and Nuclear Medicine
11. TNM Tumor, lymph node, and metastasis
12. WHO World Health Organization
13. WWFH Women with a Family History

CHAPTER ONE

INTRODUCTION

1.1 Background

According to the International Agency for Research on Cancer (IARC) report on the global status of cancer burden, it is estimated that there will be 18.1 million new cancer cases worldwide with 9.6 million cancer deaths in only 2018 (Bray et al., 2018). Out of that, breast cancer ranks the second highest diagnosed cancer causing 11.6% of all cancer deaths following lung cancer which ranks first contributing to 18.4% of all cancer deaths.

Cancer affecting the breast is not only the most prevalent cancer amongst women, as more than a million and half million women are diagnosed annually, it is also the most significant cause of death related to cancer among women (WHO, 2017). In Ghana, breast cancer is considered the leading cause of cancer death in Ghanaian women, as over 60% of Ghanaian women report late or delay treatment for breast cancer (Opoku, Benwell, & Yarney, 2012).

Breast cancer is becoming a global public health issue as it is increasingly affecting a lot more women in recent years. Women of all socio-economic levels, usually in the prime of their lives, who occupy delicate and sensitive positions within the population are victims of this menace. The median age of incidence is 45 years within an age range of 25 to 75 years as reported by Banegas et al. (2012).

Although rates of breast cancer mortality in developed countries historically has been higher, (Banegas et al., 2012), current findings suggest breast cancer deaths among African women is much higher because of late presentation (Opoku et al., 2012). Even with that, breast cancer survival rates varies significantly among populations with high income countries having a

survival rate of 80%, middle-income countries having 60% and low-income countries having 40% survival rate (Coleman *et. al.* 2008 in Zaney, 2018). Zaney (2018) attributed the less survival rates in less developed countries to the lack of adequate diagnosis, inadequate treatment facilities and lack of early detection programmes that results in late-stage reporting by significant proportion affected in these countries.

Early detection and reporting to the hospital for treatment is key to breast cancer survival (Clegg-Lamprey, Dakubo, & Attobra, 2009). Most promptly reported breast cancer cases can be cured with the right treatment at the hospital (Opoku et al., 2012). There are however some instances where breast cancer acquired resistances could result in treatment failures and progression of the disease (Mcknight & Viola-villegas, 2018). Even in some cases, there are complications where there is spread of the cancer to other parts of the body such as the bone (Liu et al., 2018).

An independent prognostic factor for breast cancer is the presence of disseminated tumor cells (DTC) in one's bone marrow although this does not uniformly predict cancer outcome, and the cells may persist in quiescent state for a long time (Borgen et al., 2018). Exposure to risk factors pronounces the disease condition. There are many risk factors for breast cancer, and those as gender, age and family history are well established (Langhorne, Fulton, & Otto, 2007). Generally, lifestyle measures, including weight control or healthy dietary habits, moderating alcohol intake and avoiding tobacco use could reduce risk by 30% (Washbrook, 2006). A randomized controlled trial involving 100 overweight and obese breast cancer survivors found significant improvement in the quality of life, bone health and physical fitness of the participants who engaged in aerobic and resistance exercise; thereby concluding that inclusion of supervised clinical exercise programmes into breast cancer treatment and care is an ideal intervention to

consider and champion (Dieli-conwright et al., 2018). Recent study involving 83,451 parous UK women has found short gestation pregnancies and high birth weight first pregnancies to be significant risk factors to developing breast cancer (Swerdlow, Wright, Schoemaker, & Jones, 2018). They explained that short gestation pregnancies may cause hormonal stimulation and early proliferation of breast compared to complete differentiation that may have occurred in normal gestation pregnancies thereby pre-menopausally increasing breast cancer risk. Again, the high birth weight associated with estrogen and levels of insulin-like growth factor 1 is believed to be the reason for increased risk of breast cancer among women who experience such situations.

Breast cancer usually starts as a painless lump in the breast which can be detected through breast self-examination (BSE), a Clinical breast examination (CBE) or a Mammography. BSE should be done monthly while CBE is carried out by a medical practitioner every three years in the over 20 years, and yearly or every other year in those above 40 years. A mammography should be done every 1-2 years after age 40.

Scientists are perpetually working assiduously to arrive at more effective treatment of cancers. A recent study has associated b-type interleukin 1 (IL1b) as the ‘IL1 signature’ in women with certain types of breast cancers (Dinarello, Denver, Medical, & Palucka, 2018). They described that in the presence of IL1b, there is an inflammation that promotes the growth of the tumor and inhibits the clinical outcomes of patients with the cancer. Therefore targeting IL1 destruction among such patients such as by using anakinra (a naturally occurring IL1 receptor antagonist used in the treatment of auto-inflammatory and autoimmune diseases) suppresses IL1b expression alongside other cytokines which in effect can reduce pain associated with the cancer, improve the quality of life of patients and in some cases improve life expectancy. An enzyme

known as Cyclophilin A (CypA) that is involved in the development of mammary glands has also been associated with the development of breast cancer (Cohut & Collier, 2018). The enzyme is believed to be involved in signaling a genetic pathway known as Jak2/Stat5 that promotes the growth of breast cancer tumors. Additionally, Jak2/Stat5 is as well associated with the activation of prolactin receptor signaling that has also be associated to the development of breast cancer cells. Hence the inhibition of the enzyme CypA by medicines approved by foods and drugs boards certainly inhibits other biological mechanisms that suppresses the growth of breast cancer tumors.

The lack of knowledge about early detection practices and the late reporting has fatal consequences and time should not be wasted trying unproven treatment. In a study where there was review of 4,109 female breast cancer pathology specimens from 2005 to 2009 in Ghana, 32.7% malignancy was found (Edmund, Naaeder, Tettey, & Gyasi, 2013). The researchers concluded that in an era of about 30 years of knowledge on breast cancer, Ghanaian women are still presenting with large invasive cancers that are histologically and clinically advanced. A similar study looking at breast cancer pattern over a period of 5 years by reviewing slides of cases within that period in Ghana concluded that there has been no improvement in how and when (stage) at which breast cancer cases are being presented for the past 3 decades (Quayson, Wiredu, Adjei, & Anim, 2014). Another study in Ghana involving the screening of 3,000 women found 0.76% prevalence of breast cancer with 30% of those affected being less than 35 years of age (Naku et al., 2016). The researchers explained that breast cancer burden in Ghana could have probably experienced a relative shift towards the early thirties of Ghanaian women compared to women in the western world. The study suggested that the mean age for breast cancer screening in Ghana should be adjusted to the early twenties for early detection and treatment.

Although there may be some knowledge gaps in the control and prevention of breast cancer, inadequate information on good early detection practices and reporting threatens the likelihood of positive treatment outcomes. Detecting early onset of breast disease is key to saving lives. This study therefore, explores knowledge on breast cancer, attitudes to early detection practices and early reporting to a hospital or health facility among women with a family history (WWFH) of breast cancer.

1.2 Problem Statement

In 2015, World Health Organization (WHO) estimated that 570,000 deaths from breast cancer occurred among women, accounting for about 15% of all cancer mortalities. The rates of cancer seem to be on the ascendency among women in developed regions, but presently its burden is escalating in nearly every region globally (WHO, 2017). Globally, it is estimated that an individual's lifetime risk for developing breast cancer is at an incidence of one-in-nine women (Ahmad, Ormiston-Smith, & Sasieni, 2015), whilst that for a woman having a first-degree relative diagnosed as having cancer of the breast is approximately 31% and 13 % for those having a relative diagnosed with cancer of the ovary (Anders, Johnson, Litton, & Phillips, 2010)

The epidemic is no different in Ghana, where it has been reported that breast cancer is the commonest among all malignancies, accounting for more than 16% of all cancers (Bardoe & Baako, 2008). Over 2,000 cases of breast cancer was recorded in Ghana in 2012 (WHO, 2017).

More staggering is the assertion that 70% of women diagnosed as having cancer of the breast report late with advanced disease stages (Clegg-Lamprey et al., 2009) . These have been attributed in part, to low awareness of the early signs of the disease, leading to limited treatment

success and increased mortality, despite ongoing nationwide efforts (Gharthey, Anyanful, Eliason, Adamu, & Debrah, 2016).

While it is evident that early detection and awareness improves treatment outcomes (Zaney, 2018), current local management guidelines and policies do not have special considerations for individuals who have an increased risk, including WWFH of breast cancer. This study, therefore determined knowledge on breast cancer, early detection practices and reporting among women with a positive family history, to provide current and perceptible basis for planning in Ghana.

1.3 Justification

In view of the scarce information and data on women's knowledge on early detection practices of breast cancer and especially among those having a family history, assessment of knowledge on early detection practices among women remains paramount. This is because in Nigeria, less than 43.2% admitted to performing the procedure or practice of BSE in the preceding year (Okobia, Bunker, Okonofua, & Osime, 2006)

With the incidence of breast cancer increasing, several organisations and governments are promoting breast screening methods for early diagnosis. However, some of these methods, though effective may not be entirely feasible in long-term organized population-based screening programs. It is therefore important that additional cost-effective strategies are adopted in addition to the promotion of BSE, CBE and mammography to improve early detection (Zaney, 2018).

Due to the scarce information and data on early detection practices among WWFH of breast cancer in Ghana, findings of this study would inform strategies that would specifically target individuals considered to have a greater risk of the disease; including those having first degree

relatives diagnosed with breast cancer. Such targeted policies would significantly complement existing programs in dealing with the emerging problem.

1.4 Conceptual Framework

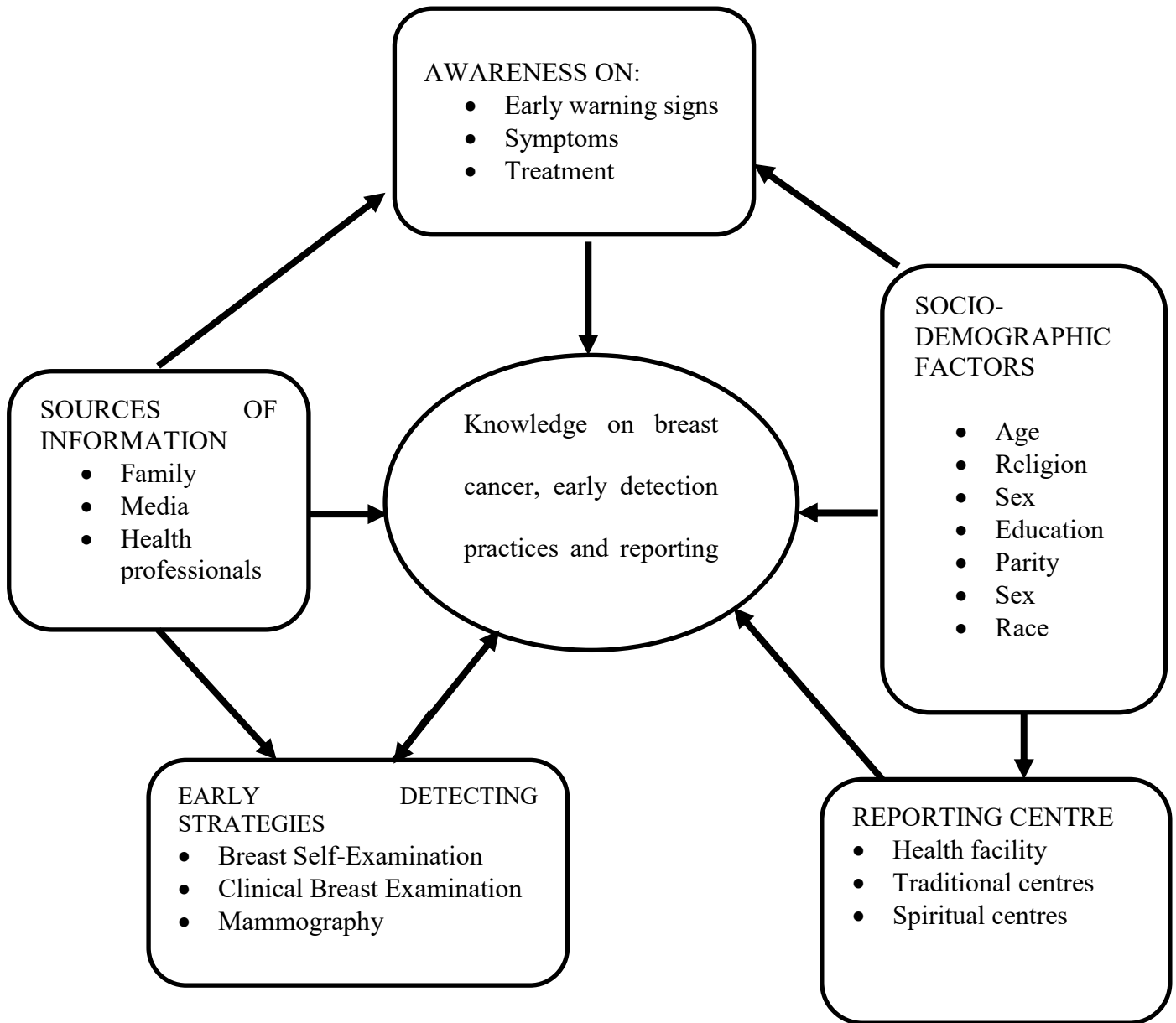


Figure 1: Conceptual framework on knowledge on breast cancer and early detection practices and reporting to a hospital for treatment

CONCEPTUAL FRAMEWORK NARRATIVE ON KNOWLEDGE ON BREAST CANCER, EARLY DETECTION PRACTICES AND REPORTING

The diagram above (Figure 1) is the conceptual framework of the study on the knowledge of Breast Cancer, its early detection and reporting practices among women with a family history of the disease.

The source of information for these women (whether from family members, the media or health professionals) affects their awareness on early warning signs of BC, the symptoms associated with the disease and treatment opportunities available (Naku et al., 2016). While early detection practices involve various strategies such as Breast Self Examination (BSE), Clinical Breast Examination (CBE) and mammography, the source of information and knowledge of BC affects whether one uses these early detection strategies (Chand, Cutress, Oeppen, & Agrawal, 2013). Utilization of the early detection strategies affect early detection of the BC and its early reporting.

Similarly, socio-demographic characteristics (age, sex, education, religion, parity, etc.) also affect one's awareness, knowledge, detection and early reporting practices of BC (Abdulkareem, 2013; Dumitrescu & Cotarla, 2005; Opoku et al., 2012; Surakasula, Nagarjunapu, & Raghavaiah, 2014). That notwithstanding, socio-demographic characteristics has an influence on where one seeks healthcare (whether from traditional or spiritual centres or the hospital/clinics); and where one seeks healthcare affects one's knowledge and detection of the condition for expedite action to be taken (Opoku et al., 2012),.

1.5 Research Questions

1. What is the level of knowledge on breast cancer among WWFH of breast cancer
2. Do women with family history of breast cancer practice early detecting measures?
3. What are the perceptions that contribute to poor health behaviours and late reporting regarding breast cancer?

1.6 Objectives

General objective

To determine the level of knowledge on breast cancer, assess attitudes and perceptions regarding early detection practices and reporting of breast cancer among women with a family history of breast cancer.

Specific objectives

1. To determine the level of knowledge on breast cancer among women with a family history.
2. To assess the attitude of women with a family history of breast cancer regarding early detection practices of the disease.
3. To assess perceptions of women with a family history of breast cancer that contribute to late reporting.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Cancer is a general term used to describe the abnormal growth of normal body cells that usually grow beyond their boundaries in a physiological pattern and can invade, spread, or metastasize to nearby organs or parts of the body. Several terms such as malignancy, tumours and neoplasms are used to describe this phenomenon, with many anatomic and molecular subtypes that require specific management strategies. Cancers can affect almost any part of the body, but much more common among some body organs. Some commonly affected ones include the Lungs, prostate, colorectal, stomach and liver in men, and breast, colorectal, lung, cervix, and stomach cancer in women (WHO, 2018).

Globally, the most commonly diagnosed cancers are lung (1.61 million, 12.7% of the total), breast (1.38 million, 10.9%) and colorectal cancers (1.23 million, 9.7%), and the most common causes of cancer deaths are from lung cancer (1.38 million, 18.2% of the total), stomach cancer (738,000 deaths, 9.7%) and liver cancer (9.2%) 696,000 deaths (WHO, 2013). Overall, it accounted for 8.8 million deaths globally in 2015 (Ferlay et al., 2010).

An estimated 12.7 million new cases of cancer and 7.6 million cancer deaths occurred in 2008, of these, 56% of new cases and 63% of the deaths occurred in low-to-medium income countries (LMICs) (Balogun & Formenti, 2015).

Cancer affecting the breast is said to impact over 1.5 million women annually, and also leads to the highest number of cancer-related deaths among women (WHO, 2017).

Breast cancer currently is the most diagnosed cancer both in the developed and developing countries and is responsible for over a million deaths in an estimated ten million malignancies diagnosed worldwide, making it also the leading cause of cancer death among Ghanaian women (Naku et al., 2016).

While several disparities have been reported in the incidence of the conditions across different geographical regions, its occurrence seems to be from 19.3 per 100,000 women in places in Eastern Africa to 89.7 per 100,000 women in the West of Europe. In the developing regions the incidence rates are mostly below 40 per 100,000 (Ferlay et al., 2010).

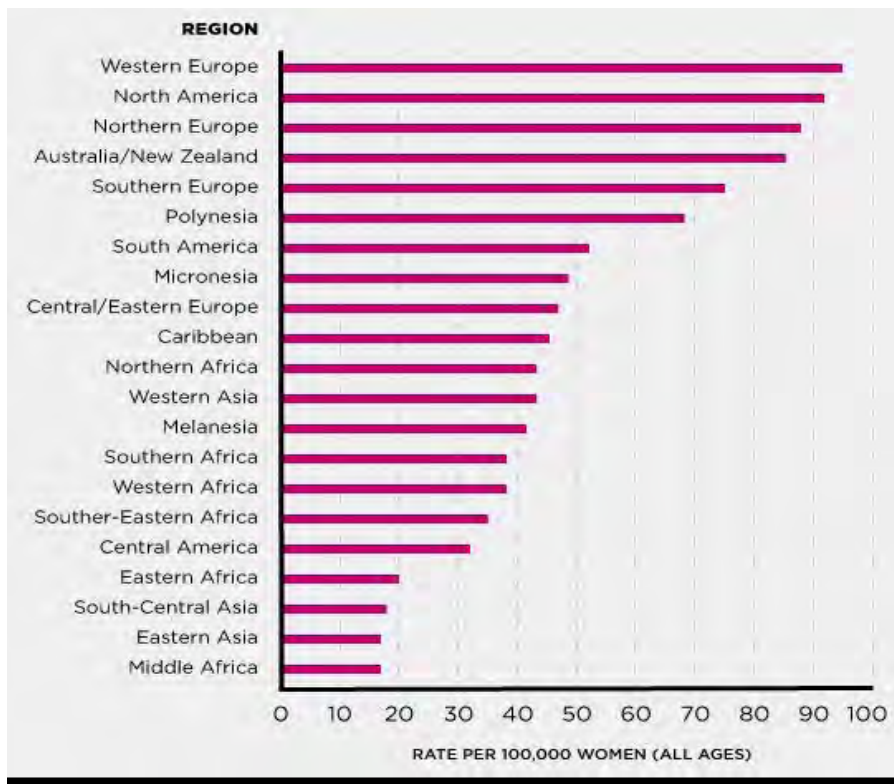


Figure 2: Worldwide incidence rates of breast cancer by regions

Source: Breast Cancer Research Studies | Susan G. Komen®

As shown in Figure 2, despite the comparatively lower rates in lower/middle income countries, burden of the condition is very much palpable in Ghana and the rest of sub-Saharan Africa, where the most diagnosed cancer in women is now breast cancer, compared to several decades ago where cervical cancer topped the chart (Olsen, 2015). There have also been reports of higher mortality rates accounting for about 75% of the total deaths from the disease in developing countries (WHO, 2002).

2.2 Aetiological factors of breast cancer

Many authors have described several aetiological and risk factors of breast cancer, though it has been suggested that many women who are diagnosed of the condition may not have a clear implication of a particular risk (Lacey et al., 2009).

Family history: Breast cancer is suggested to be more common in WWFH in comparison with the general population (Abdulkareem, 2013). Though many researchers implicate the role of BRCA1 & BRCA 2 (BReast CAncer genes 1 and 2) of gene mutations as an underlying aetiological factor, a meta-analysis of 52 separate epidemiological researches disclosed only 12% of women diagnosed have one family member affected, while 1% of the women had a relative or more affected Figure 3. (Mehrgou & Akouchekian, 2016)

Studies also reported women having one first-degree relative or more with breast cancer have a greater risk of acquiring the disease than those who did not (Dumitrescu & Cotarla, 2005). WWFH of breast cancer (mother, sister, daughter) have 2.1 to 4.0 risk of developing it themselves. This risk is projected to increase if two or more first-degree relations have had the

condition (that is relative risk higher than 4.0) and is further enhanced if the diagnoses occurred at a younger age (Siegel, Miller, & Jemal, 2015).

Genetics/Hereditary: Several years of molecular studies have shown the significance of particular alleles in aetiopathogenesis of breast cancer, though comparatively lower than the risk conferred by family history (Figure 3), higher risk predisposition alleles confer a 40% to 85% lifetime risk of developing breast cancer including BRCA1 and BRCA2 (BREast CAncer genes 1 and 2) mutations, and mutations in TP53 gene. Fifty percent of breast cancer predisposition syndromes are said to be associated with mutations in BRCA1 and BRCA2. Furthermore, women with BRCA1 or BRCA2 deleterious mutations have a significantly higher risk of developing breast cancer (Shah, Rosso, & Nathanson, 2014).

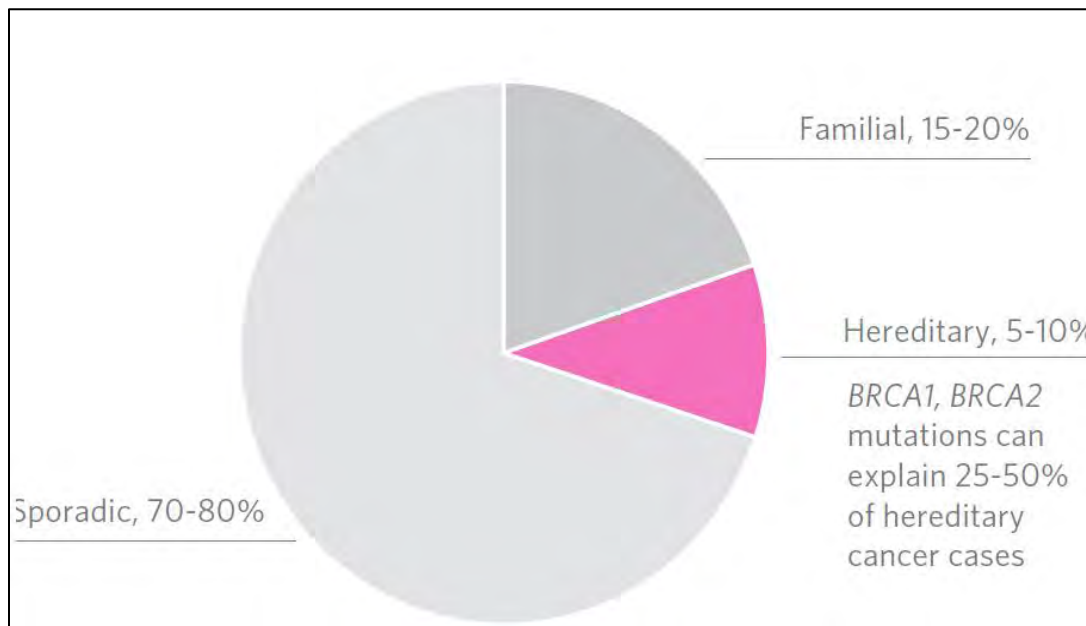


Figure 3: Aetiological distribution of Breast cancer (Source: Breastlink.com)

Geography: The annual observed incidence of breast cancer worldwide is said to be one million cases, with more than 50% occurring in the Western world. Two hundred thousand cases is seen in the United States and 320,000 cases in Europe (Dumitrescu & Cotarla, 2005). The differences in comparison to regions like the Lower middle income countries (LMICs) could also be in part be attributed to the differences in diet, combined with other sociocultural inclinations such as a delay in first childbirth, lower parity, and shorter breastfeeding

Age: There were less than ten new cases recorded per 100,000 women aged below 25 years, implying that the occurrence of breast cancer seem to be uncommon before 20 years (Pollán, 2010). The incidence is known to rise gradually with age. Risk increases from age 20 to almost a 100 times by the age of 45 years. Reports further suggest that one-fifth of women are affected after 45 year (Lunenfeld & Stratton, 2013). The relationship with age could be a result of the effect of the hormones (reproductive) produced by the ovaries and the adrenal glands which has been suggested to be involved in the pathogenesis of cancer affecting the breast (Dumitrescu & Cotarla, 2005).

Gender: Although breast cancer affects mostly females, men are not excluded. Studies have indicated that some 1% of all cases of breast cancer worldwide affect men. The occurrence has been associated more with the hormonal differences than the sex, as evidenced by the fact that the role of oestrogen has been found in the cases of men with breast cancer (Weiss, Moysich, & Swede, 2005).

Diet, alcohol and lifestyle modifications: Like most other cancers, alcohol consumption and smoking has been associated to breast cancer development. This association has been reported to be in a dose-dependent relationship over an extended period. Diets which are rich in fats and

cholesterol are also factors in the aetio-pathogenesis of the condition. This has been suggested to be due to the role of fatty acids in the synthesis of oestrogen which is implicated in the occurrence of the disease (Mauvais-Jarvis, Clegg, & Hevener, 2013). On the other hand, fiber-rich diet has been observed to inhibit the intestinal resorption of oestrogen lowering the risk of occurrence of the condition (Lattimer & Haub, 2010)

Other aetiopathological factors: Persistent exposure to ionizing radiation has been found to increase the risk of occurrence of breast cancer; including radiation used in medical treatment. A much stronger correlation in women whose exposures were at an age below 35 has been found (Shah et al., 2014). The onset of menopause from age 55 has also been linked with the incidence of breast cancer due to the increased accumulated estrogen in those women (Surakasula et al., 2014). Women who have had lesions in the breasts are also reported to stand a marginal higher risk of developing breast cancer (Abdulkareem, 2013).

2.3 Signs and symptoms

A myriad of signs and symptoms have been documented to be the manifestations of breast cancer. Several authors have described breast lump as the typical manifestation (83%), with or without other symptoms. Breast pain, nipple retraction, nipple discharge, back pain and weight loss were among 56 symptoms described by Koo et al., (2017).

2.4 Investigation and staging of breast cancer

Similar to other disease conditions, the diagnostic work-up for breast cancer begins with a detailed history and examination of the patient. The history given to the health professional may help elucidate risk factors such as other systemic manifestations, drug use and family history of cancer among others.

The management of breast cancer, as in most other cancers in contemporary medicine, requires accurate disease staging essential in making decisions both for treatment planning (locoregional or systemic therapy) and for establishing a prognosis. Clinical examinations involve inspection, palpation, percussion and auscultations of systems of the body looking for signs suggestive of the evidence of metastasis.

Although there are existing guidelines to classification and staging of the disease (Tables 1 and 2), there seem to be no clear outline as to the most appropriate initial investigations for staging and classification. As a result, the type of staging investigations vary significantly among institutions (Chand et al., 2013) Routine investigations done to augment clinical examinations may include full blood count, mammography of the breast, ultrasound imaging of the breast, biopsy of lesions or lumps found. The determination of the presence of metastasis at presentation and after the initial treatment is a critical indicator of the diagnosis and treatment plan.

There are no clear evidence supporting a universal baseline staging (Koo et al., 2017). Evidence-based guidelines are pertinent to aid treatment decisions and ensure quality in the care of patients diagnosed with breast cancer. A good appreciation of clinical practice in early breast disease staging, and how well this practice reflect available clinical guidelines is important (Chand et al., 2013). The (TNM staging) primary tumor [T], regional lymph nodes [N], distant metastases [M]

system is an essential component of diagnostics which is used as the tool for planning treatment. The system (Table 1), which is now universal and used in nearly every institution worldwide, began in 1959 as a product of the American Joint Committee for Cancer (AJCC), (Giuliano et al., 2017).

In a recent study, circadian rhythm has been reported to have been suppressed in cases of breast cancer compared to normal tissues, a finding that correlates with the stiffness of cells in areas of the tumor (Broadberry et al., 2018). The study concluded that since circadian clock plays a significant role in metabolism, cell division and DNA damage changes, altered circadian clocks should be involved in breast cancer development and progression.

Table 1: TNM Classification of Breast Cancer

<i>TNM class</i>	<i>Criteria</i>
<i>T0</i>	No evidence of primary tumor
<i>T1a</i>	Carcinoma in situ
<i>T1</i>	< or = 2 cm
<i>T1m1c</i>	microinvasion .1 cm or less
<i>T1a</i>	>.1 to .5 cm
<i>T1b</i>	>.5 to 1 cm
<i>T1c</i>	>1 to 2 cm
<i>T2</i>	>2 to 5 cm
<i>T3</i>	>5cm
<i>T4</i>	Any size tumor with direct extension to : a) Chest wall or b) skin
<i>T4a</i>	Chest wall, not including pectoralis muscle
<i>T4b</i>	Skin edema, ulceration, satellite skin nodule
<i>T4c</i>	4a and 4b
<i>T4d</i>	Inflammatory carcinoma
<i>Nx</i>	Regional lymph nodes cannot be removed
<i>N0</i>	No regional lymph node metastasis
<i>N1</i>	Metastasis to movable ipsilateral axillary lymph nodes
<i>N2</i>	Metastases in ipsilateral axillary lymph nodes fixed or matted (N2a) or met. Only in clinically apparent ipsilateral mammary nodes without clinically evident axillary lymph nodes. (N2b)
<i>N3</i>	Metastases in ipsilateral infraclavicular lymph nodes (N3a) or clinically apparent ipsilateral internal mammary lymph nodes (N3b) or ipsilateral supraclavicular lymph nodes (N3c)
<i>MX</i>	Distant metastasis cannot be assessed
<i>M0</i>	No distant metastasis
<i>M1</i>	Distant metastasis

Source: (Langhorne et al., 2007)

The TNM criteria (Table 1) are determined from clinical and imaging evaluation. The T, N, and M criteria (Table 2), which ranges from zero(0) to four (IV) have been identified for breast cancer staging. These describe the size of a tumour and on which options for treatment are based which also determine its outcomes.

Table 2: TNM Staging

<i>Breast cancer stages</i>	<i>Classification criteria based on TNM</i>
<i>Stage 0</i>	Tis, N0, M0
<i>Stage I</i>	T1, N0, M0
<i>Stage IIA</i>	T0, N1, M0 or T1, N1, M0 or T2, N0, M0
<i>Stage IIB</i>	T2, N1, M0 or T3, N0, M0
<i>Stage IIIA</i>	T0, N2, M0 or T1, N2, M0 or T2, N2, M0 or T3, N1, M0 or T3, N2, M0
<i>Stage IIIB</i>	T4, N0, M0 or T4, N1, M0 or T4, N2, M0
<i>Stage IIIC</i>	any T, N3, M0
<i>Stage IV</i>	any T, any N, M1

Source: (Langhorne et al., 2007)

2.5 Treatment of Breast cancer

Treatment decisions for Breast cancer typically depend on the TNM staging of the disease as well as the physical, social support and financial preparedness of the patient. Generally, however, the primary treatment may either be local or systemic in nature (or a combination of elements from both categories). Local treatment may involve surgery, radiotherapy or both. The specific modalities for surgery or radiotherapy likewise depend on the TNM classification of the disease and the particular histopathologic variant of the condition. Systemic treatment methods include chemotherapy, hormonal therapy or targeted therapy (Pawlaczyk, 2006). Autologous tumor cell vaccines (ATCV) are also present for the prevention of breast cancer though they may be under threat by breast cancer cells that have high levels of granulocyte-colony stimulating factors (G-CSF) (Ravindranathan et al., 2018). Recent studies correlating with others have explained how aerobic and resistant exercise have statistically significant improvement in the general quality of life, physical fitness and bone health of breast cancer survivors (Dieli-conwright et al., 2018).

2.6 Complications and prognosis

Mortality is the ultimate complication to the condition when left untreated. Other complications could be dire, potentially affecting all systems of the body. Cancer affecting the breast is the number one cause of death among women globally (Pawlaczyk, 2006). Aside the enormous social and institutional costs of managing the condition (Blumen, Fitch, & Polkus, 2016), there is also the hefty psychological burden on patients, their households and loved ones.

2.7 Breast cancer prevention and control programs

Like other health conditions of public health relevance, advocacy and health promotion plays a very vital role in creating public awareness of the disease and also especially among high risk groups. All mechanisms and tools should be fully harnessed to impact society positively. LMICs need to device collective approaches to addressing public health concerns in an effective way (WHO, 2013). Women should be educated and encouraged to have a positive breast awareness attitude.

Prevention of Breast cancer: Variable risk factors have been linked with breast cancer, Preventive measures include abstinence from smoking and alcohol consumption, healthy dietary habits, physical activity and lifestyle (Kapoor, 2013).

Early detection: Though preventive strategies can reduce a person's lifetime risk, they are on their own an inadequate approach for most women in LMICs. Therefore, early detection remains cornerstone for breast cancer control (Andersen et al., 2008).

- i. Early diagnosis in peculiar or at risk groups. This involves having adequate knowledge to identify signs and symptoms in order to seek early treatment to improve the outcome.
- ii. Screening. This is testing an asymptomatic population, aiming to identify individuals with abnormalities suggestive of cancer. Early detection methods need to be incorporated in national policies, financing and capacity building.

Early diagnosis: Early diagnosis is an important control program entity which is vital to the overall treatment outcome. There are three main ways of screening for breast cancer namely

mammography, Breast Self-Examination (BSE) and Clinical Breast Examination (CBE) (Zaney, 2018).

Mammography screening: Is established as the only one among the screening methods with proven efficacy. It has been suggested that a mammography screening can help lessen breast cancer mortality by almost 20%, especially among forty year olds and above and those considered as having an increased risk to developing the disease (Medical Advisory Secretariat, 2007). There is, however, uncertainty about the magnitude of harm regarding its use.

Breast self-examination (BSE) and Clinical Breast Examination (CBE): Though data proving the effectiveness of these methods are insufficient, the BSE approach has been suggested to empower women and increase awareness to positive self-breast care.

The CBE promises to be a standardized early identification and monitoring tool for women against breast cancer (WHO, 2013).

2.8 Knowledge on Breast Cancer, Risk Factors, and Early Detection practices

A study done in Nigeria, Lagos city among nurses indicated that knowledge about the disease, signs and symptoms and detection practices was generally very good. Nevertheless, only 30% of the participants had a CBE and 8% a mammogram within the past three years. Also 61% believed they stood no risk at all (Odusanya & Tayo, 2009).

Regarding level of the individual's knowledge about breast cancer (Alharbi, Alshammari, Almutairi, Makboul, & El-Shazly, 2012) reported majority of the study subjects (34.3%) were found to have good knowledge on cancer of the breast, and only 28.2% and 15.8% were found with moderate and poor knowledge respectively.

In their study of barriers to early detection practices of breast cancer among women in Caribbean, 13% of the respondents answered affirmatively when enquired if any of their family had ever had breast cancer. They mostly listed cousins, mothers, sisters, and mother's sisters. One of the study participant had breast cancer herself and another one had a daughter with the disease but none of the WWFH of breast cancer had ever attended a breast awareness program (Krantz et al., 2002)

A study done in Amman, Jordan to assess risk factors to breast cancer and screening awareness among female teachers and nurse indicated that family history was associated with general breast cancer awareness. One's profession, age, and family history largely influenced breast cancer cognizance. However, the rate of getting mammography was higher among women who were married or in relationships (77.2%) than those who were single or divorced, as reported in another study (Schootman, Walker, Jeffe, Rohrer, & Baker, 2008).

Perceptions influencing late reporting of breast cancer

The time lapse between discovery of symptoms and first reporting at a hospital or health facility remains critical for treatment outcomes. The most acceptable threshold is up to three months (Astvatsaturyan, Yue, Walts, & Bose, 2018). A delay of more than three months in seeking medical attention after onset of symptoms is associated with advanced disease staging and has lowered survival rates (Maghous et al., 2016).

A study from the United State of America by (Rauscher et al., 2010) on why women report late with breast cancer identified misconception as one of the independent factors associated with delay in seeking health care among symptomatic patients in urban areas. More than 44% of

women thought breast cancer equaled death and would therefore not undertake breast screening practices (Chamot & Perneger, 2001).

In Ghana, five main themes emerged from a study in Kumasi on why women reported with late presentation to the hospital. These were; a lack of knowledge about the disease, traditional and spiritual beliefs about treatment alternatives, poverty, caring for other sick relatives and fear of cancer treatment outcomes (Asoogo & Duma, 2015). The reasons given all hinged on a lack of knowledge and understanding of the seriousness of the condition.

Clegg-Lamprey and Hodasi (2007) revealed that about 50% or more women in Ghana sought medical treatment with late breast disease. At least 75% of women reported for the first time to a hospital with clinical stages III and IV of the disease in other developing countries (Clegg-lamprey & Hodasi, 2010). This worrying trend questions the effectiveness of breast cancer awareness programs and whether the targeted population is reached with such campaigns.

2.8 Conclusion

The adverse impact of breast cancer is enormous, affecting the state, institutions, households and individuals financially, psychologically and socially. It is therefore imperative that all mechanism including education for knowledge on the disease, early detection practices for early reporting and treatment be harnessed to address the burden of the disease.

3.2 Study site

The Korle Bu Teaching Hospital was established on October 9, 1923 and presently the third leading hospital in Africa and a premier centre of referral in Ghana. Its bed capacity is estimated to be 2000 with a staff strength of over 4,000, both medical and paramedical staff. On the average it records a daily attendance of 1,500 patients of which about 250 would be admitted for further management.

Korle Bu Teaching Hospital is located in Ablekuma south of the Accra metropolis, in the Greater Accra region. The hospital has 21 clinical and diagnostic departments/units which include the National Centre for Radiotherapy and Nuclear Medicine where the study took place. The National Centre for Radiotherapy and Nuclear Medicine (NCRNM) is one of three (3) centers of excellence within the hospital. It is also one of three cancer referral centres with Radiation Therapy in Africa, together with South Africa and Nigeria. It became operational in May of 1997, through the collaborative effort of the Government of Ghana, acting through the Ministry of Health and the International Atomic Energy Agency (IAEA) involving the Ghana Atomic Energy Commission (GAEC). The Centre manages referred patients with all forms of cancers within the country and the sub-region. This makes it the ideal study site.

3.3 Study population

The study population consisted of women who visit the NCRNM with immediate family members undergoing treatment for breast cancer.

Inclusion criteria:

1. Female relatives of women who visit the NCRNM for breast cancer treatment and consent to be a part of this study
2. Women who attend the NCRNM for routine breast screening and have had family relations (Mother, Sister or daughter) diagnosed with breast cancer.

Exclusion criteria:

1. Women who have been diagnosed with breast cancer and are on treatment

3.4 Sample Size Calculation

The sample size was determined at a confidence level of 95% using the single sample for infinite population formula: $Ss = (z^2 \times \sigma^2) / d^2$ (Kadam & Bhalerao, 2010), where $z = z$ value (e.g. 1.96 for 95% confidence level); $\sigma =$ Standard Deviation; $d =$ distance on either side of mean in confidence interval. In a study by (Kobeissi, Samari, Telesca, Esfandiari, & Galal, 2014) to determine the impact of knowledge on early detection practices of breast cancer among WWFH among a population of immigrants in North America, the lowest standard deviation in their parameters sought was 4.11. Using the standard deviation from Kobeissi et al.(2014) and assuming d of 0.4, the sample size was calculated as follows: $[1.96^2 \times 4.11^2] / 0.4^2 = 162.23$, which approximated to 162. Adding 15% of this figure to accommodate for possible fall-outs, a resulting 186 patients was obtained as sample size.

3.5 Sampling method

Records of the NCRNM which sees all referred cancers cases were obtained and sorted out for those diagnosed with breast cancer. The computerized records also indicate the treatment plans for the patients as well as their next scheduled appointment. A list of all patients scheduled to be at the NCRNM for treatment/review within the study period (February to July 2018) were then collated. Contacts were obtained from the records, and all patients called and reminded of their appointment and also encouraged to come along with a first-degree female relative, especially those who usually go to the hospital with them. At presentation, the relatives of patients were consented and the questionnaire administered during or after the review/treatment session of their sick relatives. Some patient relatives were given the option of having the questionnaire administered at a later review date and also to contact other close female relatives for the study. In such cases their contacts numbers were taken and followed up on the rescheduled date when their information was then taken.

3.6 Study Variables

The outcome variables for the study was obtained with an independent set of questions, which were knowledge on breast cancer, attitudes to early detection practices and perceptions of respondents towards early reporting to a health facility for treatment.

Knowledge of breast cancer: This assessed the knowledge of the WWFH of breast cancer on the disease, its early warning signs and treatment.

Attitudes to Breast cancer: This outcome variable assessed knowledge on the early detection practices of Breast self-examination, CBE and Mammography as well as how and when they should be performed.

Perceptions of respondents: This explored the way in which respondents perceived breast cancer leading to late reporting and seeking treatment at a health facility.

Other background information obtained were the age of respondents, highest educational level, religion, marital status and number of children.

3.7 Data Collection Techniques and Tools

A standardized questionnaire (appendix A) was used to collect data from the research participants. Women accompanying their close relatives to the NCRNM, but themselves not victims of breast cancer were contacted, adequately counseled and then interviewed for the study. The questionnaire is developed from the Breast cancer knowledge, perceptions and early detection practices (BCPKS) of the American Cancer Society. It is in five sections, covering the knowledge on breast cancer, attitudes towards early detection practices (BSE, CBE, Mammography) and perceptions of respondents to seeking treatment to breast cancers and factors that influence it. The study questionnaire is generally a 50-item question on a Likert scale type with a response format of “agree”, “disagree” or “I don’t know”.

While the first section obtains the background information of the respondents, section two and three ascertain the knowledge of the respondents on the disease condition and its symptoms respectively. Section four investigates the attitudes to early detection practices and section five covers perceptions of respondents to reporting and treatment.

3.8 Quality Control

Adequate mechanisms were put in place to safeguard and guarantee data accuracy and quality, thus minimizing bias. The measures included training of research assistants, pretesting of questionnaires, editing of completed questionnaires, and careful entry of data. The work and progress of the research assistants were also monitored and all completed questionnaire validated and entered on daily basis. Also, all datasets were cleaned before analysis. Completed questionnaires were kept under lock and will be discarded using standard procedure six months after publication of the findings of the study.

Training of field workers: Three (3) research assistants were recruited to help with the administration and collection of data, and to code and enter the information obtained into Microsoft Excel (version 2010). These individual are staff of the NCRNM who are fluent in English, Akan, and Ga and underwent a two day training; including targeted respondents, questionnaire to be used for data collection and how to obtain an informed consent or other information from the respondents, as well as confidential handling of information and data entry was thoroughly discussed.

Pre-testing of questionnaires: The questionnaire was pre-tested before being rolled-out. Pre-testing was conducted on WWFH who visited the NCRNM during the study period (February to July 2018). This stage also offered the interviewers a better understanding of the questionnaire and a foresight to possible issues during the main study.

Editing completed questionnaires: All errors observed from the pre-testing were corrected and reviewed before the commencement of the study.

Data entry and processing: The information collected were screened thoroughly, validated, serialized and coded within 24 hours after collection and entered into Microsoft Excel 2010. After entry, the data set was rechecked for errors with individual hard copies. The data was analyzed in Stata version 14.

3.9 Data Analysis

3.9.1 Background characteristics of respondents

Sociodemographic information of respondent's, age, religion, marital status, highest educational level and the number of children was obtained and tabulated by use of Microsoft Excel 2010.

3.9.2 Knowledge on breast cancer

This component was assessed with 18 questions covering general knowledge on the disease condition, its signs and symptoms and treatment. First of all, a descriptive report was made for some of the individual responses.

Secondly, a descriptive tertile was employed to quantitatively ascertain the knowledge level of WWFH of breast cancer: A three-dimension Likert scale was used, in which the WWFH of breast cancer were asked to categorize statements under each dimension as “agree,” “disagree” or “I don't know.” The composite score was obtained by adding the dimensions in each domain and multiplying by the number of questions. This score was then reclassified as low, moderate or high with the corresponding ranges using a descriptive statistic tertile as shown in table 3.

Cross-tabulations and Chi-square tests were done to ascertain associations with the level of knowledge among different educational levels and age groups.

Table 3: Scoring of the level of knowledge on breast cancer among WWFH

<i>No.</i>	<i>Dimension</i>	<i>Upper range limit</i>
1.	Low	1/3 (18-29)
2.	Moderate	2/3 (30-41)
3.	High	3/3 (41-54)

Source: Field survey

3.9.3 Attitude to early detection practices

The attitude of WWFH of breast cancer was investigated with a 12-item component of the study tool. Corresponding proportions were counted, tabulated and reported with respective confidence intervals. Cross-tabulations were done with age and educational level categories.

3.9.4 Perceptions of respondents towards early reporting and treatment

The perceptions of respondents to breast cancer were explored using questions on common assertions. These responses were similarly counted, tabulated and reported with respective confidence intervals. Cross-tabulations were done with age categories and educational level.

3.10 Study limitations

1. The small sample size may not have been representative enough of the actual sample frame of women with a family history of breast cancer who visited the NCRNM .

3.11 Ethical considerations

The study was done at the NCRNM of the Korle-Bu Teaching Hospital. Ethical approval was thus sought from the IRB-KBTH (KBTH-STC/IRB/00088/2017). Approval was also given by the administration of the NCRNM. Participants involved in the study were women who had a

family history of breast cancer and visiting the NCRNM with their relatives. Though the respondents may not have had any immediate or direct benefits from the study, their responses would aid in the formulation of recommendations to appropriate authorities. There was no envisaged risk, the inconvenience with the study was the time taken to go through, as well as the fact that some of the respondents considered some of the questions quite sensitive. The respondents were educated on the study and assured of confidentiality and the freedom to decline participation at any stage. Respondents had to sign an informed consent (Appendix A) prior to undertaking the questions. All participants were allowed to ask questions concerning the study. Regarding privacy and anonymity, the information collected has been kept under strict confidentiality and will be discarded six months after publication of the findings. Also, names were not used in any part of the findings or write up. There are no declarations to make and this study was self-sponsored in partial fulfillment for the award of a degree of Master of Public Health, from the University of Ghana.

CHAPTER FOUR

RESULTS

4.1 Background Characteristics

A total of 202 women with a family history of breast cancer participated in this study. Their ages ranged from 18 to 75, with a mean age of 44 years. The largest group of respondents was those between the ages of 40 and 49 years. There were only three respondents who were 70 years and older, as were the two respondents who were less than 20 years (18 and 19 years).

As shown in Table 4, only one respondent has not had any form of formal education, while the majority of the respondents (72.3%) have had at least senior high school/senior secondary school education with 37.1% having a tertiary level of education. Also, most of the respondents had children, with 21.8% of them having three children each, and 28.7% having four children or more.

There was minimal variation in the religious background of respondents, as all were either Christian or Muslim. Ninety-two percent of the study population identified themselves with Christianity, while 7.9% indicated that they were Muslims (Table 4).

Table 4: Background characteristics of respondents

Background Characteristics	Number	Percent
Age		
<i>less than 20</i>	2	1.0
<i>20-29</i>	31	15.3
<i>30-39</i>	46	22.8
<i>40-49</i>	49	24.3
<i>50-59</i>	38	18.8
<i>60-69</i>	33	16.3
<i>70 +</i>	3	1.5
Education		
<i>No education</i>	1	0.5
<i>Primary</i>	34	16.8
<i>Middle/JSS/JHS</i>	21	10.4
<i>SSS/SHS/Vocational/Technical</i>	71	35.2
<i>Tertiary</i>	75	37.1
Marital Status		
<i>Single</i>	67	33.2
<i>Married</i>	98	48.5
<i>Divorced</i>	18	8.9
<i>Widower</i>	19	9.4
Parity		
<i>No child</i>	41	20.3
<i>1 child</i>	22	10.9
<i>2 children</i>	37	18.3
<i>3 children</i>	44	21.8
<i>4 children</i>	33	16.3
<i>More than 4 children</i>	25	12.4
Religion		
<i>Christian</i>	186	92.1
<i>Muslim</i>	16	7.9
<i>Others</i>	0	0.0

Source: field survey, 2018

4.2 Knowledge of respondents on Breast Cancer

The total average population of respondents showed knowledge on breast cancer was ‘medium’ (44%). However, most (54%) of the respondents demonstrated ‘high’ level of knowledge while only 3 (2%) respondents scored ‘low’ on level of knowledge (Figure 5).

The knowledge level of the participants on breast cancer did not vary significantly with their age ($p=0.793$), marital status ($p=0.057$), religion ($p=0.112$), parity ($p=0.507$) or educational level ($p=0.216$).

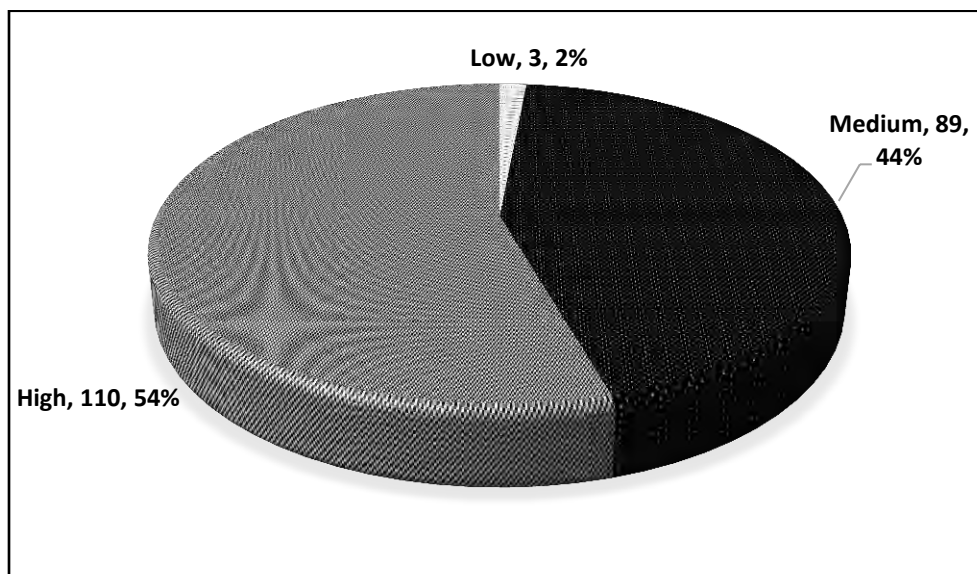


Figure 5: Distribution of level of knowledge of Breast Cancer

Source: field study, 2018

Table 5: Association between respondents' characteristic and knowledge level on breast cancer

Characteristics	Level of knowledge of breast cancer			X ²	p
	Low n(%)	Moderate n(%)	High n(%)		
Age				7.896	0.793
<20	0	2 (100)	0		
20 - 29	1 (3.2)	11 (35.5)	19 (61.3)		
30 - 39	1 (2.2)	18 (39.1)	27 (58.7)		
40 – 49	0	22 (44.9)	27 (55.1)		
50 - 59	0	17 (44.7)	21 (55.3)		
60 – 69	1 (3.0)	17 (51.5)	15 (45.5)		
>70	0	2 (66.7)	1 (33.3)		
Education				10.753	0.216
No education	0	0	1 (100)		
Primary	0	19 (55.9)	15 (44.1)		
JHS	0	12 (57.1)	9 (42.9)		
SHS	3 (4.2)	29 (40.9)	39 (54.9)		
Tertiary	0	29 (38.7)	39 (54.9)		
Religion				4.381	0.112
Christian	3 (1.6)	78 (41.9)	105 (56.5)		
Muslim	0	11 (68.8)	5 (31.3)		
Marital status				12.213	0.057
Single	2(2.99)	22 (32.8)	43 (64.2)		
Married	1 (1.0)	43 (43.9)	54 (55.1)		
Divorced	0	10 (55.6)	8 (44.4)		
Widower	0	14 (73.7)	5 (26.3)		
Parity				5.290	0.507
No child	1 (2.4)	17 (41.5)	23 (56.1)		
1 child	1 (4.6)	12 (54.6)	9 (40.9)		
2 children	1 (2.7)	17 (46.0)	19 (51.4)		
>3 children	0	43 (42.2)	59 (56.8)		

Source: Field survey, 2018

4.3 Knowledge of respondents on signs and symptoms of breast cancer

Majority of the respondents demonstrated ‘high’ knowledge (75%) with regards to signs and symptoms of breast cancer, with only two respondents exhibiting ‘low’ on knowledge (Figure 6). The knowledge level of the participants on the risks, signs and symptoms of breast cancer did not vary significantly with their age ($p=0.726$), marital status ($p= 0.121$), parity ($p=0.301$) or religion ($p= 0.712$). There was, however, a significant difference ($p<0.001$) of knowledge on the symptoms of breast cancer among the women at the different educational levels ((Table 6). The distribution of participants’ knowledge on breast cancer and its symptoms among respondents.

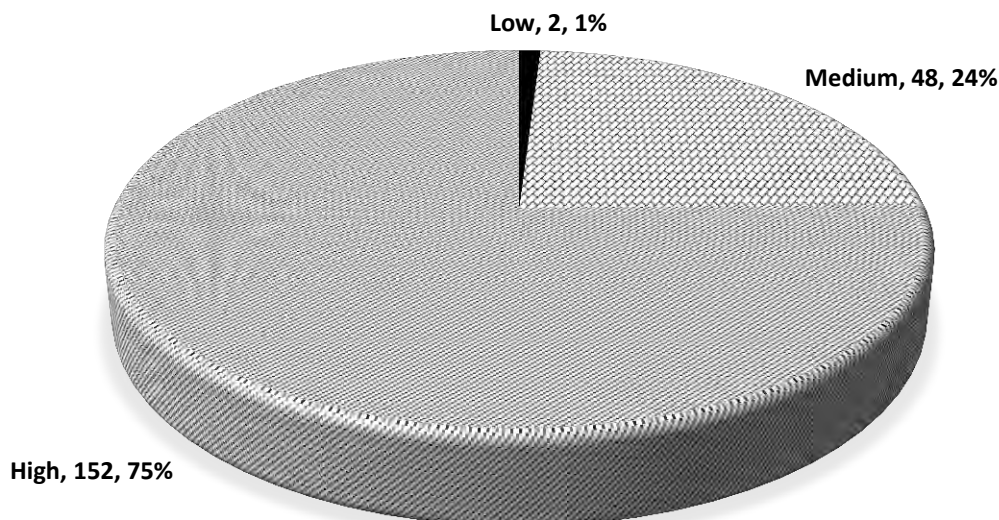


Figure 6: Distribution of level of knowledge on breast cancer

Source: Field survey, 2018

Table 6: Association between respondents' characteristic and level of knowledge on signs and symptoms breast cancer

Characteristics	Knowledge of signs and symptoms			X ²	p
	Low n(%)	Moderate n(%)	High n(%)		
Age				11.2 86	0.505
<20	0	1 (50)	1 (50)		
20 - 29	0	3 (9.68)	28 (90.3)		
30 - 39	0	11 (23.9)	35 (76.1)		
40 – 49	0	10 (20.4)	39 (17. 6)		
50 - 59	1 (2.63)	13 (34.2)	24 (63.2)		
60 – 69	1 (3.03)	9 (27.3)	23 (69.7)		
>70	0	1 (33.3)	2 (66.7)		
Education				278.155	<0.01
No education	1 (100)	0	0		
Primary	1 (2.94)	33 (97.1)	0		
JHS	0	15 (71.4)	6 (28.6)		
SHS	0	0	71 (100)		
Tertiary	0	0	75 (100)		
Religion				4.964	0.084
Christian	1 (0.5)	44 (23.7)	141 (75.8)		
Muslim	1 (6.3)	4 (25)	11 (68.8)		
Marital status				5.755	0.451
Single	0	14 (20.9)	53 (79.1)		
Married	1 (1.0)	23 (23.5)	74 (75.5)		
Divorced	0	6 (33.3)	12 (66.7)		
Widower	1 (5.3)	5 (26.3)	13 (68.4)		
Parity				8.332	0.215
No child	0	5 (12.2)	36 (87.8)		
1 child	0	4 (18.2)	18 (81.8)		
2 children	0	8 (21.6)	29 (78.4)		
>3 children	2 (1.96)	31 (30.4)	69 (67.7)		

4.3 Attitude of respondents regarding early detection practices of breast cancer

Fifty six percent (112/202) of the respondents had very good attitude towards early detection practices of breast cancer while 24% (49/202) had a good score on attitude and 20% (41/202) scored poorly for attitude towards early detection practices, Figure 7.

Although there were large proportions of women with positive attitudes to early detection practices, considerable numbers (44%), did not. Almost nine percent of them (8.9%) indicated that because they did not have any problem with their breasts, there was no reason for them to regularly examine them (Table 7). Thirteen percent also said they were afraid to find a problem with their breasts during its examination, so they would rather not find out; while the remaining respondents either said they were too young to have breast cancer, so breast-self-examination was not necessary now or it was difficult (Table 7).

The score categories of the participants on attitude to early detection practices of breast cancer did not vary significantly among their age ($p=0.417$), education ($p=0.124$) and parity ($p=0.456$). However there was a significant difference in the score categories with regards to marital status ($p=0.009$) and religion ($p<0.01$), Table 8.

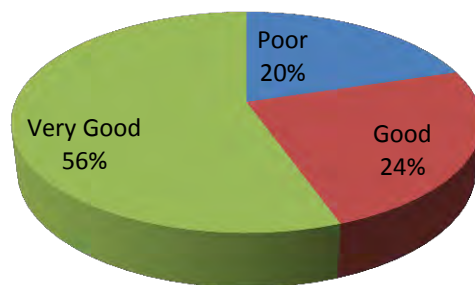


Figure 7: Score of respondents on attitude to early detection practices

Source: field survey, 2018

Table 7: Attitude of respondents towards early detection practices

Respondents' attitude regarding breast cancer	Number	Percent (%)
I do not have any problem in my breast, so there is no reason for me to examine my breast		
<i>Agree</i>	18	8.9
<i>Do not know</i>	39	19.3
<i>Do not agree</i>	145	71.8
Breast self – examination is difficult		
<i>Agree</i>	21	10.4
<i>Do not know</i>	29	14.4
<i>Do not agree</i>	152	75.2
Breast self-breast examination is uncomfortable		
<i>Agree</i>	20	9.9
<i>Do not know</i>	32	15.8
<i>Do not agree</i>	150	74.3
Breast self-examination is time consuming		
<i>Agree</i>	23	11.4
<i>Do not know</i>	33	16.3
<i>Do not agree</i>	146	72.3
If I examine my breast, I cannot detect abnormalities in my breast		
<i>Agree</i>	35	17.3
<i>Do not know</i>	23	11.4
<i>Do not agree</i>	144	71.3
If I knew the benefits of breast self-examination, I would do it regularly		
<i>Agree</i>	157	77.7
<i>Do not know</i>	23	11.4
<i>Do not agree</i>	21	10.4
I am afraid I would find a problem with my breast, so I better not find out		
<i>Agree</i>	26	13.0
<i>Do not know</i>	23	11.4
<i>Do not agree</i>	154	76.2
I am too young to have breast cancer, so breast-self-examination is not necessary now		
<i>Agree</i>	33	16.3
<i>Do not know</i>	37	18.3
<i>Do not agree</i>	132	65.3
I would prefer a nurse/doctor to examine my breast		
<i>Agree</i>	149	73.8
<i>Do not know</i>	32	15.8
<i>Do not agree</i>	21	10.4

Source: Field Survey

Table 8: Association between respondents' characteristics and score on attitude

Characteristics	attitude			X ²	p
	Poor n(%)	Good n(%)	Very Good n(%)		
Age				12.361	0.417
<20	1 (50)	0	1 (50)		
20 - 29	11 (35.5)	6 (19.4)	14 (45.2)		
30 - 39	6 (13.0)	13 (28.3)	27 (58.7)		
40 – 49	13 (26.5)	12 (24.5)	24 (49.0)		
50 - 59	7 (18.4)	9 (23.7)	22 (57.9)		
60 – 69	3 (18.4)	8 (24.2)	22 (66.7)		
>70	0	1 (33.3)	2 (66.7)		
Education				12.661	0.124
No education	8 (22.9)	8 (22.9)	19 (54.3)		
Primary	6 (28.6)	7 (33.3)	8 (38.1)		
JHS	9 (12.70)	12 (16.9)	50 (70.4)		
SHS	2 (15.4)	5 (38.5)	6 (46.2)		
Tertiary	16 (25.8)	17 (27.4)	29 (46.8)		
Religion				19.406	<0.01*
Christian	31 (16.7)	48 (25.8)	107 (57.5)		
Muslim	10 (62.5)	1 (6.3)	5 (31.3)		
Marital status				17.192	0.009*
Single	23 (34.3)	17 (25.4)	27 (40.3)		
Married	12 (12.24)	23 (23.5)	63 (64.3)		
Divorced	5 (27.8)	4 (22.2)	9 (50.0)		
Widower	1 (5.26)	5 (26.3)	13 (68.4)		
Parity				5.711	0.456
No child	13 (31.7)	7 (17.1)	21 (51.2)		
1 child	4 (18.2)	5 (22/7)	13 (59.1)		
2 children	8 (21.6)	8 (21.6)	21 (56.8)		
>3 children	16 (15.7)	29 (28.4)	57 (55.9)		

Source: Field Survey

4.4 Perception of respondents regarding early reporting and treatment

Figure 8 shows the score of respondents on perception of breast cancer; 16% (33/202) had a very good score, 47% (95/202) had a good score, and 37% (74/202) had a poor score.

Views and perceptions varied among respondents, albeit not significantly among educational level, religion or parity for all questions of perception asked. Most respondents however thought that getting treated for breast cancer is often worse than the actual disease (48%), while 11.9% thought breast cancer could be attributed to a punishment from a Supreme Being, therefore the need for spiritual treatment (Table 9).

The score categories of the respondents' on perception towards early reporting to a hospital or health facility for breast cancer treatment did not vary significantly with their age ($p=0.399$), education ($p=0.389$), marital status ($p=0.06$) and parity ($p=0.640$). However there was a significant difference in the score categories with regards to religion ($p=0.013$)

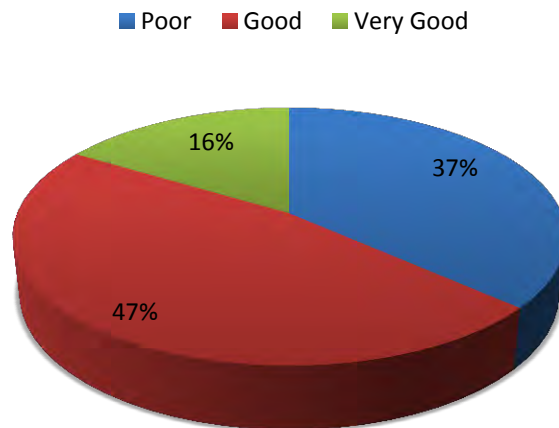


Figure 8: Score of respondents on perceptions towards reporting for treatment

Source: Field survey, 2018

Table 9: Respondents' Perceptions about breast cancer

Perceptions about breast cancer	Number	Percent (%)	CI
Breast cancer is more common in women with big breast			
<i>Agree</i>	10	5.0	0.03-0.09
<i>Don't know</i>	40	19.8	0.15-0.26
<i>Disagree</i>	152	75.2	0.69-0.81
Getting treated for breast cancer is often worse than the actual disease			
<i>Agree</i>	97	48.0	0.41-0.55
<i>Don't know</i>	53	26.2	0.21-0.33
<i>Disagree</i>	52	25.7	0.20-0.32
Surgery can expose breast cancer to the air and cause it to spread to other parts of the body			
<i>Agree</i>	36	17.8	0.13-0.24
<i>Don't know</i>	52	25.7	0.20-0.32
<i>Disagree</i>	114	56.4	0.49-0.63
Having a mammogram can cause breast cancer to spread.			
<i>Agree</i>	40	19.8	0.15-0.26
<i>Don't know</i>	53	26.2	0.21-0.33
<i>Disagree</i>	109	54.0	0.47-0.61
Getting breast cancer is God's punishment			
<i>Agree</i>	24	11.9	0.08-0.17
<i>Don't know</i>	33	16.3	0.12-0.22
<i>Disagree</i>	145	71.8	0.65-0.78
A woman's chances of surviving breast cancer is very low even if it is found early			
<i>Agree</i>	108	53.5	0.47-0.60
<i>Don't know</i>	27	13.4	0.09-0.19
<i>Disagree</i>	67	33.2	0.27-0.40
Shaking hands, touching, or kissing someone with breast cancer makes people uncomfortable			
<i>Agree</i>	15	7.4	0.05-0.12
<i>Don't know</i>	27	13.4	0.09-0.19
<i>Disagree</i>	160	79.2	0.72-0.84
Breast cancer can be prevented by breastfeeding			
<i>Agree</i>	33	16.3	0.12-0.22
<i>Don't know</i>	38	18.8	0.14-0.25
<i>Disagree</i>	131	64.9	0.58-0.71
Changes found in the breast during breast self-examination are usually cancer			
<i>Agree</i>	44	21.8	0.17-0.28
<i>Don't know</i>	35	17.3	0.13-0.23
<i>Disagree</i>	123	60.9	0.54-0.67

Source: Field Survey

Table 10: Association between respondents' characteristics and the level of perception

Characteristics	Level of perception			X ²	p
	Low n(%)	Moderate n(%)	High n(%)		
Age				12.593	0.399
<20	1 (50)	1 (50)	0		
20 - 29	14 (45.2)	14 (45.2)	3 (9.7)		
30 - 39	15 (32.6)	23 (50.0)	8 (17.4)		
40 – 49	22 (44.9)	21 (42.9)	6 (12.2)		
50 - 59	14 (36.8)	14 (36.8)	10 (26.3)		
60 – 69	8 (24.2)	19 (57.6)	6 (18.2)		
>70	0	3	0		
Education				8.472	0.389
No education	13 (37.1)	14 (40.0)	8 (22.9)		
Primary	9 (42.9)	11 (52.4)	1 (4.8)		
JHS	20 (28.2)	37 (52.1)	14 (19.7)		
SHS	4 (30.7)	6 (46.2)	3 (23.1)		
Tertiary	28 (45.2)	27 (43.6)	7 (11.3)		
Religion				8.651	0.013
Christian	63 (33.9)	90 (48.4)	33 (17.7)		
Muslim	11 (68.8)	5 (31.3)	0		
Marital status				12.055	0.061
Single	33 (49.3)	29 (43.3)	5 (7.5)		
Married	30 (30.6)	45 (45.9)	23 (23.5)		
Divorced	6 (33.3)	10 (55.6)	2 (11.1)		
Widower	5 (36.6)	11 (57.9)	33 (16.3)		
Parity				4.271	0.640
No child	19 (46.3)	18 (43.9)	4 (9.8)		
1 child	9 (40.9)	8 (36.4)	5 (22.7)		
2 children	13 (35.1)	18 (48.7)	6 (16.2)		
>3 children	33 (32.4)	51 (50.0)	18 (17.7)		

CHAPTER FIVE

5.0. DISCUSSION

This study set out to determine the level of knowledge of women having a family history of breast cancer and to determine their attitudes to early detection practices and perceptions towards early reporting to a hospital or health facility. The study found a moderate to high knowledge level on breast cancer among the respondents, whilst attitudes and perceptions towards early detection practices and early reporting differed greatly.

The age distribution of the respondents ranged from 18 to 72 years showing sufficient variation in knowledge, attitudes and practices among the WWFH of breast cancer, suggesting a good representation for the study. The level of education among these women was also found to play a significant role in their level of knowledge on breast cancer and its early warning signs, thus those with tertiary education had a relatively higher level of knowledge as compared with those who had secondary, primary or no education.

The religious beliefs of these women were also significantly found to be associated with their attitudes to early detection practices and perceptions to early reporting to a health facility for treatment ($X^2 = 19.406$; $P < 0.01$) and perception ($X^2 = 8.651$; $P = 0.013$) towards BC. About 11% of the respondents attributed BC to punishment from a supreme being, therefore expressed the need to seek for spiritual treatment.

The family history of breast cancer has strongly been linked in literature to the occurrence of the disease, with BRCA I and BRCA 2 (BReast CAncer genes 1 and 2) gene mutations being implicated (Bethea et al., 2016)

While this has been said to be associated to certain genetic predispositions, the role of other multifactorial effects cannot be ruled out for this risk group (Civelek, Lusic, Genetics, & Angeles, 2014). It is therefore imperative that these individuals are prioritized in the policy process and promotion programs considering the fact that almost 70% of women diagnosed with breast cancer in Ghana are in the advanced stages of the condition (Ghartey, Anyanful, Eliason, Adamu, & Debrah, 2016), and corroborated by Clegg-Lamprey & Hodasi (2007). An idea of the level of knowledge for this group of individuals is therefore, necessary to serve as a baseline for future assessment and impact programs. Our use of a descriptive method in ascertaining knowledge level, attitudes and perceptions are widespread in this area of study of breast cancer, as it has been employed by many researchers (Olayide, Halimat, Samuel, Ganiyu, & Soliu, 2017). Though this current study did not have a comparative group, it found that WWFH of breast cancer had a 'moderate' level of general knowledge in breast cancer and a 'high' knowledge level in risks, warning signs of breast cancer. In corroboration to this current study, Olayide et al., in their systematic review including 19,598 women, reported that there were 'high' levels of awareness on breast cancer and BSE. They, however, in comparison reported a lower level of knowledge of symptoms/signs. Similar inquiries done locally in Ghana among women in Makola shopping mall in Accra favourably suggested that Breast cancer awareness was 'very high' with a large number (87.6%) knowing about the common signs and symptoms of presentation of the condition (Kudzawu, Agbokey, & Ahorlu, 2016).

Bird et al. reported that no significant differences in knowledge level amongst women with or without family history whilst indicating that age, marital status and breast cancer knowledge significantly influenced breast screening behaviors among women.

Alharbi et al. also reported that the factors that may have an impact on acquiring satisfactory level of knowledge were, women older than 40 years, marital status and user of birth control pills.

The findings of this current study do not favourably compare to some of the findings as the age group, marital status, religion, and parity did not affect the level of knowledge among the study participants. However, it was found that the educational level could influence the level of knowledge on the risks, sign and symptoms and early warning signs. The role of formal education in level of awareness was also highlighted by Opoku et al., (2012), who reported that respondents with higher level of education were significant for breast cancer screening practices in Ghana. Webster and Austoker (2006), in their aim to assess women's knowledge and perception of breast screening, exploring whether background or other personal characteristics are associated with accurate knowledge, established an association between inaccurate knowledge and lower formal educational level which was also observed in this study.

Attitudes and perceptions of individuals are influenced by many interacting factors which may include socio-cultural factors, education, religion and social upbringing. This current study reported considerable proportions and worrying variations of attitudes and perceptions, though many were by far positive (Tables 6 & 7). Some respondents thought that because they did not have any problem with their breasts, there was no reason for breast examination (8.9%), that they were afraid to find a problem with their breasts, so they better not find out (13%), that they were too young to have breast cancer, so breast-self-examination is not necessary now (16.3%), and that breast self-examination is difficult (10.6%). Also, 11.9% thought breast cancer could be attributed to punishment from a Supreme Being. For prevention and control programs to be effective, proponents have to bear in mind the prevailing attitudes and perceptions and belief

patterns of the target population. Such perceptions of breast cancer are not peculiar to this region as Webster and Austoker also found among a thousand respondents in Europe that 45% of them wrongly believed that breast screening was done to prevent breast cancer whilst another 58% thought it was likely a woman would develop the disease during their lifetime.

CHAPTER SIX

6.0. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Findings from this study showed women with a family history of breast cancer had a moderate-to-high level of knowledge on breast cancer, its early warning signs and symptoms which was mainly influenced by the level of formal education they have had.

Attitudes and perception towards early detection practices and early reporting to a hospital or health facility constituted a major challenge amongst these women, as almost 48% of respondents did not practice early detection strategies as they thought it to be difficult (10.6%) or just not important (16.3%) and the others believed there was no problem with their breast so they better not find out.

6.2. Recommendations

In a worldwide effort to controlling breast cancer, the WHO promotes breast cancer control within the context of comprehensive national cancer control programme (WHO, 2013). This conscientious effort might very well be designed in our local effort to target specific risk groups. This current study has demonstrated that although this group possesses a moderate to high knowledge level of breast cancer entity, as well as on the signs and symptoms of the disease, there might be the need to incorporate and plan for the perceptions and attitudinal change of this group when targeting them for control programs. This study also indicated the significance of formal education in the knowledge level pattern of the group.

It is recommended from this study that the Ministry of Health designs national, community and institutional breast cancer control and preventive programs and implement in all health facilities in relation to the WHO's policy on breast cancer early detection practices and to include WWFH of breast cancer, as a critical at risk group.

In this pursuit special considerations should be given to individual attitudes and perceptions towards early detection practices and reporting, as it seem a major challenge to treatment and cure.

The Ghana Education Service should be strengthened to advance efforts in including breast care education in their curriculum, especially at the Junior and Senior high levels, so as to improve awareness to preventing the emerging epidemic.

Faith based institutions, such as churches and mosques should be harnessed as platforms for breast care education and to encourage women to report to hospitals early when unwell and heed to medical advice, whilst still seeking help spiritually.

Further studies are recommended for WWFH of breast cancer whose relatives visit other health facilities for cancer treatment beside the NCRNM in Ghana to fully elucidate described associations in Ghana.

REFERENCES

- Abdulkareem, I. H. (2013). Aetio-pathogenesis of breast cancer. *Nigerian Medical Journal : Journal of the Nigeria Medical Association*, 54(6), 371–5. <https://doi.org/10.4103/0300-1652.126284>
- Ahmad, A. S., Ormiston-Smith, N., & Sasieni, P. D. (2015). Trends in the lifetime risk of developing cancer in Great Britain: Comparison of risk for those born from 1930 to 1960. *British Journal of Cancer*, 112(5), 943–947. <https://doi.org/10.1038/bjc.2014.606>
- Alharbi, N. A., Alshammari, M. S., Almutairi, B. M., Makboul, G., & El-Shazly, M. K. (2012). Knowledge, awareness, and practices concerning breast cancer among Kuwaiti female school teachers. *Alexandria Journal of Medicine*, 48(1), 75–82. <https://doi.org/10.1016/J.AJME.2011.10.003>
- Anders, C. K., Johnson, R., Litton, J., & Phillips, M. (2010). NIH Public Access. *Semin Oncol.*, 36(3), 237–249. <https://doi.org/10.1053/j.seminoncol.2009.03.001.Breast>
- Andersen, B. L., Yang, H.-C., Farrar, W. B., Golden-Kreutz, D. M., Emery, C. F., Thornton, L. M., ... III. (2008). Psychologic intervention improves survival for breast cancer patients: a randomized clinical trial. *Cancer*, 113(12), 3450–8. <https://doi.org/10.1002/cncr.23969>
- Asoogo, C., & Duma, S. E. (2015). Factors contributing to late breast cancer presentation for health care amongst women in Kumasi, Ghana. *Curationis*, 38(1), 1–7. <https://doi.org/10.4102/curationis.v38i1.1287>
- Astvatsaturyan, K., Yue, Y., Walts, A. E., & Bose, S. (2018). Androgen receptor positive triple negative breast cancer: Clinicopathologic, prognostic, and predictive features. *PLoS ONE*, 13(6), 1–16. <https://doi.org/10.1371/journal.pone.0197827>
- Balogun, O. D., & Formenti, S. C. (2015). Locally Advanced Breast Cancer – Strategies for Developing Nations. *Frontiers in Oncology*, 5(April), 1–5. <https://doi.org/10.3389/fonc.2015.00089>
- Banegas, M. P., Bird, Y., Moraros, J., King, S., Prapsiri, S., & Thompson, B. (2012). Breast Cancer Knowledge, Attitudes, and Early Detection Practices in United States-Mexico Border Latinas. *Journal of Women's Health*, 21(1), 101–107. <https://doi.org/10.1089/jwh.2010.2638>
- Bethea, T. N., Rosenberg, L., Castro-Webb, N., Lunetta, K. L., Sucheston-Campbell, L. E., Ruiz-Narváez, E. A., ... Palmer, J. R. (2016). Family history of cancer in relation to breast cancer subtypes in African American women. *Cancer Epidemiology Biomarkers and Prevention*, 25(2), 366–373. <https://doi.org/10.1158/1055-9965.EPI-15-1068>
- Bird, Y., Banegas, M. P., Moraros, J., King, S., Prapasiri, S., & Thompson, B. (2011). The impact of family history of breast cancer on knowledge, attitudes, and early detection practices of Mexican women along the Mexico-US border. *Journal of Immigrant and Minority Health*, 13(5), 867–75. <https://doi.org/10.1007/s10903-010-9418-5>

- Blumen, H., Fitch, K., & Polkus, V. (2016). Comparison of Treatment Costs for Breast Cancer, by Tumor Stage and Type of Service. *American Health & Drug Benefits*, 9(1), 23–32.
- Borgen, E., Rypdal, M. C., Sosa, M. S., Renolen, A., Schlichting, E., Lønning, P. E., ... Naume, B. (2018). NR2F1 stratifies dormant disseminated tumor cells in breast cancer patients. *Breast Cancer Research*, 20(120), 1–13.
- Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global Cancer Statistics 2018 : GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer Journal for Clinicians*, 0, 1–31. <https://doi.org/10.3322/caac.21492>
- Breast Cancer Research Studies | Susan G. Komen®. (n.d.).
- Broadberry, E., Mcconnell, J., Williams, J., Yang, N., Zindy, E., Leek, A., ... Streuli, C. H. (2018). Disrupted circadian clocks and altered tissue mechanics in primary human breast tumours. *Breast Cancer Research*, 20(125), 1–13.
- Chamot, E., & Perneger, T. V. (2001). Misconceptions about efficacy of mammography screening: A public health dilemma. *Journal of Epidemiology and Community Health*, 55(11), 799–803. <https://doi.org/10.1136/jech.55.11.799>
- Chand, N., Cutress, R. I., Oeppen, R. S., & Agrawal, A. (2013). Staging Investigations in Breast Cancer: Collective Opinion of UK Breast Surgeons. *International Journal of Breast Cancer*, 2013, 506172. <https://doi.org/10.1155/2013/506172>
- Civelek, M., Lusic, A. J., Genetics, M., & Angeles, L. (2014). HHS Public Access, 15(1), 34–48. <https://doi.org/10.1038/nrg3575>.Systems
- Clegg-Lamprey, J., Dakubo, J., & Attobra, Y. N. (2009). Why do breast cancer patients report late or abscond during treatment in Ghana? A pilot study. *Ghana Medical Journal*, 43(3), 127–131. <https://doi.org/10.4314/gmj.v43i3.55338>
- Clegg-lamprey, J. N. ., & Hodasi, W. . (2010). A study of breast cancer in Korle Bu Teaching Hospital: assessing the impact of health education. *Ghana Medical Journal*, 41(2). <https://doi.org/10.4314/gmj.v41i2.55305>
- Cohut, M., & Collier, J. (2018). Breast cancer : Discovery of new factor may improve therapy. Retrieved September 30, 2018, from <https://www.medicalnewstoday.com/articles/323050.php>
- Dieli-conwright, C. M., Courneya, K. S., Demark-wahnefried, W., Sami, N., Lee, K., Sweeney, F. C., ... Mortimer, J. E. (2018). Aerobic and resistance exercise improves physical fitness , bone health , and quality of life in overweight and obese breast cancer survivors : a randomized controlled trial. *Breast Cancer Research*, 20(124), 1–10.
- Dinarello, C. A., Denver, C., Medical, A., & Palucka, K. (2018). New way to target advanced breast cancers. *Cancer Research*, (September), 1–2. <https://doi.org/10.1158/0008-5472>
- Dumitrescu, R. G., & Cotarla, I. (2005). Understanding breast cancer risk - where do we stand in

2005? *Journal of Cellular and Molecular Medicine*, 9(1), 208–21.

- Edmund, D. M., Naaeder, S. B., Tettey, Y., & Gyasi, R. K. (2013). Breast Cancer in Ghanaian Women What Has Changed? *American Journal of Clinical Pathology*, 140, 97–102. <https://doi.org/10.1309/AJCPW7TZLS3BFFIU>
- Ferlay, J., Shin, H.-R., Bray, F., Forman, D., Mathers, C., & Parkin, D. M. (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *International Journal of Cancer*, 127(12), 2893–2917. <https://doi.org/10.1002/ijc.25516>
- Giuliano, A. E., Connolly, J. L., Edge, S. B., Mittendorf, E. A., Rugo, H. S., Solin, L. J., Hortobagyi, G. N. (2017). Breast Cancer-Major changes in the American Joint Committee on Cancer eighth edition cancer staging manual. *CA: A Cancer Journal for Clinicians*, 67(4), 290–303. <https://doi.org/10.3322/caac.21393>
- Kadam, P., & Bhalerao, S. (2010). Sample size calculation. *International Journal of Ayurveda Research*, 1(1), 55–7. <https://doi.org/10.4103/0974-7788.59946>
- Kapoor, S. (2013). Advantages of exercise in breast cancer patients and survivors in addition to its mitigating effect on chest wall pain. *Current Oncology (Toronto, Ont.)*, 20(1), e54-5. <https://doi.org/10.3747/co.20.1194>
- Kobeissi, L., Samari, G., Telesca, D., Esfandiari, M., & Galal, O. (2014). The impact of breast cancer knowledge and attitudes on screening and early detection among an immigrant Iranian population in southern California. *Journal of Religion and Health*, 53(6), 1759–69. <https://doi.org/10.1007/s10943-013-9778-y>
- Koo, M. M., von Wagner, C., Abel, G. A., McPhail, S., Rubin, G. P., & Lyratzopoulos, G. (2017). Typical and atypical presenting symptoms of breast cancer and their associations with diagnostic intervals: Evidence from a national audit of cancer diagnosis. *Cancer Epidemiology*, 48, 140–146. <https://doi.org/10.1016/J.CANEP.2017.04.010>
- Krantz, B. A., Srivastava, A. K., Nauli, S., Baker, D., Sauer, R. T., & Sosnick, T. R. (2002). [No Title]. *Nature Structural Biology*, 9(6), 458–463.
- Kudzawu, E., Agbokey, F., & Ahorlu, C. S. K. (2016). A Cross Sectional Study of the Knowledge and Practice of Self-Breast Examination among Market Women at the Makola Shopping Mall, Accra, Ghana. *Advances in Breast Cancer Research*, 5(3), 111–120. <https://doi.org/10.4236/abcr.2016.53013>
- Lacey, J. V, Kreimer, A. R., Buys, S. S., Marcus, P. M., Chang, S.-C., Leitzmann, M. F., Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial Project Team. (2009). Breast cancer epidemiology according to recognized breast cancer risk factors in the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial Cohort. *BMC Cancer*, 9(1), 84. <https://doi.org/10.1186/1471-2407-9-84>
- Langhorne, M. E., Fulton, J. S., & Otto, S. E. (2007). *Oncology Nursing*. (C. Fortenbaugh, E. Haozous, S. Steele, & J. Van Cleave, Eds.) (5th ed.). USA: Mosby Elsevier Inc.

- Lattimer, J. M., & Haub, M. D. (2010). Effects of Dietary Fiber and Its Components on Metabolic Health, 1266–1289. <https://doi.org/10.3390/nu2121266>
- Liu, X., Cao, M., Palomares, M., Wu, X., Li, A., Yan, W., ... Wang, S. E. (2018). Metastatic breast cancer cells overexpress and secrete miR-218 to regulate type I collagen deposition by osteoblasts. *Breast Cancer Research*, 20(127), 1–12.
- Lunenfeld, B., & Stratton, P. (2013). Best Pract Clin Obstet Gynaecol. *The Clinical Consequences of an Ageing World and Preventive Strategies*, 27(5), 643–659. <https://doi.org/10.1016/j.bpobgyn.2013.02.005>.The
- Maghous, A., Rais, F., Ahid, S., Benhmidou, N., Bellahamou, K., Loughlimi, H., Benjaafar, N. (2016). Factors influencing diagnosis delay of advanced breast cancer in Moroccan women. *BMC Cancer*, 16(1), 1–8. <https://doi.org/10.1186/s12885-016-2394-y>
- Mauvais-Jarvis, F., Clegg, D. J., & Hevener, A. L. (2013). The role of estrogens in control of energy balance and glucose homeostasis. *Endocrine Reviews*, 34(3), 309–338. <https://doi.org/10.1210/er.2012-1055>
- Mcknight, B. N., & Viola-villegas, N. T. (2018). Monitoring Src status after dasatinib treatment in HER2 + breast cancer with 89Zr-trastuzumab PET imaging. *Breast Cancer Research*, 20(130), 1–12.
- Medical Advisory Secretariat. (2007). *Screening mammography for women aged 40 to 49 years at average risk for breast cancer: an evidence-based analysis. Ontario health technology assessment series (Vol. 7)*.
- Mehrgou, A., & Akouchekian, M. (2016). The importance of BRCA1 and BRCA2 genes mutations in breast cancer development. *Medical Journal of the Islamic Republic of Iran*, 30(1), 1–12.
- Naku, F., Jnr, G., Anyanful, A., Eliason, S., Adamu, S. M., & Debrah, S. (2016). Pattern of Breast Cancer Distribution in Ghana : A Survey to Enhance Early Detection , Diagnosis , and Treatment. *International Journal of Breast Cancer*, 2016(July), 1–9. <https://doi.org/10.1155/2016/3645308>
- Odusanya, O. O., & Tayo, O. O. (2009). Breast Cancer Knowledge , Attitudes and Practice among Nurses in Lagos, Nigeria. *Cancer Nursing*. <https://doi.org/10.1080/02841860152703472>
- Okobia, M. N., Bunker, C. H., Okonofua, F. E., & Osime, U. (2006). Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study. *World Journal of Surgical Oncology*, 4, 11. <https://doi.org/10.1186/1477-7819-4-11>
- Olayide, A. S., Halimat, A. J., Samuel, O. A., Ganiyu, R. A., & Soliu, O. A. (2017). Level of Awareness and Knowledge of Breast Cancer in Nigeria. A Systematic Review. *Ethiopian Journal of Health Sciences*, 27(2), 163–174.
- Olsen, M. (2015). *Cancer in Sub-Saharan Africa; The Need for New Paradigms in Global*

Health. The Frederick S. Pardee Center for the Study of the Longer-Range Future.

- Opoku, S. Y., Benwell, M., & Yarney, J. (2012). Knowledge, attitudes, beliefs, behaviour and breast cancer screening practices in Ghana, West Africa. *The Pan African Medical Journal*, *11*, 28. <https://doi.org/10.1038/nmat3328>
- Pawlaczyk, A. (2006). An analysis of long term complications in breast cancer patients after conservative therapy. *Reports of Practical Oncology & Radiotherapy*, *11*(2), 81–89. [https://doi.org/10.1016/S1507-1367\(06\)71052-5](https://doi.org/10.1016/S1507-1367(06)71052-5)
- Pollán, M. (2010). Epidemiology of breast cancer in young women. *Breast Cancer Research and Treatment*, *123*(SUPPL. 1), 3–6. <https://doi.org/10.1007/s10549-010-1098-2>
- Quayson, S. E., Wiredu, E. K., Adjei, D. N., & Anim, J. T. (2014). Breast cancer in Accra, Ghana. *Journal of Medical and Biomedical Sciences*, *3*(3), 21–26. <https://doi.org/10.4314/jmbs.v3i3.4>
- Rauscher, G. H., Ferrans, C. E., Kaiser, K., Campbell, R. T., Calhoun, E. E., & Warnecke, R. B. (2010). Misconceptions about breast lumps and delayed medical presentation in urban breast cancer patients. *Cancer Epidemiology Biomarkers and Prevention*, *19*(3), 640–647. <https://doi.org/10.1158/1055-9965.EPI-09-0997>
- Ravindranathan, S., Nguyen, K. G., Kurtz, S. L., Frazier, H. N., Smith, S. G., Koppolu, B., ... Zaharoff, D. A. (2018). Tumor-derived granulocyte colony-stimulating factor diminishes efficacy of breast tumor cell vaccines. *Breast Cancer Research*, *20*(126), 1–17.
- Schootman, M., Walker, M. S., Jeffe, D. B., Rohrer, J. E., & Baker, E. A. (2008). NIH Public Access, *33*(5), 379–386.
- Shah, R., Rosso, K., & Nathanson, S. D. (2014). Pathogenesis, prevention, diagnosis and treatment of breast cancer. *World Journal of Clinical Oncology*, *5*(3), 283–98. <https://doi.org/10.5306/wjco.v5.i3.283>
- Siegel, R. L., Miller, K. D., & Jemal, A. (2015). Cancer statistics, 2015. *CA: A Cancer Journal for Clinicians*, *65*(1), 5–29. <https://doi.org/10.3322/caac.21254>
- Surakasula, A., Nagarjunapu, G. C., & Raghavaiah, K. V. (2014). A comparative study of pre- and post-menopausal breast cancer: Risk factors, presentation, characteristics and management. *Journal of Research in Pharmacy Practice*, *3*(1), 12–8. <https://doi.org/10.4103/2279-042X.132704>
- Swerdlow, A. J., Wright, L. B., Schoemaker, M. J., & Jones, M. E. (2018). Maternal breast cancer risk in relation to birthweight and gestation of her offspring. *Breast Cancer Research*, *20*(110), 1–9.
- Washbrook, E. (2006). Risk factors and epidemiology of breast cancer. *Women's Health Medicine*, *3*(1), 8–14. <https://doi.org/10.1383/wohm.2006.3.1.8>
- Webster, P., & Austoker, J. (2006). Women's knowledge about breast cancer risk and their views of the purpose and implications of breast screening—a questionnaire survey. *Journal of*

Public Health, 28(3), 197–202. <https://doi.org/10.1093/pubmed/fdl030>

Weiss, J. R., Moysich, K. B., & Swede, H. (2005). Epidemiology of male breast cancer. *Cancer Epidemiology, Biomarkers & Prevention : A Publication of the American Association for Cancer Research, Cosponsored by the American Society of Preventive Oncology*, 14(1), 20–6.

WHO. (2013). Global action plan for the prevention and control of noncommunicable diseases 2013-2020. *World Health Organization*, 102. [https://doi.org/978 92 4 1506236](https://doi.org/978_92_4_1506236)

WHO. (2017). WHO: Breast cancer - Prevention.

WHO. (2018). WHO : Cancer - National Cancer Control Programmes (NCCP).

Zaney, G. D. (2018, October 7). Breast Cancer - Early Detection Saves Lives. *Government of Ghana*, p. 1. Retrieved from <http://www.ghana.gov.gh/index.php/media-center/features/1684-breast-cancer-early-detection- saves-lives>

APPENDICES

Appendix I: Participants' Consent Form

KNOWLEDGE ON EARLY DETECTION PRACTICES OF BREAST CANCER AMONG WOMEN WITH A FAMILY HISTORY, AT THE KORLE-BU TEACHING HOSPITAL

My name is Antoinette .M. Asante, a post graduate student from the School of Public Health, University of Ghana. I am carrying out a study in this department to investigate the knowledge on early detection practices of breast cancer among women with family history, who visit the Radiotherapy Centre of the Korle-Bu Teaching Hospital with their family relations. You are being requested to participate in the study because you have been randomly selected as a woman whose family relation is diagnosed with breast cancer and is being treated at the Radiotherapy Centre of the KBTH.

If you agree to participate in this study, I will ask you a few questions about yourself, what you know about breast cancer and how it can be detected early. This will take about 30 minutes of your time and your participation in the study ends after this interview.

Participating in this study is entirely voluntary. You have the right to refuse to participate and this will not affect your rights in anyway. You are also at liberty to withdraw from this study at any stage during the interview. I would however encourage you to participate fully and answer all questions asked.

There are no direct benefits or risks in participating, however, the information that would be obtained will help us organize effective education campaign against breast disease. All the information collected from you will be treated in strict confidence and will be used for the intended purpose only. You will not be identified by name in any dissemination reports or publications resulting from this study.

The Institutional review board of the KBTH has reviewed and given approval for this study to be conducted. The Radiotherapy Centre has also granted the permission for this study to be carried out. Do you have any questions for me?

If you have any further questions regarding this study you may please contact Antoinette M. Asante, epidemiology department on (Tel: 0246884838 or E-Mail: antosante@yahoo.com)

Before taking Consent

Do you have any questions you wish to ask about the study? Yes |____| No |____|

If yes, kindly indicate the question (s): _____

In case you have any questions later please, do not hesitate to contact Antoinette M. Asante, Department of Epidemiology and Disease Control, School of Public Health, University of Ghana. (Tel: 0246884838) Email: antosante@yahoo.com.

Also, if you need further clarifications about this study, kindly contact Mr. Victor Nortey, Research Office Secretary, Korle-Bu Teaching Hospital. (0277743365): If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline *0302666766* or email addresses: *rdo@kbth.gov.gh*

PARTICIPANT'S CONSENT

I have read or I have let somebody read or translated all the necessary information that I need to know concerning this study and have fully understood it. I have decided on my own accord without any coercion to take part in this study. However by deciding to participate in this study, I am not waiving any of my personal rights by signing or thumb printing this consent form.

Signature:
.....

OR



L/R Thumb Print

Interviewers Statement

I, the undersigned, have explained this consent to the participant in English language/Ga/Twi, and that she/he understands the purpose of the study, procedures to be followed, as well as the risks and benefits of the study.

The participant has fully agreed to participate in the study.

Signature of Interviewer.....

Date.....

Address.....

Appendix II: Study Questionnaire

QUESTIONNAIRE ON: KNOWLEDGE ON EARLY DETECTION PRACTICES OF BREAST CANCER AMONG WOMEN WITH A FAMILY HISTORY, AT THE KORLE-BU TEACHING HOSPITAL

FORM NUMBER _____

CODE _____

SECTION 1: DEMOGRAPHIC CHARACTERISTICS

1. Age	<input type="text"/>
2. Highest educational level	<input type="checkbox"/> None <input type="checkbox"/> Primary <input type="checkbox"/> JHS <input type="checkbox"/> SSS <input type="checkbox"/> Vocational/ Technical <input type="checkbox"/> Tertiary
3. Religion	<input type="checkbox"/> Christian <input type="checkbox"/> Muslim <input type="checkbox"/> Traditional believer <input type="checkbox"/> Others
4. Marital status	<input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widow/widower
5. Number of children	<input type="text"/>

SECTION 2: KNOWLEDGE OF ON BREAST CANCER

Please respond appropriately to the following questions by ticking only one box	Agree	Disagree	I don't know
6. One's risk of developing breast cancer increases with age			
7. One's risk of breast cancer increases when a family relation (mother, sister and daughter) has breast cancer.			
8. Early onset of menarche or late menopause increases a woman's risk of developing Breast cancer			
9. A woman who has her first full term pregnancy after 30 years is at risk of developing breast cancer.			
10. Breast feeding for more than a year reduces a woman risk of developing breast cancer			
11. Having many children as a woman, reduces the risk of developing breast cancer			
12. Consumption or eating a lot of fatty foods increases risk of developing breast cancer.			
13. Drinking a lot of alcohol by a woman increases risk of developing breast cancer.			
14. Hormone replacement therapy as contraceptive increases a woman's risk of developing breast cancer.			
15. Exercise, fruits, healthy diet and lifestyle decreases one's risk of developing breast cancer			

SECTION 3: KNOWLEDGE ON SIGNS AND SYMPTOMS OF BREAST CANCER

Please respond appropriately to the following questions by ticking only one box	Agree	Disagree	I don't know
16. Breast cancer may begin as a painless lump in the breast or armpit			
17. Having multiple breast lumps is a warning sign of breast cancer			
18. Skin changes and dimpling of the breast is a sign of breast cancer			
19. Changes in the nipple of the breast / retraction or discharges may be a sign of breast cancer			
20. A family history of breast cancer increases the chance of developing breast cancer			
21. Breast examination every month by a woman is a way of detecting breast cancer.			
22. A clinical breast examination or having a nurse or doctor examine your breast is a method of early detection of breast cancer.			
23. A mammography or breast ultrasound scan is a method of early detection of breast cancer.			

24. Which of the following is the correct sequence of steps in breast self-examination (four options). <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> I don't know			
1	Stand before a mirror and watch for any changes	Raise both hands and watch for any changes.	Lay down on a pillow with right hand behind head and feel right breast for lumps with left finger pads and vice versa.
2	Examine the right breast with the left finger pad	Raise both hands and watch for any changes.	Lay down on a pillow with right hand behind head and feel right breast for lumps with left finger pads and vice versa.
3	Lay down on a pillow with right hand behind head, then feel right breast for lumps with the left finger pads and vice versa	With left hand up, examine the left breast with the right finger pads and vice versa.	Raise both hands and watch for any changes.
4	Raise both hands and watch for any changes.	Lay down on a pillow with right hand behind head, then feel right breast for lumps with the left finger pads and vice versa	Examine the right breast with the left finger pad

SECTION 4: ATTITUDES TO BREAST CANCER

Please respond appropriately to the following questions by ticking only one box	Agree	Disagree	I don't know
25. Breast cancer is curable			
26. I do not have any problem in my breast, so there is no reason for me to examine my breast			
27. Breast self – examination is difficult			
28. Breast self-breast examination is uncomfortable			
29. Breast self-examination is time consuming			
30. If I examine my breast, I cannot detect abnormalities in my breast			
31. If I knew the benefits of breast self-examination, I would do it regularly			
32. I am afraid I would find a problem with my breast, so I better not find out			
33. I am too young to have breast cancer, so breast-self-examination is not necessary now			
34. I would prefer a nurse/doctor to examine my breast			
35. How did you respond when you found your relation had been diagnosed with breast cancer?	<input type="checkbox"/> Feel sorry for her <input type="checkbox"/> Encouraged her to seek medical care <input type="checkbox"/> Advised her to seek traditional medicine <input type="checkbox"/> Advised her to go to prayer camp <input type="checkbox"/> Others. Specify		
36. How would you primarily respond if you develop breast cancer?	<input type="checkbox"/> See a doctor <input type="checkbox"/> go to a prayer camp <input type="checkbox"/> use traditional medicine <input type="checkbox"/> agree to lumpectomy <input type="checkbox"/> agree to mastectomy		

SECTION 5: PERCEPTION ABOUT BREAST CANCER

Please respond appropriately to the following questions by ticking only one box	Agree	Disagree	I don't know
37. Breast cancer is more common in women with big breast			
38. Breast cancer is uncommon in women with small breast			
39. A blow to the breast can cause breast cancer			
40. Breast cancer can be caused by anger and stress			
41. Getting treated for breast cancer is often worse than the actual disease			
42. Surgery can expose breast cancer to the air and cause it to spread to other parts of the body			
43. Having a mammogram can cause breast cancer to spread.			
44. Getting breast cancer is God's punishment			
45. A woman's chances of surviving breast cancer is very low even if it is found early			
46. Shaking hands, touching, or kissing someone with breast cancer makes people uncomfortable			
47. Breast Cancer can be caused by prolonged (more than 5 years) use of certain contraceptives			
48. Breast cancer can be prevented by breastfeeding			
49. Changes found in the breast during breast self-examination are usually cancer			
50. Getting breast cancer is a death sentence for people			

THANK YOU VERY MUCH

Appendix III: Ethical Approval

In case of reply the number
And the date of this
Letter should be quoted

My Ref. No. KBTH/MA/1931/8
Your Ref. No.



KORLE BU TEACHING HOSPITAL
P. O. BOX KB 77,
KORLE BU, ACCRA.

Tel: +233 302 667759/673034-6
Fax: +233 302 667759
Email: Info@kbth.gov.gh
pr@kbth.gov.gh
Website: www.kbth.gov.gh

22nd February, 2018

ANTOINETTE M. ASANTE
SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF GHANA, LEGON

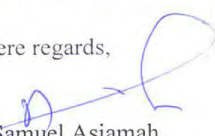
**INSTITUTIONAL APPROVAL: KORLE BU TEACHING HOSPITAL-SCIENTIFIC AND
TECHNICAL COMMITTEE/INSTITUTIONAL REVIEW BOARD (KBTH-
STC/IRB/00088/2017**

Following approval of your study entitled "Knowledge on early detection practices of breast cancer among women with a family history at Korle Bu Teaching Hospital" by the Korle Bu Teaching Hospital-Scientific and Technical Committee/Institutional Review Board. I am pleased to inform you that institutional approval has been granted for the conduct of your study in Korle Bu Teaching Hospital.

Please contact the Head of Radiotherapy Department to discuss the commencement date of the study.

Please note that, this institutional approval is rendered invalid if the terms of the Institutional Reviewed Board/Scientific and Technical Committee approval are violated.

Sincere regards,


Dr. Samuel Asiamah
Director of Medical Affairs
For: Chief Executive

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And the date of this
Letter should be quoted

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Your Ref. No.



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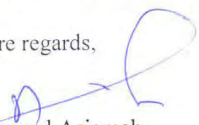
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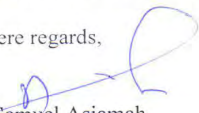
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