

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**



**BREAST SELF-EXAMINATION FOR BREAST CANCER AMONG
FEMALE STUDENTS OF UNIVERSITY OF GHANA**

By

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DECLARATION

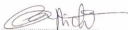
I, Grace Selassie Fiador, do hereby declare that apart from other people's knowledge that I have acknowledged and duly referenced, this study is the product of my own dedicated hard work under guidance. I take full responsibility for this work.



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Date

DEDICATION

O Lord, Thou art exalted as head above all. All things come of Thee and of Thine own have we given Thee.

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My God, thanks and praise to your glorious name for in Your hands is power and might and to make great and giving strength to come this far.

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ABSTRACT

Background: Breast malignancies are the leading cause of death due to cancer among women around the world. Picking the lesions enables women to have better treatment choices and a better prognosis. Examining one's own breast on a monthly basis increases the possibility of detecting such lesions early. This study is designed to assess Knowledge, Attitude, and Practice of Breast self-examination (BSE) among female students of the University of Ghana as well as barriers to practice.

Methodology: A cross-sectional quantitative study which employed Multistage sampling technique was conducted. A total of 340 women studying at the University and residing on campus were randomly selected to be the respondents. The collected data from structured questionnaires were entered into Microsoft Excel and migrated to STATA version 15.0 for statistical analysis. Means, frequencies, tables, and charts were used to present findings. Simple and multiple logistic regression models were done reporting crude and adjusted odds ratio with significance level fixed at $p \leq 0.05$.

Results: Prevalence of BSE practice was 61% ($p = 61\%$; 95% CI = 53.7% – 68.6%) with only 18.9% reported practice of BSE every month. The mean age of the respondents was 20.6±2.9years. Almost all respondents had heard about breast cancer (97.9%), and the percentage of respondents with adequate knowledge of the malignancy was 64 based on the scores on risk factors and signs and symptoms. Nearly ninety out of every hundred females at the University of Ghana had heard of BSE but only 30.9% of them knew BSE should be performed monthly. Twenty percent knew the correct procedure for practicing BSE. They predominantly got their information on BSE from the Media and health professionals. Majority of them (81.4%), strongly agreed that BSE needs to be performed by all females and 76% were strongly

in agreement that BSE was important to determine breast cancer. Most of the respondents (72.9%), strongly agreed that early detection prevents breast cancer. Majority of the females (96.9%) indicated reporting to a health facility as the action they would take if they detected a lump in the breast and also 89.3% of the respondents would seek help in less than a month if they detected any abnormalities with their breasts. In multiple response questions on perceived barriers to BSE practice, 43.3% indicated that they had no reason, 42.5% due to lack of knowledge, 37% attributed non-practice of BSE to forgetfulness, whilst 11% stated they would find a mass. Age (AOR = 1.2; 95% CI = 1.002 – 1.4) and knowing procedure for performing BSE (AOR = 2.0; 95% CI = 1.06 – 3.9) were significant predictors of BSE practice.

Conclusion: There adequate knowledge of BC but not how to carry out BSE. About one-third of them had ever carried out BSE. The likelihood of performing BSE is explained by knowledge of BSE procedure and age. Health education on BSE practice is lacking and the knowledge deficit can contribute negatively to early detection of breast cancer and compound late detection. Interventions should go beyond just campaigns on awareness creation but to ensure young females know the procedures involved BSE.

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LIST OF ABBREVIATIONS

BSE: Breast Self-Examination

CBE: Clinical Breast Examination

HBM: Health Belief Model

WHO: World Health Organization

IARC: International Agency for Research on Cancer

GHS: Ghana Health Service

CEGENSA: Centre for Gender Studies and Advocacy

MOH: Ministry of Health

SRG-WOCOM: Student Representative Council- Women's Commission

GBD: Global Burden of Disease

DALYs: Disability-Adjusted Life Years

ASDRs: Age-Standardized Death Rates

IOH: Institute of Medicine

GLOBOCAN: Global Cancer Incidence, Mortality, and Prevalence

KSTH: Korle-Bu Teaching Hospital

GHS-ERC: Ghana Health Service-Ethical Review Committee

LMICs: Low -Middle Income Countries

CI: Confidence Interval

AOR: Adjusted-Odds Ratio

COR: Crude-Odds Ratio

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Globally, cancers (malignancies) are the principal cause of fatal outcomes which accounts for an estimate of 8.2 million of the world's populace death in 2012 and a prevalence of 32.6 million people (above age 15) living who were diagnosed with cancer for five years now (Ferlay et al., 2013). According to estimates of cancer incidence and mortality produced by the International Agency for Research on Cancer (IARC) for 2012 reports that most of the cancers (56.8%) and related- deaths (44.9%) occurred in developing and underdeveloped countries of the world (WHO, 2013). Cancer of the breast accounts for the commonest and most frequent cancer diagnosed among females across the world resulting in over one million women being detected with this cancer and over four hundred and ten dying annually (Coughlin & Ekwuzeme, 2009). In 2012, 1.7 million women had developed cancer of their breasts and 4.3 million females had had breast cancer in the previous half-decade worldwide (WHO, 2013).

The incidence of cancer of the breast is on the increase with approximately 92,000 new cases diagnosed annually in Africa (WHO, 2008). In sub-Saharan Africa, breast cancer is responsible for one in four diagnosed cancers and one in five cancer deaths in women (Parkin et al., 2008). Despite its emerging public health importance, incidence rates are still generally low in Africa, presumably below 35 per 100,000 women in most countries (as compared to over 90-120 per 100,000 women in most European or North American countries). Precise incidence figures in Africa, however, are lacking given the absence of cancer registration in most countries. Recent GLOBOCAN data estimate that in 2012, 94,000 women developed breast cancer and 48,000

died from it in sub-Saharan Africa (Ferlay, 2013). This finding is in consonance with studies in Uganda (Wabinga et al., 2014), Nigeria (Akanro-Arthur et al., 2010) and Ghana (Parkin et al., 2008).

In Ghana, breast cancer is the highest among all other cancers and the second cause of deaths due to cancer among women (WHO, 2008). Reported in the worldwide cancer mortality statistics, 2014, it is estimated that there are 25 new cases per 100,000 population of cases of breast cancer in Ghana compared to 93 per 100,000 in the USA but the death rate is 12 per 100,000 in Ghana as opposed to 15 cases per 100,000 in the USA (Clegg-Lamprey et al., 2014). The high morbidity is partly explained by the late presentation of advanced stage cancer which has poor treatment outcomes and a high fatality rate (Bray et al., 2013). Seventy-five percent (75%) of females in developing countries are diagnosed at the terminal stages of the disease (Coughlin & Elwueme, 2009). A study in Ghana by Clegg-Lamprey & Hodasi, (2007) reported that there has been no improvement in breast cancer presentation at the Korle-Bu Teaching Hospital over the past 5-10 years, in spite of breast awareness programmes. Patients still present with advanced disease many months after symptoms appear.

The survival rate for breast cancer ranges from 40% in the least developed countries to 80% in developed countries (Gupta et al., 2009). Although breast cancer incidence remains high in many high-income countries, the death rates are relatively lower than in developing economies (Sankaranarayanan et al., 2010). This can be attributed to the fact that the lesions are picked very early and there is access to therapeutic means.

Picking the cancer cells early through screening is very pivotal in halting the progression and mortality and thus successful treatment. The screening methods include Clinical Breast

Examination (CBE), Breast Self-Examination (BSE), and mammography. These are recommended to detect the breast lesions early (Ervin & Bahar, 2013; Yilmaz et al., 2013). The known best screening method is mammography, but the cost of routine mammographic screening is high and often unavailable in most healthcare facilities in the under developed developing countries (Coughlin & Ekwueme, 2009). Breast self-examination involves palpation of one's own breast using the appropriate procedure. The rationale for females to know their normal breast structure, appearance, and feel, helps detection of any anomalies as soon as possible (Smith et al., 2009).

Breast self-examination, when done once every month, within the 7th to 10th day of her menstrual cycle, greatly improves the early detection of malignant lesions of the breast with low risk of metastasis and ensures good treatment outcomes (Kapote and Akande, 2005). Breast self-examination is able to discover 40% of lesion(s) in female's breast (Gupta et al., 2009). The American Cancer Society recommends self-examination of the breast as the first choice in detecting early breast cancer (Karayurt et al., 2008). It is, therefore, necessary for females to be aware of the need for BSE as a screening tool for breast cancer.

1.2 Statement of the Problem

Breast cancers/malignancies are the number one cancer in women and also the lead mortality due to malignancies among women worldwide (Jemal et al., 2011). Although its morbidity is high in developed countries, the associated death rates are higher in developing countries. (Cancer Research UK, 2014). A study conducted in Ghana reveals that most of the cancers are presented at the health facility at the advanced stage (Quayson, Wiredu, Adjei, & Anim, 2014) where prognosis is usually poor contributing to the increased mortality in breast cancer. It attacks women in their most productive years of life. Not only does it affect the individual lives, but

their relations, communities and the nation at large making it a public health concern. Early diagnosis is an important strategy particularly in LMICs where resources are very limited, and the disease is diagnosed in its late stages. Early detection is a key determinant of good prognosis and limits the development of complications and disability of several kinds of malignancies including breast cancers increasing life quality and survival. Several studies suggest that nearly all breast cancers are discovered by women who palpate a mass hence a regular BSE to identify a lump is very important hence early detection have been related to frequency of BSE (<http://www.nationalbreastcancer.org/breast-self-exam>). The Cancer Society in America (2014) proposed that females from their 20's and beyond should be breast aware and at least perform BSE regularly to identify any changes timely and lots of female students in the University are within this age category. The practice of BSE is important for the detection of early cancer. Many studies indicated the practices of BSE are low among University students, in Nigeria (Gwarzo et al., 2009), Yemen (Ahmed, 2010), United Arab Emirate (Al-Sharbatli et al., 2011) Malaysia (Akhতার et al., 2015). The only study in Ghana as at the time of this study was among nursing students of the Presbyterian University College who reported that majority of respondents performed BSE but not correctly (Sarfo et al., 2013). University students are perceived to be well educated and expected to be knowledgeable on diverse issues not excluding preventive behaviour. Female students in the University of Ghana are made up of national and international with diverse backgrounds and this population can be useful in promoting healthy behaviour change which will lead to early detection with good prognosis and in turn help reduce mortality related to breast cancer. Studies on BSE practice in Ghana is needed to help inform programs on breast awareness to minimize late diagnosis and the increasing incidence of mortality related to breast cancer.

1.3 Justification for this survey

The study seeks to investigate what knowledge the University females have on breast cancer, their attitude, and whether they actually self-examine their own breasts and also find out factors that are associated with BSE among them.

Findings from this study will be an add-on to the existing knowledge body on the practice of BSE and will also provide specific evidence on how female students of the University, who are agents needed for change and possible agents of change as well as women empowerment in their communities, know and practice breast self-examination.

The study findings may also generate opportunities for study to identify *proof* on broader observations regarding breast cancer among Ghanaian females. This area could provide insight on patterns of breast self-examination practice. These findings and recommendations may be helpful to Ministry of Health (MoH) and the Ghana Health Service (GHS) as well as women interest groups such as CEGENSA, SRC-WOCOM of the University to revise, emphasise on, strengthen and come to a decision on the most practical educational programs on health and awareness campaigns on the application of BSE which may eventually create the necessary levels of awareness and practice of BSE among University females to help reduce problem of late detection of breast-related conditions and diseases.

1.4 Objectives

1.4.1 General Objective

The main objective of the study is to investigate the level of knowledge, attitude, and practice of female students of the University of Ghana on breast cancer and self-examination of their breasts and to also identify barriers to Breast self-examination.

1.4.2 Specific Objectives

1. To measure the level of knowledge on breast cancer and self-examination of the breast.
2. To evaluate their attitude towards the practice of the self-examination of the breast.
3. To assess their practice of examining their own breast.
4. To find out the perceived barriers associated in performing an examination of their own breast.

1.5 Research Questions

1. What amount of knowledge do female students of University of Ghana have on breast cancer and the breast self-examination?
2. What is their attitude towards examining their own breast?
3. Do these female students perform examination of the breast by themselves?
4. What do they perceive is/are the barriers in performing a breast self-examination?

1.6 Conceptual Framework for the Study

INDIVIDUAL PERCEPTIONS

MODELLING FACTORS

LIKELIHOOD OF ACTION

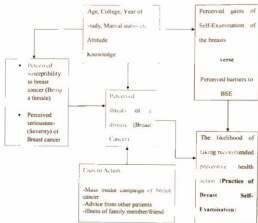


Figure 1.1: Health Belief Model adapted from Janz & Becker (1984)

1.6.1 Narration of conceptual framework

The conceptual framework above is a Health Belief Model (HBM) developed in the 1950s by social psychologists Irwin M. Rosenstock, Godfrey M. Hochbaum, S. Stephen Kegelin, and Howard Leventhal which explains why certain health behaviours are displayed by people by ascertaining factors associated influencing individual behaviours and beliefs (Janz & Becker, 1984).

According to the model, individual perception coupled with modifying factors determine whether a person is likely to engage in specific health-related behaviour or take an action (Rosenstock, 1974). The model tries to answer questions on the reasons for the use of health services by individuals and the factors that influence the compliance with medical regimens. There are four concepts of the HBM that explain health-related behaviour. These include perceived susceptibility, severity, benefits, and the barriers (Janz & Becker, 1984; Rosenstock, 1974). This model gives the assumption that the behaviour of an individual is influenced by the perceived reality than the actual reality (Jones, Jones, and Katz, 1988).

Perceived susceptibility is one's view on the chances of experiencing a condition that has the potential of causing harm (Champion, 1984). The individual's perception of being at risk to a condition which in this context is breast cancer prevalent in females in their reproductive age.

Perceived severity looks at how the individual feels threatened about a condition. It includes the evaluation of the health implication (pain, disability) and the social impact (relations, friends, work, the environment) (Becker & Janz, 1984) as well as death. The combination of susceptibility and severity leads to a perceived threat as shown in the above diagram.

Perceived benefits, that is, beliefs on how effective a recommended action results in a perceived benefit (Glanz, Barham & Viswanath, 2008). The individual assesses a recommended action (BSI) and considers how feasible and efficient it will be in decreasing the perceived threat of Breast Cancer.

A perceived barrier is the belief a person holds regarding the costs involved in taking a health action. They are the aspects of an action that has the possibility to cause harm (Michyk, 1988). Barriers come in many forms, such as physical, financial, or psychological. In this case, the barrier may consider factors that may hinder the practice of BSE.

In addition, there should be a cue or a trigger to elicit the action. This can be sometimes internal (symptoms) or external (media, education) (Janz & Becker, 1984) that promote engagement in the health-related behaviour. The intensity of the cue that needs to initiate action is inversely in relation to how psychologically ready a person is to take an action.

In conclusion, the health belief model suggests that health behaviours such as performing a breast self-examination are more likely to occur if a person feels susceptible (being a female) to a medical condition (breast cancer) and perceive the condition to be very severe (breast cancer not easily treatable). Furthermore, people are likely to undertake a health behavior (Breast Self-Examination) when its benefits (early detection leading to good prognosis) outweigh various barriers (time) associated with its performance (Cantabulet & Usan, 2008). The combination of the levels of susceptibility and severity provides the push for an action. The perception of the benefits with fewer or no barriers offer a preferred action taken.

Although the Health Belief Model accounts for individuals' differences in beliefs and attitudes in the uptake of a health-related behaviour, it has some limitations (Janz & Becker, 1984). It does

not consider other factors that are likely to influence a health-related behaviour which includes habitual health-related behaviour, health-related behaviour unrelated to health, environmental factors (Janz & Becker, 1984), impact of emotions on health-related behaviour (Glanz et al., 2008), outcome expectancy (Schwarzer, 2001), and self-efficacy (Seyde et al., 1990). Furthermore, it does not specify how constructs of the model interact with one another (Carpenter, 2010) and the cues of action are often difficult to assess (Glanz et al., 2008).

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter discusses the works done on this subject matter in literature. It explains the key concepts underlying the study. It is divided into sections.

2.2 The burden of Breast Cancer

Globally cancers are a leading cause of mortality only second to deaths due to cardiovascular diseases. Cases of cancer, 17.5 million, were diagnosed worldwide in 2015 and their associated deaths were 8.7 million (GHD, 2015). Cancer cases rose steadily in the period 2005 to 2015 and 2.4 million women were picked with the cancer of the breast out of which 523,000 died and disability-adjusted life years (DALYs) was 15.1 million. Between 2005 and 2015, countries that had an increase in the Age-Standardized Death Rates (ASDR) due to all cancers were for the most part in the African region (Fitzmaurice et al., 2017).

The abnormal proliferation of the cells in the breast constitutes the breast cancer. It begins by breast cells growing out of control. The cells, by and large, appear as a lump or mass that are visible on an x-ray or felt as a lump (American Cancer Society, 2008). A lump or mass is malignant (cancerous) when the cells start to grow and invade other tissues. It may spread into contiguous tissues locally or to distant parts of the body. Breast cancer is commoner in women than men (American Cancer Society, 2008). The exact aetiology of breast cancer is unknown but there are several factors that put individuals at risk. These include old age, familial or personal history of breast cancer, race, exposure to ionizing radiation, early menarche, late menopause among others (McPherson, Steel & Dixon, 2000). The risk of a woman developing cancer of the

breast within five-year period is calculated using the Gail Index Score, a model used in women with no history of breast cancer. It estimates risk for breast cancer based on demographic and clinical data. A score of at least 1.7% suggests the likelihood of a female to develop breast cancer (Gail et al., 1989).

According to World Health Organization, approximately 7.6 million of the world's population lost their lives to cancer, and if action is not taken, 84 million more will die over a period of years to come and over 70% of cancer-related mortality in 2005 occurred in developing and the underdeveloped world (WHO, 2005). Over a million women are diagnosed with breast cancer yearly, and over 10,000 will die from the disease forming 14% of female cancer deaths (Parkin et al., 2006).

Twenty-eight percent (28%) of all malignancies and 20% of all deaths related to malignancies in women are associated with the breast. More so there is a low reporting of new cases in Africa. Thirty-five per 100,000 women in Africa are picked with cancer. This is low compared to over 90-120 per 100,000 cases in Europe or North America (Coughlin and Ekwueme, 2009). Estimates in 2012 from GLOBOCAN revealed that in Africa, 134,000 women were diagnosed with breast cancer with 63,000 deaths and in Sub-Saharan Africa, 94,000 were diagnosed with 48,000 deaths and it is expected to double in next 30 years. In Nigeria, new cases of breast cancer have doubled over the period from 1976 to 2000 increasing from 15.2% per 100,000 women to 33.6% per 100,000. It is currently the leading malignancy in Ibadan (Breast cancer Association of Nigeria, 2010). In Kenya, 9.4% of all malignancies in women are attributed to the breast, in Zimbabwe 8.5%, in Tanzania about 8.1%, in Sudan 26.0%, in Malawi 5.5%, in Liberia 15% and in Uganda 4.0% (Badoe & Basile, 2008).

In Ghana, cancer of the breast has become a malignant condition that is very common and is accountable for most deaths related to cancer among women (Winidu & Annah, 2006). Studies by Clegg-Langley & Hodson (2007) revealed that 15.4% of all malignancies were breast cancer. The numbers keep increasing every year. The patterns of mortality due to cancers reported breast cancer as the biggest contributor that results in women admitted at Korle-Bu hospital losing their lives (Quayson et al, 2014). Badoe & Baako (2008) added that about 400 new cases were diagnosed yearly at Korle-Bu.

The rate of women surviving cancer of the breast varies from country to country. The cumulative 5-year survival spans from 80 % in high-income countries in North America, Sweden, and Japan to 60 % in developing countries and below 40 % in less developed economies (Coleman et al., 2008). Detecting breast cancer early, coupled with the right management, is the optimum approach to effectively reduce its morbidity and associated mortality. Lack of programs on awareness and failure to detect cancer early contribute to the reason for the low survival rate in low-income countries taking into consideration the number of women who present with a late stage of the disease and the lack of adequate treatment facilities (Gelukande, Wabinga, & Mirembe, 2015).

In diagnosing breast cancer, the readily available means is screening through a clinical examination (CBE), self-examination (BSE) of the breasts and mammogram (Erin and Bahar, 2011; Yilmaz et al., 2013). Developed countries have reduced the mortality rate by detecting cancer early, availability, and accessibility to mammograms, and effective medications (Langhorne et al. 2007). The case is not the same in developing countries where there is high mortality (WHO 2008) as a result of the absence of mammograms and other tools for the early

diagnosis of cancer of the breast (Jornal et al., 2009). Clegg-Lamptey & Hodan (2007) also observed that irrespective of the numerous health education programmes on BSE, slightly over of 50% of Ghanaian women with breast cancer still present to the hospitals at the terminal stage of the disease. Though mammography is very crucial in the detecting the disease at its early stage, it is not able to pick all the various types of a tumour (Mandelblatt et al., 2009), hence awareness creation through health education about BSE, and reporting early to a health facility remains the pivotal approach for preventing cancer of the breast.

In Self-Examination, a woman palpates her own breast. This is recommended from the age of 20 year

(<http://www.cancer.org/acs/groups/content/jinfo/documents/document/call2005brlcspdl2005pdl.pdf>). It only takes 5 to 10 minutes to apply. It is easy-to-do, safe, less time consuming and has no cost involved which is effective in the screening for breast cancer (Kerime & Bursen, 2010). A regular BSE enables women to easily recognise changes in the breast early. However, the improper application of BSE can give a false impression and may reduce a woman's readiness to undergo further screening (Martha & Bedford, 2012).

2.3 Knowledge of Breast Cancer and Breast Self-Examination

A qualitative study involving young American women conducted in 2008 revealed that 64.4% of selected women for the study had a very low knowledge level and understanding of breast cancer, age and family history were the two main risk factors the women could identify (Johnson & Dickson-Swift, 2008). A survey of 240 women admitted to an obstetric-gynaecology clinic in Turkey pointed out that the majority, 79.2%, of the women's knowledge of BSE was poor, of risk factors and sign and symptoms of breast cancer were 62% and 52%, respectively (Karadag

et al., 2014). Another study to investigate knowledge of nursing and midwifery students on breast self-examination (BSE) involving 244 female students of the School of Health at Adnan Menderes University in *Aydin*, Turkey, also showed that more than half (64.0%) of the participants had good knowledge of BSE and from diverse sources, more especially from the school syllabus. The students were adequately knowledgeable on the performance of BSE and how often it should be performed. However, their knowledge of the techniques involved in BSE fell short of adequacy (Memis, Balkaya, Demirkiran, 2009).

Studies by Habib, Shaiqa, Maha, & Sherien (2010) in Saudi Arabia concluded that respondents had some level of knowledge of all factors (of both modifiable and non-modifiable) associated with the disease. Out of every 100, 64.4 had no knowledge of the proper performance of self-examination and 42.2% of them have not undertaken this test due to certain barriers. The majority (43.3%) believed that the frequency for performing BSE was twice a year and after menstruation was the most (65.9%) appropriate times to perform BSE.

A study assessing the effect of workshops on cancer of the breast was conducted on a group of 33 students studying nursing in Saudi Arabia. It evaluated the knowledge of breast cancer and the ability to perform breast self-examination before and after the workshop. Questionnaires were designed for that purpose. It was concluded that their level of knowledge increased significantly after the workshop (Yousaf, 2010).

Results of a research among Iranian women in Hamedan also identified a low knowledge about breast cancer and its screening among the participating women. Similar findings were obtained in a related study in the same city (Pana & Karsdiah, 2005). Rastad et al. (2012) in their focus group discussion involving women in an Iranian city also showed that the failure of understanding of breast cancer is a determinant of symptom detection.

Another cross-sectional study among female health workers in Nigeria in 2009 revealed that 55% had inadequate knowledge about the factors associated with cancer of the breast (Adehigbe & Omuema, 2009). This high percentage is surprising because health workers are supposed to act as agents and be knowledgeable enough to educate the public about breast cancer. It is however satisfying that in the same year, another quantitative study among female doctors in a tertiary hospital in Lagos revealed high satisfactory knowledge (74%) about breast cancer (Ibrahim & Oduanya, 2009). Also, in studies that recruited healthcare professionals (Chibba, Bunker, Okonofua, & Osime, 2006), 55% of the respondents knew of breast cancer and its associated factors, 67% knew well of the burden of breast cancer and 73% identified breast cancer as the most predominant cancer in women. About 2/3 of them also concluded that breast cancer was severer than other malignancies (Oluwatosi and Oladapo, 2008). In another study conducted among 300 SSF girls in the Abuja, Nigeria, 60% poor knew of breast cancer, 37.6% had a good level of knowledge and only 5.6% excellently knew of breast cancer (Iliya & Ojedokun, 2011). In a report by Azubuike & Celestina (2015) among northern Nigerian women, about ¼ knew about breast cancer from health facilities (29.13%), the greatest source of information. 29.35% also knew of the risk factors tested. The mean level of knowledge of the signs and symptoms was 50.1% while the mean knowledge of screening was 34.26%, with breast self-examination (BSE) as the widely identified in 46.1% of the cases.

Though quite a few studies have been done on breast cancer in Ghana, not much has been done in the area of women knowledge of the disease. A study among female students of the Presbyterian University College showed 95% respondents had ever been told and heard of breast cancer and BSE, most of them got this information through the media and formal education despite this high proportion. Only 80% knew how to perform BSE and irrespective of the fact

too that majority of them knew BSE examination as a screening method (Akuamoa Sarfo, Anuah-Pensah, Achampong, & Asamoah, 2013). A survey done at Komfo Anokye Teaching Hospital (KATH) to assess knowledge on breast cancer among nurses at the hospital revealed that 54.5% knew about one or two out of the five risk factors. A little over 94% thought breast cancer was a serious disease. 81.8% indicated that they will seek a doctor on the same day that they developed breast cancer and would accept mastectomy as treatment of the disease. The study concluded that nurses at KATH have adequate knowledge about several aspects of breast cancer (Otiene-Yeboah, Adofe & Adigbo, 2013).

2.4 Attitude towards Breast Self-Examination

Despite numerous awareness campaigns dedicated to breast cancer, outreach and advocacy available to the public and the medical community, misinformation about breast cancer is still rife within many communities. This misinformation has been noted to a large extent to be partly responsible for the delay in seeking medical care after most women have discovered symptoms suggestive of breast cancer (Okolie, 2012).

In a quantitative survey of 158 college students in the United States of America in 2005, only 1/3 believed that breast lumps that are cancerous are painful and 15% assert that breast cancer is caused by being hit on the breast (Powell et al., 2005). In this same study, the majority (97%) also identified healthcare workers as the only one capable of detecting lumps in the breast and only 41% associated high fat and a diet low in vegetables with increased breast cancer risk.

Another very common belief is that only women with a history of the disease in their families develop breast cancer. It is however well documented that 80-85% of women with breast cancer have no associated family history of breast cancer (American Cancer Society, 2010). It is also a commonplace belief that herbal medications and dietary supplements can help treat breast cancer

(Mohammed, Munazza & Mahla, 2016). In a qualitative study in the USA about young women's notion on breast cancer in 2008, most respondents are not obsessed about the disease although they conceded that breast health information must always be made available to women at an early age as cancer can strike at any age and early detection is the mainstay of a good therapeutic outcome (Johnson & Dickson-Swift, 2018).

Furthermore, it is not known how alternative medicines may interact with orthodox medicines. There is a widespread acceptance of local herbal medications and prayer as a therapeutic measure to tackle breast cancer among women in developing countries and of African-American origin (Dimitri et al, 2015). Some of these women believe that resorting to treatment is unnecessary as only God can cure breast cancer but not medications (Wiredu & Annah, 2006).

Another common attitude is that young women have a greater propensity for developing the malignancy though the disease is commoner in postmenopausal women, globally, 25-30% of women with breast cancer globally are younger than 50 years, there is also an alarming rise in new cases of the disease of breast cancer among young women in low-income countries (Breast cancer Association of Nigeria, 2010; Clegg-Lamprey and Hodosi, 2007). Although most studies on college student and health behaviour have involved ethnicity as an important factor that differentially affects health behaviour, breast cancer is treatable if detected early (Harris, Gordon-Larson, Chantala, & Udry, 2006).

2.5 The practice of Breast Self-Examination

Self-examination (BSE) tries to detect early lesions breast cancer. The woman performs it herself. She looks out for possible lumps by feeling it in her palms (WHO, 2012). With breast Self-Examination, the woman gets acquainted with the normal look and feel of her breasts and so can easily identify differences in shape or size, lumps, skin discolouration, discharges and the

remarkable pain (American Cancer Society, 2007; Mason & White, 2008). BSE is promoted ostensibly as a means of detecting lesions very early to ensure high survival rates. Breast Self-Examination is considered by many organizations as an important method to early detect any abnormality and helps women to be familiar and learn what is normal with their breasts (American Cancer Society, 2009; WHO, 2008). This is the only available and commonly used means for younger women to pick changes in the breast very early. Regular Breast Self-Examination has many advantages: cost-effectiveness, non-invasive, convenience, privacy and simplicity (Ku, 2009) associated with a reduced tumor size and requires no use of other equipment (Hill, 2008).

Regardless of the efficacy of breast cancer screening behaviours in reducing mortality, findings suggest low screening rates. In a prospective study of 364 patients newly diagnosed with breast cancer in England, 54% of respondents claimed to practice breast self-examination (Philip et al., 2008). While other involving different groups of women in the U.S, monthly breast self-examination spans from 29% to 63% (Sevginli and Nalcivan, 2006) while 19 to 43.2% were reported practicing it in Nigeria (Okobin et al., 2006; Owarao et al., 2009). A study in Turkey showed that less than half of the participants practiced BSE and only 16% reported that they do it monthly (Yardakci and Gulhan, 2013). In Malaysia, similar results were found among women, 36.7% of the women practice BSE (Akhtari-Zavare et al., 2011).

In a survey conducted in Korea, 27% of students practiced BSE (Shin et al., 2012). Segni & Tadase (2015) also revealed 39.4% of them did BSE, out of which 9.7 % of them do a monthly practice (Azubike & Celestina, 2015). Practices of Breast Self-Examination among Female Debre Berhan University Students, only 28.3% of the participants had ever performed BSE in the

year preceding the study. Out of those who have ever performed, 61.9% do a monthly BSE (Bihane et al., 2017) and 36% had knowledge on how to perform BSE and actually performed it. Most of them were aware of the different ways of performing BSE (Aboamoh Sarfo et al., 2013). Despite the numerous advantages, only 18 to 36 percent of women self-examined their breasts in USA (Ashton, Karolewicz & Fooks, 2011). Also in Nafissi et al. (2012), only 17% and 12% of women respectively undertook this procedure monthly (Firoozjoo et al., 2008). Usually, most cases of women diagnosed with breast cancer are at the terminal stages of the disease. Studies in Ghana in 2006, revealed that 36% of women diagnosed with breast cancer were stage IV (Kirby, 2006).

Akoko et al. (2017) reviewed studies among female University students in low and middle income and emerging economy countries and came out with the following findings: 36.7%-55.4% in Malaysia (Al-Naggar et al., 2011; Akhtari-Zavare et al., 2013), in Egypt, 1.3% monthly BSE (Boulos & Ghali, 2013), Nigeria, 19.0% (Gwarzo et al., 2009), Yemen, 17.4% (Ahmed, 2010) and UAE 22.7% practiced BSE with 3% doing it on a monthly basis (Al-Sharbaty et al., 2015).

Major barriers to BSE were no awareness and bad attitudes towards the practice (Wardle et al., 1995; Ahmed, 2010; Shin et al., 2012; Al-Sharbaty et al., 2013). Some of the reasons assigned for non adherence to the practice in other studies include forgetfulness, lack of time (Gupta et al., 2009; Akhtari-Zavare et al., 2014), ignorance, fear of finding a mass (Hisham and Yip, 2004; Salazar, 2007; Anzor, Abdulai, Pal, & Arebo, 2014) and low level of education (Okobia et al., 2006).

2.6 Factors associated with practice of BSE

The prevalence of BSE practice among females were low as shown in previous studies. There is the need to identify the relationship between and among females who practice BSE to inform future interventions or education. Some of the factors associated to practice include: higher level of education, a study in Ghana (Sarko et al., 2013), similar to a study in Northwestern Nigeria, duration of stay in the University (Gwarzo et al., 2009). Rosmarwati (2010), conducted a study among women in a suburban area in Terengganu, Malaysia, there were significant positive correlation between knowledge and attitude score, knowledge and practice score as well as attitude and practice score. Latif (2014), had practice of breast self-examination to be significantly related to participants' knowledge scores. Other studies (Montazeri et al., 2008; Barinchi et al., 2012) reported that literacy was significantly correlated with a greater degree of knowledge about breast cancer, and literate women were significantly more likely to perform breast self-examination. The practice of screening methods for breast cancer was significantly associated with knowledge of the subject ($p=0.03$) as reported in one study (Oladunayo & Tayo, 2001). In a study by Pengpid & Karl (2014), among female University students from 24 low, middle income and emerging economy countries found that BSE importance or attitude was highly associated with the BSE practice (Odds Ratio=2.95; CI=2.67-3.28).

2.7 Summary

Related literature to the study area have been reviewed and it has been noticed that research done were more foreign-based, which indicates that little research has been done in Ghana concerning the study area and therefore this research is to help fill that gap in Ghana.

CHAPTER THREE

3.0 METHODS

3.1 Introduction

This chapter presents the methods applied to collect empirical data for analysis in the study.

3.2 Study Design

A descriptive cross-sectional study design was conducted among female students of the University of Ghana residing on the main campus, Legon. Breast cancer and breast self-examination as well as potentially related factors are measured and prevalence determined. There's no causal statement made from this type of study. Data were collected using structured questionnaires.

3.3 Study Area

The study area was the University of Ghana. It has four colleges: Basic and Applied Sciences, Education, Health Sciences, and Humanities and several research institutions and centers. The University is located at Legon about 12km northeast of the center of Accra Metropolitan Area in the capital of Ghana.

The University as at July 2016 has a student population of 39,249 representing a male to female ratio of about 1.4:1, made up of students enrolled in various programmes whether regular or sandwich or distance education as well as students from affiliated institutions.

The female population is about 17,641 with about 39.6% residing on the main campus.

(www.ug.edu.gh/about/overview)

The University has 14 halls of residence and hostels. The Commonwealth hall and the Volta hall are solely for males and females respectively. The rest of the halls have both males and females but with some having separate blocks for each sex. For the purpose of this study with time and financial constraints, 5 halls of residence were selected randomly by balloting. The halls of residence selected are;

Volta hall which is the only all-female hall and located opposite the Modern Language Department and in front of Commonwealth hall.

Legon hall, the first to be built therefore the premiere hall of the University. They have 3 annexes. It's located in the centre of the school close to the biggest library in West Africa, the Balme Library.

Mensah Sarbah, the first hall to be named after a hero of the nation, Dr. Mensah Sarbah. It is behind the Central Cafeteria. They have 4 annexes, Annex A to Annex D.

Akuafo hall, the second hall of residence to be established by the University of Ghana. It can be found opposite the Earth Science Department. It has 4 annexes, Annex A to Annex D.

Alexander Kwame Ninsin hall, named after the first black vice-chancellor of the University of Ghana. In order of position, it's the second building when heading to the University of Ghana Medical Centre from the Okponglo entrance to the University after the roundabout.

3.4 Study Population

It consisted of all female students residing in the halls on campus at the University of Ghana. The participants were females from the halls of residence selected; Volta, Legon, Sarbah, Akuafo and Kwame Ninsin hall.

3.4.1 Inclusion Criteria

Eligible persons for this study were female students of the University who reside on the main campus residential halls and fall within the sampling, both undergraduates and graduates, if and only if they consent to participate in the study.

Replacement criteria; When the members of the selected room are not available, the next room occupied by females was selected automatically to participate only if their willing.

3.4.2 Exclusion Criteria

Female students residing on the main campus and in the selected rooms but are not original members of the selected room and selected rooms with members that are not willing to participate in the study.

3.5 Sample Size

Three hundred and forty-three (343) females were used by applying the Cochran's formula (1977) based on the following assumptions: 28.3% of University students who practice breast self-examination (Birhanie et al., 2017), 95% CI, 5% margin of error, and 10% of non-response rate.

The sample size was determined using the Cochran's formula.

$$n_0 = \frac{z^2 pq}{e^2}$$

n_0 = minimum sample size

z = standard normal deviate (1.96)

p = 28.3% practice level according to previous similar study from Ethiopia

$$q = -0.717$$

α = the level of significance, set at 5% = 0.05

$$\begin{aligned} \text{Substituting, } n &= \frac{(1.96)^2 \times 0.283 \times 0.717}{0.05 \times 0.05} \\ &= \frac{3.0416 \times 0.283 \times 0.717}{0.05 \times 0.05} \\ &= 312 \end{aligned}$$

This number was increased to 343 to make up for a possible 10% non-response rate.

3.6 Sampling Method

Multistage sampling method was used in the study. A simple random sampling was employed at each stage of selection, (by balloting). All resident halls except Commonwealth (only for males) were written on each paper and folded which was shuffled in a box and randomly picked five (5) halls; Volta, Lagon, Merimah Sabah, Akuafo and Kwapong halls. A stratified sampling was done where each selected hall represented a stratum and calculated sample size was allocated to each selected hall proportional to size (table 3.1). A list of all female rooms of each selected hall (stratum) was compiled and room numbers for each stratum were entered into Ms. Excel and sample size generated of room numbers for each hall. In the final stage, members of each selected room were requested to pick a paper which has "yes" or "no" on them in a semi-sealed box. Students who picked the paper with "yes" requesting her to participate were included in the study if they are willing to participate in the study.

Calculating sample size for each hall using the population sample size (343)

$$\text{Sample size per hall} = \frac{\text{Number of females per hall}}{\text{Total of females in selected hall}} \times \text{population sample size}$$

Table 3.1 Proportionate to size sampling

Hall of Residence	Number of females	Sample size per hall
Volta Hall	658	71
Legon Hall	589	63
Mervah Sarbah Hall	540	59
Akuafo Hall	518	56
Alexander Kwame Hall	867	94
TOTAL	3163	343

3.7 Pretesting

The questionnaire was pre-tested with twenty (20) non-resident female students of University of Ghana using convenient sampling to detect difficulties, clarity, and sequence that may arise during the study. It was also done to estimate the time needed to fill out the questionnaire. Data from the pre-tested questionnaires were not included in the results of this study but the comments were thoroughly discussed. The questionnaire was fine-tuned after the pretesting.

3.8 Study Variables

3.8.1 Dependent Variable

The practice of Breast self-examination: Ability to examine to detect any abnormality and cancer of breast as early as possible. Breast self-examination in this study refers to the palpation of one's own breast, to identify any breast changes. Practice is a categorical variable that was measured in frequency and the right process on a nominal scale.

Table 3.2 Independent Variables

Variables	Operational Definition	Scale of Measurement	Type of Variable
Age	Age at Last Birthday	Discrete	Continuous
College	An academic constituent of the University	Nominal	Categorical
Level of study	Current year of study	Ordinal	Categorical
Marital status	Single, Single but in a relationship, Married	Nominal	Categorical
Religion	Way of worship	Nominal	Categorical
Ethnicity	Social group with a common and distinctive language	Nominal	Categorical

Residence	Dwelling or home where a person lives	Nominal	Categorical
Menarche	Age at first menstruation	Discrete	Continuous
Parity	Number of children borne	Nominal	Categorical
Knowledge of Risk Factors for breast cancer	Knowing the increased likelihood for one to develop breast cancer	Nominal	Categorical
Knowledge of signs and symptoms of breast cancer	Knowing the experience and manifestation of breast cancer	Nominal	Categorical
Knowledge of BSE	Knowing the right procedure to perform BSE	Nominal	Categorical
Source of information	Whether one has heard and where it was heard.	Nominal	Categorical
Attitudes towards BSE	The way of thinking or feeling towards BSE	Nominal	Categorical

3.9 Quality control

3.9.1 Training of field workers

Four (4) research assistants were engaged to assist in the administration of the questionnaires. They had a minimum qualification of West African Secondary School Certificate (WASSCE). They assisted in the administration of the questionnaires only. They were trained intensively for a day on the techniques of questionnaire distribution and quantitative data collection, simple random sampling and on the ethical guidelines.

3.10 Data Collection Method, technique and Tool

A structured self-administered questionnaire was used for collection of data. The questionnaire was prepared by reviewing literature. The questionnaire comprised of four sections: Section A collected data on the socio-demographic characteristics of the respondents which include age, college, level of study, marital status and religion, ethnicity, region of residence outside campus, parity and age at menarche. Knowledge of breast cancer and BSE was under Section B which looked at the knowledge of risk factors and signs and symptoms of breast cancer, and knowledge on the method, position, appropriate time and regularity of BSE as well as source of information. Under Section C, questions on the attitude towards BSE were asked, that is, who should perform BSE and if they think BSE is important and the action that would be taken if they found a lump. Section D is based on the Practice of BSE and reasons for not performing BSE. The study respondents were given printed copies of the questionnaire and allowed time to fill their response at their will and convenience and in a private, confidential setting. The respondents then returned the questionnaires anonymously (without their names). Questionnaires were distributed to respondents in their various halls of residence by the principal investigator and the research assistants. Distribution was done after official lecture hours since they are likely to be in the

comfort of their halls by that time. This also ensured that respondents are assured the maximum level of confidentiality possible.

Recruitment and administration of questionnaire were done only after the possible risks and discomforts such as time spent in responding to the questions have been read by the respondent to merit her informed consent which was culminated in the signing of the informed consent form. Distribution of questionnaires was by the research assistants who have been trained in field data collection for this study by the Principal Investigator. Respondents were allowed time to fill though each questionnaire can take a maximum of twenty (20) minutes to complete. Data collection took two (2) weeks to obtain the sample size.

3.11 Data Processing and Analysis

The questionnaires collected were crosschecked for completeness then coded and entered into Ms. Excel then exported to STATA (version 13.0) for statistical analysis. Descriptive statistics were used to describe all variables. Frequency distribution was done to compute proportions on all categorical variables. Mean age and its standard deviation were computed. Multivariable logistic regression analyses were used to identify independent predictors of BSE. This was done by first running a bivariate analysis between practice and all the independent variables. Independent variables with p -values ≤ 0.05 in the bivariate analysis were fitted in the final multiple logistic regression models to assess the strength of association looking at Adjusted Odds Ratio (AOR) with 95% confidence interval (CI).

3.12 Ethical Considerations

3.12.1 Ethical Clearance

Approval was sought from the Ghana Health Service Ethical Review Committee (GHS-ERC) and was granted evidence by reference number GHS-ERC/030/03/18 from GHS-ERC.

3.12.2 Approval from Study Area

Permission was obtained from the registry of the University of Ghana and hall tutors of selected halls before collecting data.

3.12.3 Respondents' Consent

The purpose and the procedures of the study were clearly discussed with the respondents and informed consent was obtained from each respondent. Each was given a consent form to read and sign before questionnaire given.

Consent of the respondents was sought before inclusion in the study. Individuals who were eligible for the study were enrolled to participate in this study only after they have endorsed a written informed consent/assent form, by signing, before they respond to the items on the questionnaire (see Appendix B). Respondents were informed of the time involved in responding to the various questions which does not exceed 20minutes.

3.12.4 Privacy and Confidentiality

Privacy and confidentiality of the study respondents were strictly maintained. All respondents were given assurance that any information they provided is strictly going to be used solely for academic purposes and their confidentiality was therefore assured. To further assure the privacy and confidentiality of respondent information, the data obtained from the study is being kept under lock in a safe until the whole study has been completed.

3.12.5 Voluntary Participation

Respondents were also made to understand that participation in the study is voluntary, that they have the right to either be or not be part of the study; and that they can withdraw at any time during the study.

Respondents were given satisfactory information on the right to refuse participation or to skip some questions she's not comfortable answering.

Respondents can choose not to continue participation in the study whenever and they can decide not to answer all questions in the questionnaire.

3.12.6 Data Storage and usage

Data collected is being stored in a safe cabinet under a strong lock and key. The key is being kept safe from easy access. Data entered into the computer is being saved using a strong password which has lower and upper cases and special characters in it making it difficult to guess the password.

3.12.7 Potential Risk/Benefit

Respondents were assured that there was very minimal risk associated with their participation in the study by way of time spent and responding to sensitive questions. Respondents were assured that the process will only take a maximum of twenty (20) minutes to complete. Due to the nature of some of the questions on Breast Self-Examination, some questions may trigger some few emotional or psychological sensibilities or discomforts while answering.

3.14.8 Compensation

Respondents were compensated with a customized handkerchief with the inscription 'Early detection saves... I pink I can'. Pink is usually associated with breast cancer awareness like we

have “Pink October” as a month for breast cancer awareness. Finally, any knowledge adopted in the study was duly credited to those it was obtained from.

3.12.8 Declaration of Conflict of interest

There is no conflict of interest in the study.

3.12.10 Protocol amendments

There were no changes in the study area, population or any part of the study.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of respondents

A total of 328 female students filled the questionnaire correctly which gives response rate of 94%. The result in table 4.1 below shows the socio-demographic characteristics of respondents. The mean age of the respondent was 20.6 years $\pm$ 2.5 SD. Respondents from the college of humanities were in the majority 68.3% (224/328). Level 100, 200, and 300 respondents constituted most of the respondents 82.3% (270/328). Majority of the respondents were single 78.1% (256/328). Christians, 93.6% (303/328) was the majority. The Akan ethnic group was in the majority 55.5% (182/328). Most of the respondents live in the Greater Accra region 72.4% (236/328). Ninety-three percent (93.0%) of respondents had no children (303/328). The mean age at menarche among respondents was 12.6 years $\pm$ 1.5 SD.

Table 4.1 Socio-demographic characteristics of Female University Students

n=328		
Variables	Frequency	Percent (%)
Age		
17-25	317	96.7
26-33	8	2.4
34-40	3	0.9
Mean Age	20.6 $\pm$ 2.5years	
College		
Health sciences	29	8.8
Basic and applied sciences	61	18.6
Humanities	224	68.3
Education	14	4.3

Level of study		
Level 100	89	27.1
Level 200	83	26.8
Level 300	93	28.4
Level 400	49	14.9
Level 500	6	1.8
Level 600	3	1.0
Marital Status		
Single	256	78.1
Dating	65	19.8
Married	7	2.1
Religion		
Christianity	307	93.6
Islamic	21	6.4
Ethnicity		
Ewe	68	20.7
Akan	182	55.5
Ga	55	16.8
Others	23	7.0
Region of residence off campus		
Greater accra	218	72.6
Western	6	1.8
Volta	28	8.5
Bongu ahafo	4	1.2
Eastern	10	3.1
Upper west	3	0.9
Central	19	5.8
Ashanti	20	6.1
Parity		
No children	305	93.6
1 to 3 children	23	7.0
Mean Age of Menarche		
		12.6 $\pm$ 1.5years

4.2 Knowledge of Breast cancer

Majority of the respondents had heard of cancer of the breast 97.9% (321/328). Family history of breast cancer 78.2% (251/321), personal history of breast cancer 75.4% (242/321), cigarette smoking and intake of alcohol 76.0% (244/321) were the most known risk factors of breast cancer amongst females in the University who had heard about breast cancer. Assessing their knowledge of signs and symptoms, 95.3% (306/321) knew a lump in the breast was a sign of breast cancer. Pain in the breast or nipple 87.2% (280/321), swelling of all or part of the breast 79.8% (256/321), nipple discharge 84.4% (271/321) were the other signs and symptoms that most females knew. Knowledge of BC was grouped into adequate and inadequate where those who scored $\geq 50\%$ of risk factors and signs and symptoms combined had adequate knowledge on BC hence, overall, 64% (210/328) of the respondents had adequate knowledge of breast cancer.

Table 4.4 Knowledge of breast cancer among Female University Students

Variables	Frequency	Percent (%)
heard of breast cancer (n = 328)		
Yes	321	97.9
No	8	2.1
**Risk Factors (n = 321)		
Old age	121	37.7
Family history of breast cancer	251	78.2
Personal history of breast cancer	242	75.4
Birth of a first child after the age of 30 years	78	24.3
Early onset of menses (before age 12)	58	18.1
Late menopause (after the age of 55)	76	23.7
Late initiation of breastfeeding	120	37.4

Being a woman	170	52.9
Cigarette smoking and intake of alcohol	244	76.0
Sedentary lifestyle	135	42.1
Use of oral contraceptive	119	37.1
**Signs and Symptoms (n = 321)		
Swelling of all or part of the breast	256	79.8
Breast/nipple pain	280	87.2
Sores over the breast	219	68.2
Breast lump	306	95.3
Retracted nipple	196	61.1
Reddening, scaling, and thickening of the nipple or breast	253	72.6
Nipple discharges other than breast milk	271	84.4
Overall Knowledge (n = 318)		
Inadequate knowledge	118	36.0
Adequate knowledge	210	64.0

** Multiple response

4.3 Knowledge on Breast Self-Examination

Nearly ninety out of every hundred females in the University of Ghana had heard of BSE but only 30.9% of them knew how often BSE should be performed, monthly. Only 11.9% (35/295) knew that the suitable period to perform BSE was the fifth to seventh day of the menstrual cycle. Nearly twenty-seven percent (79/295) knew at least one position for performing BSE, out of which 29% (23/79) knew all three (lying, standing and sitting) positions of performing BSE. Assessing the knowledge on the procedure of performing BSE, the procedure was outlined, and respondents were to tick, 20% (39/295) knew the right procedure for practicing BSE. Media was the predominant source of information on BSE among the study at the University of Ghana 60.1% (193/295).

Table 4.3 Knowledge of Breast Self-Examination among Female University Students

Variables	Frequency	Percentage (%)
Heard of BSE		
Yes	295	89.9
No	33	10.1
How often BSE should be performed		
Daily	31	10.5
Weekly	45	15.3
Monthly	91	30.9
Yearly	13	4.4
Anytime	50	17.0
Don't know	65	22.0
Suitable period to perform BSE (n=195)		
Before menses	38	12.9
During menses	8	2.7
3 rd -7 th day of the menstrual cycle	35	11.9
Anytime	85	28.8
Don't know	129	43.7
Know position in performing BSE (n=295)		
Yes	74	6.8
No	216	73.2
BSE positions known (n=79)		
Lying	12	15.2
Standing	8	10.1
Lying and standing	32	40.5
Lying and sitting	3	3.8
Standing and sitting	1	1.3
Lying, standing and sitting	23	29.1
Assessment of knowledge on BSE procedure		
Do not know BSE procedure	236	80.0
Know BSE procedure	59	20.0
**Sources of information on BSE		
Mass media	197	60.1
Health professionals	139	48.5
School	85	25.9

Friends	40	12.2
Family	38	11.6

**Multiple responses

4.4 Attitudes of respondents towards Breast Self-Examination/Breast Cancer

Majority of respondents strongly agreed that BSE needs to be performed by all females 81.4% (267/328). Nearly 76% (248/328) were strongly in agreement that BSE was important to determine breast cancer. Most of the females strongly agreed that early detection prevents breast cancer 72.9% (239/328). Majority of the females 96.9% (318/328) indicated reporting to a health facility as the action they would take if they detected a lump in the breast and also 89.3% (293/328) of the respondents would seek help in less than a month if they detected abnormality with their breasts.

Table 4.6 Attitudes of Female University students towards BSE/BC

Variables	Frequency	Percent (%)
All females need to perform BSE		
Strongly agree	267	81.4
Agree	50	15.2
Neither agree nor disagree	11	3.4
Disagree	0	0.0
Strongly disagree	0	0.0
BSE is important to detect BC early		
Strongly agree	248	75.6
Agree	63	19.2
Neither agree nor disagree	15	4.6
Disagree	1	0.3
Strongly disagree	1	0.3
Early detection prevents BC		
strongly agree	239	72.9
Agree	58	17.7
neither agree nor disagree	27	8.2

Disagree	4	1.2
strongly disagree	0	0.0
Action to take when breast lump is found; visit		
Health facility	308	96.9
Prayer house	3	1.0
Traditional healer or herbalist	0	0.0
Hide it	7	2.1
Duration it will take to seek help		
Less than a month	293	89.3
Within 6 months	12	3.7
6 months to a year	3	0.6
Not be bothered	21	6.4

4.5 Proportion of BSE practice among respondents

Out of every hundred respondents, a little less of sixty-two have ever performed breast self-examination (261/328). ($p = 61\%$; 95% CI = 55.7% – 66.6%).

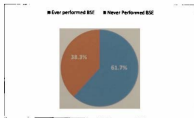


Figure 4.2 Proportion of BSE practice among respondents

4.5.1 Frequency of BSE practice among females who practice

Majority of females who practice BSE do so when they remember, 63.2% (131/204) and 16.9% (34/204) practice BSE monthly.

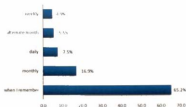


Figure 4.3 Frequency of BSE practice among females who practice

4.6 Factors associated with practice

All the independent factors were checked for having an association with practicing of BSE in bivariate simple logistic regression. Age, level of study, knowledge on BSE procedure, and some attitudes were found to be significantly associated with practice of BSE among the females in University of Ghana. The mean age of females who practiced BSE was 21.0 ± 2.95 SD and that of the females who do not practice BSE was 20.1 ± 1.55 SD. A year increase in age significantly

increases the odds of BSE practice among the females by 20% (COR = 1.2; 95% CI = 1.08 – 1.4).

The odds of BSE practice were found to be 2.2 times as high amongst females in level 400 compared to those in level 100 and this association was significant (COR = 2.2; 95% CI = 1.05 – 4.7).

The odds of BSE practice among female students who knew the procedure for performing BSE was significantly 2.1 times as high compared to those who did not know the procedure for BSE (COR = 2.1; 95% CI = 1.1 – 3.9).

Respondents who simply agreed that BSE should be performed by all females had significant reduction in their odds of BSE practice compared to those who strongly agreed that BSE should be performed by all females (COR = 0.5; 95% CI = 0.3 – 0.9).

Females who neither agreed nor disagreed with the statement “BSE aids in detection of breast cancer” had significantly 70% reduction in their odds of BSE practice compared to those who strongly agreed that BSE aids in detection of breast cancer (COR = 0.3; 95% CI = 0.009 – 0.08).

Table 4.7 Bivariate Analysis Result

Variables	Practice		COR (95% CI)	p-value
	Practice	No practice		
Age (M + SD)	21.0 ± 2.9	20.1 ± 1.5	1.2 (1.08 - 1.4)	0.001
College				
Health sciences	21(72.4)	8(27.6)	Reference	
Basic and applied health sciences	40(68.9)	19(31.2)	0.8 (0.3 - 2.2)	0.731
Humanities	130(58.0)	94(42.0)	0.5 (0.2 - 1.2)	0.143
Education	8(37.1)	14(62.9)	0.5 (0.1 - 1.9)	0.320

Table 1. Demographic characteristics of the study population				
Level of study				
100	47(52.8)	42(47.2)	Reference	
200	50(56.8)	38(43.2)	1.2 (0.7 - 2.1)	0.942
300	61(65.6)	32(34.4)	1.7 (0.9 - 3.1)	0.090
400	35(71.4)	14(28.6)	2.2 (1.05 - 4.7)	0.038
500	5(83.3)	1(16.7)	4.5 (0.5 - 39.8)	0.190
600	3(100.0)	0(0.0)	1	
Marital status				
Single	152(59.4)	104(40.6)	Reference	
Dating	44(67.7)	21(32.3)	1.4 (0.8 - 2.6)	0.221
Married	5(71.4)	2(28.6)	1.7 (0.3 - 8.9)	0.526
Religion				
Christianity	187(60.9)	120(39.1)	Reference	
Islamic	14(66.7)	7(33.3)	1.3 (0.5 - 3.3)	0.601
Ethnic				
Ewe	40(58.8)	26(41.2)	Reference	
Akan	122(67.0)	60(33.0)	1.4 (0.8 - 2.5)	0.228
Ga	25(43.3)	30(56.5)	0.6 (0.3 - 1.2)	0.141
Others	14(60.9)	9(39.1)	1.08 (0.4 - 2.8)	0.863
Residence				
Greater Accra	142(59.7)	96(40.3)	Reference	
Western	5(83.3)	1(16.7)	3.4 (0.4 - 29.4)	0.270
Volta	19(67.9)	9(32.1)	1.4 (0.6 - 3.3)	0.403
Bong, Akaho	3(75.0)	1(25.0)	2.03 (0.2 - 19.8)	0.543
Eastern	5(50.0)	5(50.0)	0.7 (0.2 - 2.4)	0.545
Upper west	2(66.7)	1(33.3)	1.4 (0.1 - 15.1)	0.807
Central	11(57.9)	8(42.1)	0.9 (0.4 - 2.4)	0.880
Ashanti	14(70.0)	6(30.0)	1.6 (0.6 - 4.2)	0.367
Parity				
None	185(60.7)	120(39.3)	Reference	
1 to 3	16(69.6)	7(30.4)	1.5 (0.6 - 3.7)	0.400
Menarche (M ± SD)				
	12.9 ± 1.5	12.7 ± 1.6	1.05 (0.9 - 1.2)	0.483

Knowledge on breast cancer

Inadequate knowledge	67(56.8)	51(43.2)	Reference	
Adequate knowledge	134(53.8)	76(36.2)	1.3 (0.8 - 2.1)	0.210

Knowledge on breast self-examination

Do not know BSE procedure	154(58.1)	111(41.9)	Reference	
Know BSE procedure	47(74.6)	16(25.4)	2.1 (1.1 - 3.9)	0.017

BSE should be performed by all females

Strongly agreed	171(64.8)	94(35.2)	Reference	
Agreed	21(46.0)	27(54.0)	0.5 (0.2 - 0.9)	0.013
Neither agree nor disagree	3(5.3)	6(54.5)	0.5 (0.1 - 1.5)	0.201

BSE aids in detection of breast cancer

Strongly agreed	159(64.1)	89(35.9)	Reference	
Agreed	33(35.6)	28(44.4)	0.7 (0.4 - 1.2)	0.212
Neither agree nor disagree	5(33.3)	10(56.7)	0.3 (0.09 - 0.8)	0.024
Disagree	1(100.0)	0(0.0)	1	
Strongly disagree	1(100.0)	0(0.0)	1	

Early detection prevents breast cancer

Strongly agreed	152(63.6)	87(36.4)	Reference	
Agreed	34(58.6)	24(41.4)	0.8 (0.5 - 1.5)	0.483
Neither agree nor disagree	12(44.4)	15(55.6)	0.5 (0.2 - 1.02)	0.057
Disagree	3(75.0)	1(25.0)	1.7 (0.2 - 16.8)	0.642
Strongly disagree	0(0.0)	0(0.0)		

Action to be taken when a lump is detected

Health facility	197(61.9)	121(38.1)	Reference	
Prayer house	2(66.7)	1(33.3)	1.2 (0.1 - 13.7)	0.867
Hide it	2(28.6)	3(71.4)	0.2 (0.05 - 1.3)	0.097

4.7 Results for Multiple Logistic Regression

To further investigate the strength of association between the factors that had significant association with practice of BSE in the simple logistic regression (Age, Level of study, Knowing BSE procedure, agreeing that BSE should be performed by all females and Neither agree nor disagree that early detection prevents breast cancer) and practice of BSE, multiple logistic regressions were fitted in order to compute estimates of the adjusted odd ratios. After controlling the confounding factors, variables that remained as predictor factors of practicing BSE were age (AOR =1.2; 95% CI = 1.002 – 1.4) and female students who know the procedure for (AOR = 2.0; 95% CI = 1.06 – 3.9).

Table 4.8 Results for Multiple Logistics Regression

Variables	Practice		COR (95% CI)	p-value	AOR (95% CI)	P-value
	Practice	No practice				
Age (M + SD)	21.0 + 2.9	20.1 + 1.5	1.2 (1.08 - 1.4)	0.001	1.2 (1.002 - 1.4)	0.047
Level of study						
100	47(52.8)	42(47.2)	Reference			
200	50(26.8)	38(43.2)	1.2 (0.7 - 2.1)	0.592	1.1 (0.6 - 2.1)	0.767
300	60(65.6)	32(34.4)	1.7 (0.9 - 3.1)	0.080	1.3 (0.7 - 2.6)	0.462
400	35(71.4)	14(28.6)	2.2 (1.05 - 4.7)	0.035	1.5 (0.6 - 3.5)	0.409
500	5(83.3)	1(16.7)	4.5 (0.5 - 39.8)	0.180	1.2 (0.1 - 15.3)	0.866
600	3(100.0)	0(0.0)	1		1	
Knowledge on breast self-examination						
Do not know BSE procedure	154(58.1)	111(41.9)	Reference			
Know BSE procedure	47(74.6)	16(25.4)	2.1 (1.1 - 3.9)	0.017	2.0 (1.06 - 3.9)	0.031

BSE should be performed by all females						
Strongly agreed	173(64.8)	94(35.2)	Reference			
Agreed	23(46.0)	23(54.0)	0.5 (0.3 - 0.9)	0.013	0.5 (0.3 - 1.1)	0.102
Neither agree nor disagree	5(45.5)	6(54.5)	0.5 (0.1 - 1.5)	0.201	1.05 (0.1 - 7.9)	0.942
BSE aids in detection of breast cancer						
Strongly agreed	159(66.1)	89(35.9)	Reference			
Agreed	39(55.4)	28(44.4)	0.7 (0.4 - 1.2)	0.212	1.00 (0.5 - 2.0)	0.973
Neither agree nor disagree	5(33.3)	10(66.7)	0.3 (0.09 - 0.8)	0.024	0.4 (0.06 - 1.9)	0.235
Disagree	1(100.0)	0(0.0)	1		1	
Strongly disagree	1(100.0)	0(0.0)	1		1	

4.8 Barriers to BSE practice among respondents

Reasons indicated for not practicing BSE among females who had never practiced BSE is shown below (table 4.9). Not having a reason, lack of knowledge and forgetfulness were the foremost barriers for not ever practicing BSE, 43.3%, 42.5% and 37% respectively. Respondents who perceive practice of BSE not beneficial or necessary were the least, 6%.

Table 4.9: Barriers to BSI practice among Female University Students

(n=127)	
Reasons	n (%)
Not having any reason	55(43.3)
Lack of knowledge	54(42.5)
Forgetfulness	47(37)
Lack or inadequacy of time	32(25.2)
Fear of finding a mate	14(11)
Not beneficial or necessary	6(4.7)

***multiple responses

CHAPTER FIVE

5.0 DISCUSSION

Breast cancer is the most common cancer among women worldwide. Late diagnosis of breast cancer is a contributory factor to poor prognosis hence decreasing the survival rate in Sub-Saharan African which includes Ghana, is low. A female becomes familiar with her breast when BSE is done monthly hence she's able to detect any abnormality early. The purpose of this study was to assess breast self-examination for breast cancer among female students of the University of Ghana.

5.1 The practice of Breast Self-Examination

The result of this study revealed that 61.7% have performed breast self-examination ($p = 61\%$; 95% CI = 55.7% – 66.6%). This agrees with Gwaran, Sabitu, & Idris (2009) who found that 57% of female undergraduate students of Ahmadu Bello University, Nigeria have performed BSE. However, a number of results from similar studies conducted in Nigeria (Bihant et al., 2017) and Malaysia (Rosmarwati, 2010), Yemen (Ahmed, 2010) Ajman, United Arab Emirates (UAE) (Al-Sharhuti, Shaikh, Mathew, & Al-Bata, 2013), University of Buca Cameroon (Sama et al., 2017) and Haramaya University Ethiopia (Armer, Abdulle, Kamar Pal, et al., 2014) found lower prevalence of BSE practice. Some other studies have found a higher prevalence of BSE practice among female University students in Uganda (Godfrey, Agatha, & Nankumbi, 2016), Ghana (Akumrosah Serfo et al., 2013) and among female teachers in Ethiopia (Birhane, Mamo, Girma, & Assew, 2015). The reasons for this inconsistency might be due to the differences in knowledge and cultural diversity of the various study settings within which the studies were conducted as well as varying sources of information on BSE among the respondents in each study. Some

women might not have practice BSE due to their understanding on how to perform BSE or the category of women that should perform BSE, which they may feel they do not fall into.

In this study, majority 65.2%, of females who practice BSE did so when they remember and 16.9% practice BSE monthly. In a study conducted among University students in Ethiopia, 9.7% were found to perform BSE monthly (Tafa Segen & Tadesse, 2015). Al-Sharbaty, Shaikh, Mathew, & Al-Baze (2013) found that, of those who practiced BSE, only 3% performed it monthly. Guezo, Sabeta, & Idem (2009) also reported that only 19% of the 57% who practiced BSE did so, monthly. This study agrees with almost all other studies in relation to low percentage of monthly self-breast examination. This can be because of information without emphasis on the importance of doing a monthly BSE.

5.2 Knowledge on breast self-examination

Although nearly ninety out of a hundred females in the University of Ghana had heard of BSE, only 30.9% knew how often BSE should be performed (30.9%), 11.9% knew that the suitable period to perform BSE was the fifth to seventh day of the menstrual cycle. Nearly 27% knew at least one position for performing BSE, out of which 29% knew all three (lying, standing, and sitting) positions of performing BSE. Also, 89.9% had heard about BSE but assessing the knowledge on the procedure of performing BSE, only 20% (39/209) knew the procedure for practicing BSE. Akuaomah Sarfo et al., (2013) and Amoor, Abdulie, Pal, et al., (2014) found a rather high proportion of female students who knew how to perform BSE. This contrast in findings is because Akuaomah Sarfo et al., (2013) and Amoor, Abdulie, Pal, et al., (2014) conducted their study among female nursing student and medical student respectively hence they may have been taught BSE in school resulting in the high knowledge reported. Barhane et al., (2017) also reported that though 64% of the participants had heard about BSE, a significant

proportion of the participants had limited knowledge about BSE. Almost only 3 in 10 participants knew how to perform and when to perform BSE. Generally, these discrepancies might be due to inadequate health education awareness programs to this target population on the details of BSE.

This study found the media and health workers as the predominant sources of information on BSE among females at the University of Ghana just as reported by Barbare et al., (2017). This finding is also consistent with Gwaga et al., (2009) who stated that the media and health personnel were the main sources of information on BSE for the females. Similarly, Akoumouh Sarfo et al., (2013) also reported media and formal education as the major sources of information on BSE among the females. The result is an expected finding because, nowadays, most of young University students and even those outside the University use the internet, television, and other mass media as a source of information. This is an indication that the media could be an effective medium to get more and more people aware of Breast self-examination and this time not just being aware but to educate on the procedure, how often it should be done and the most appropriate time to perform BSE.

5.3 Knowledge on breast cancer

Almost all females had heard about breast cancer, 97.9%. Overall, 64% of the female respondents per groupings by score on breast cancer risk factors and signs and symptoms had adequate knowledge. In contrast, 21% of female undergraduate students in a higher teachers training college in Cameroon had sufficient knowledge on Breast Cancer (Sama et al., 2017). A low level of knowledge (50%) about breast cancer and breast cancer screening among was reported by Akhtari-Zavare, Ghanbari-Baghestan, Latiff, Matinnia, & Hosseini, (2014), 54.5% poor knowledge by Parsa & Kandiah, (2005), and 55% poor knowledge about the risk factors

for breast cancer was reported (Akhigbe & Oluwalan, 2009). However in support of what is reported in this study, in a report by Azubuike & Celestina (2013) among northern Nigerian women, about 75.2% knew about breast cancer but in terms of knowledge on risk factors, an average of 29.33% had knowledge of the risk factors tested.

5.4 Attitudes towards breast self-examination

Majority of respondents strongly agreed that BSE needs to be performed by all females 81.4%. Nearly 70% (248/328) were strongly in agreement that BSE was important to determine breast cancer which reflects a similar attitude reported by Ameen, Abdulai, Pal, et al., (2014) and Birhanu et al., (2017). Most of the females strongly agreed that early detection prevents breast cancer, 72.9%. Similarly, Birhanu et al., (2017) and Oladimeji et al., (2015) reported that the majority of females strongly agreed on same. Another attitude reported in this study was that almost all females, 96.9% indicated reporting to a health facility as the action they would take if they detected a lump in the breast and finding is in agreement with (Birhanu et al., 2017). The attitude towards examining one's own breast may partly account for the reasons why patients present late to hospitals with advanced disease states.

5.5 Factors associated with BSE practice

In this study, most socio-demographic factors were found to have no association with practice. However, age was found to be significantly associated with the practice of BSE in both simple and multiple logistic regressions. A year increase in age significantly increased the odds of BSE practice among the females by 20% after multivariate analysis. Birhanu et al., (2017) had a contrasting report. They found no association between socio-demographic characteristics and BSE practice.

Another factor found to be associated with BSE practice in this study was Knowledge on the procedure for BSE. The odds of BSE practice among female students who knew the procedure for performing BSE was significantly 2 times as high compared to those who did not know the procedure for BSE. This finding agrees with what was reported by Bahane et al., (2017) who reported significantly higher odds of BSE among those who know the procedure and when to practice BSE as compared to those who did not know the procedure for BSE. It can be concluded that knowledge of BSE is a necessary precursor to student's adherence to performance of BSE.

5.4 Barriers to BSE practice

Reasons indicated for not practicing BSE among females who had never practiced BSE in this study shows that 43.3% of respondents had no reason to examine their breasts, 42.5% of respondents did not practice due to lack of knowledge, 37% attributed non-practice of BSE to forgetfulness, whilst 11% feared they would find a mass and hence do not practice BSE. In other studies, the most frequently reported barriers for BSE was the lack of knowledge for BSE about 60% in Ajman (Al-Sharhiti et al., 2013), a finding consistent with reports from Nigeria (Bassey et al., 2011) (stated by 87.5%), and Turkey (Karayurt et al., 2008) (98.5%). In a study from Saudi Arabia (Habib et al., 2010), the reported frequencies for the barrier (lack of knowledge for BSE was 63%. Identification of barriers regarding BSE is very essential and can be used to design appropriate educational interventions which promote this preventive behavior. Applications of this have been reported by researchers from Iran (Hajian et al., 2011) who have used information on perceived barriers as a predictor of BSE behaviour.

The perceived barrier emphasize on the Health Believe Model which stipulates that a health-related behaviour is influenced by a person's perception of the threat posed by a health problem and by the value associated with his or her action to reduce that threat (Hajian et al., 2011)

5.7 Limitations of the Study

The study was cross-sectional, so causal conclusions cannot be drawn. The study was carried out in only students of the University of Ghana and therefore might not represent the generality of Universities in Ghana and young females in wide-ranging and the practice of BSE may be different in other sectors of the population.

Although recall and information biases have been identified as one of the limitations identified in a quantitative method such as this, respondents were allowed time to fill questionnaires in the comfort of their rooms so that they do not to feel pressured in one way when answering a question concerning their knowledge and practice of BSE. Knowledge and Practice are behavioural hence respondents may overestimate or sometimes underestimate their response just to make their answers look excellent though confidentiality and anonymity have been explained. Also, the students were not assessed, practically on their ability to correctly perform BSE.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The study revealed that female students of University of Ghana have high prevalence of ever practice of BSE, but very low monthly practice. The predictor factors to the practice were age, level of study, knowledge of BSE procedure, and the attitudes that BSE should be performed by all females and BSE aids in detection of breast cancer. Almost all the female students have heard and have adequate knowledge on breast cancer, risk factors and signs and symptoms. Similarly, most of the respondents have heard about breast self-examination but in assessing the knowledge of BSE by procedure, only a few knew how to perform BSE. Media and health workers played a predominant role as the sources of information on BSE in this study.

The most discouraging factors of the female students of University of Ghana who have never examined their own breast are that they had no reason to examine their breasts, they lack the knowledge, and forgetfulness.

6.2 Recommendations

- Health education programs should be targeted at females through various media including social media, leaflets, television, and radio with emphasis on encouraging females to practice BSE.
- The University in collaboration with hospitals, churches, SRC-WOCOM, CEGENSA, should organize campaigns that go beyond awareness creation to training females on the procedure for BSE as part of meetings and annual week celebrations.

- Since health workers were identified as one of the **influential** sources of **information** on **HIV**, doctors and nurses, especially those in and around the University, should have the opportunity to educate females they come into contact with.

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