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



**DETERMINANTS OF BREAST CANCER SCREENING AMONG FEMALE
CIVILIAN PATIENTS AT THE OUT-PATIENT DEPARTMENT OF THE 37
MILITARY HOSPITAL, GREATER ACCRA REGION**

BY

EWURA ADJOA AHIMAH NUNOO

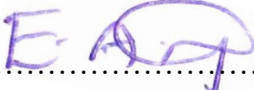
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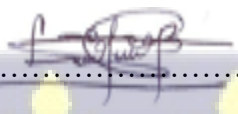
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OF MASTER OF PUBLIC HEALTH DEGREE.**

JUNE 2022

DECLARATION

I, Ewura Adjoa Ahimah Nunoo, the author of this dissertation, do solemnly declare that except for references to the literature and works of other researchers which have been appropriately cited and acknowledged, this dissertation is certainly an original one. Furthermore, these research findings have not been presented elsewhere for another degree either in whole or in part.

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DEDICATION

I dedicate this dissertation to all breast cancer survivors and four loved ones that I lost in 2020 - my auntie, Madam Naana Baiden, and three friends Dr Kwadwo Asiedu, Mrs Patience Adjei and Mr Isaac-De Graft. May their souls rest in peace. They encouraged me to pursue my master's degree in public health.



ACKNOWLEDGEMENT

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ABSTRACT

Background: Breast cancer is the most frequent cancer in women and the second leading cause of death from cancer in women worldwide. Sadly, in Sub-Saharan Africa (SSA), Ghana inclusive, Breast cancer is diagnosed late because of poor screening practices, and this results in a poorer prognosis and an increase in breast cancer mortality.

Objective: The main aim of this study was to assess factors influencing breast cancer screening amongst female Civilian patients at the Out-Patient Department (OPD) of the 37 Military Hospital in Accra, Ghana.

Methods: A descriptive cross-sectional research design was used. A quantitative method for collecting data was applied. A total of 180 Civilian female participants seeking health care at the 37 Military hospital OPD were chosen for the study. 180 structured questionnaires were administered between mid-June and mid-July to females aged between 20 and 60 years old. They were selected by simple random sampling using the balloting technique. The COVID-19 protocols were duly observed during data collection. The data was analyzed using SPSS Version 25, Microsoft Excel Version 2111, and Stata IC 16.1. The data was presented using descriptive statistics comprising frequency and percentages. Prevalence ratios and the multivariable modified Poisson regression model was used to determine the relationship between the independent variables and breast cancer screening uptake.

Results: The percentage of female Civilian patients at the 37 Military Hospital OPD who had screened for breast cancer in their lifetime was 40.1% (95% CI: 0.94 - 0.99). The most common screening method used amongst the women who partook the study was breast self-examination (44.5%). The ages at which they screened for breast cancer were between 35 and 39 years (21.4%). The common source of breast cancer information was mass media (44%). The socio-demographic factor that influenced breast cancer screening was educational level with patients who had attended tertiary having a higher breast cancer screening prevalence (aPR:8.20, 95%

CI:2.56 – 26.27). Those who had screened for cervical cancer screening were more likely to screen for breast cancer. Majority of the respondents were aware of breast cancer (98%), and many had poor knowledge about what breast cancer was and its treatment, signs, and symptoms (55.6%).

Conclusion: Although breast cancer awareness was high amongst the respondents, they had a poor knowledge of breast cancer. Educational level was a key determinant of breast cancer screening in the female Civilian OPD patients of the 37 Military Hospital. The common source of breast cancer information was obtained from mass media i.e television, radio, and newspapers. Breast cancer screening prevalence was higher in the 51 - 60 years age group, in employed patients, those who had given birth to one child and in Akans and Dagombas.



DEFINITIONS

Age-standardization: a technique used to allow populations to be compared when the age profiles of the populations are quite different.

Breast cancer awareness: whether one has heard of breast cancer or not.

Breast cancer screening: to examine one's breasts to identify any abnormalities so that treatment can start on time. It is usually recommended for women that are not showing any symptoms. Screening methods include breast self-examination, clinical breast examinations, ultrasonography, mammography, and magnetic resonance imaging.

Civilian: a person who is not in the armed services or police force

Clinical breast examination: breast examination that is done for you by a health-worker either a nurse or a doctor.

Mastectomy: the surgical removal of the breast.

Menarche: the occurrence of a first menstrual period in the female adolescent.

Menopause: the end of a woman's menstrual cycle.

Nulliparity: the condition in a woman of never having given birth.

Parity: the number of children that a woman has given birth to.

Regular breast self-examination: examining one's breasts for lumps or any other abnormal findings monthly.

Signs: abnormalities that a healthcare worker detects on a patient.

Symptoms: abnormalities observed by patients.

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LIST OF ABBREVIATIONS

aPR	adjusted Prevalence Ratio
AJOL	African Journal Online
BCS	Breast Cancer Screening
BRCA	Breast Cancer Genes
BSGI	Breast-Specific Gamma Imaging
CBE	Clinical Breast Examination
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
COVID-19	Coronavirus Disease
DALYs	Disability Adjusted Life Years
GLOBOCAN	Global Cancer Incidence, Mortality and Prevalence
GSS	Ghana Statistical Service
IARC	International Agency for Research on Cancer
IRB	Institutional Review Board
LDL	Low-density Lipoprotein
LMIC	Low Middle-Income Country
LRC	Low Resource Country
MRI	Magnetic Resonance Imaging
NGO	Non-Governmental Organization
OPD	Out-Patient Department
PEM	Positron Emission Mammography
SBE	Self-Breast Examination
SPSS	Statistical Package for the Social Sciences
SRHR	Sexual and Reproductive Health and Rights Policy
SSA	Sub-Saharan Africa

USA	United States of America
USG	Ultrasonography
WHO	World Health Organization



CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The abnormal proliferation of breast cancer cells is known as breast cancer. It is the most frequent malignancy in women and the second largest cause of cancer mortality in females (Sun et al., 2017). Breast cancer has no specific causes. However, certain risk factors that a woman may have, may increase her chances of acquiring breast cancer in her lifetime. Risk factors include gender (female), increased age (over 40 years), obesity, alcohol, family history of breast cancer, history of radiation exposure, early menarche, late menopause, smoking, mutations in BRCA 1 (Breast Cancer Genes 1) and BRCA 2 (Breast Cancer Genes 2), and postmenopausal hormonal therapy (World Health Organization (WHO), 2020). These factors are the same across the different countries in the world. The signs and symptoms of breast cancer include breast lumps that are usually not painful, nipple inversion, breast sores, bloody nipple discharge, increase in size of breasts, change in breast colour, texture, and shape of the breast, dimpling and tethering.

In 2020, 2.3 million women were diagnosed with breast cancer and there were 685,000 deaths worldwide. It accounts for 25% of all cancer patients (WHO, 2020). By December 2020, 7.8 million women who were diagnosed with breast cancer in the past five years were alive, making it the world's most prevalent type of cancer. Breast cancer takes the most Disability-Adjusted Life Years (DALY's) from women than any other cancer globally (WHO, 2018). In 2020, the number of new cases of breast cancer in African women was 186,598 with 85,787 deaths. Over the course of her lifetime, one in every eight women in the United States of America will get breast cancer (American Breast Cancer Society, 2021). However, it is the commonest cancer seen in both sexes in Africa. The highest age-standardized breast cancer death rate is seen in Africa, with the highest Incidence rates being recorded in Sub-Saharan African sub-region.

New cases recorded for breast cancer in Ghanaian women were 4,482 with 2,055 deaths in 2020. The 5-year prevalence for women of all ages with breast cancer is 66.14 per 100,000 (GLOBACON, 2020). Because of increased life expectancy, urbanization, and adoption of western ways of living, the incidence of breast cancer is gradually increasing in developing countries (Mohamed et al., 2016).

Breast self-examination, clinical examination and mammography are part of the global Breast cancer prevention strategy (WHO, 2015). Mammography is a frequently used screening method for Breast cancer detection that has been shown to effectively reduce mortality. In women between 50-69 years, mammography reduces breast cancer deaths by 20-30% (Elmore et al., 2005). A study showed that 12% of adult Ghanaian women had breast cancer screening and 3.4% of these women had done a mammogram (Ayanore et al., 2020).

Breast cancer treatment is usually effective, with about 90% survival rate when detected early. Treatment usually consists of surgery, radiation therapy, chemotherapy, and hormonal therapy (WHO, 2014). Breast cancer screening is readily accessible in the Westernized countries as compared to Africa. A study in 70 African countries, showed that about 2.2% of women between 40 and 69 years had screened their breasts for breast cancer in the last five years (Mahumud et al., 2020). Studies have shown that factors related to women's awareness, perceptions and knowledge significantly contribute to breast cancer screening (Osei-afriyie et al., 2021). Significant low levels of awareness and practice of Breast Self-Examination (BSE) were recorded in Akatsi South, a district in the Volta region of Ghana (Dadzi & Id, 2019). Akatsi is a rural community in Ghana.

The determinants of breast cancer screening practices in low middle-income countries (LMICs) remain under-researched. This study sought to assess determinants of breast cancer screening in female Civilian patients at the Out-Patient Department (OPD) of the 37 Military Hospital in

Accra. It identified the prevalence of breast cancer screening by the female patients receiving healthcare at that facility as well. Findings obtained in this research may be used in future health promotion strategies and may result in the formulation of policies that will make breast cancer screening affordable and readily accessible to every Ghanaian woman.

1.2 Problem Statement

Breast cancer affects nearly 1.5 million women worldwide each year (WHO, 2018). Every year in Ghana, more than 4,500 women were diagnosed with breast cancer and close to 2,000 died from it (Agyemang et al., 2020). It has been observed that a lack of adequate screening and treatment protocols in low and middle-income countries contribute to low survival rates (Bonsu et al., 2019). There are currently no national breast cancer screening programmes in Ghana (Ohene-Yeboah & Adjei, 2012), and this makes patients present late thereby increasing the breast cancer mortality rate.

Breast cancer screening is generally low in Ghana. Some studies have shown that there is a low breast cancer screening prevalence in Ghana (Agyeman et al., 2020; Dadzi & Id, 2019; Ayanore et al., 2020). Research in Ghana, Ethiopia and Nigeria show that socio-demographic characteristics, socio-economic characteristics, family history of breast cancer, socio-cultural characteristics, and religious barriers, affect breast cancer awareness and screening (Agide et al., 2019). Low awareness and knowledge of breast cancer among women in Sub-Saharan Africa (SSA), contribute to delayed breast cancer presentation and a poor prognosis (Akuoko et al., 2017).

Most developing countries, including Ghana consider women to be of a lower priority than men. This results in underfunding of female-related cancers, such as breast cancer. These countries lack an urgency for screening and care of female cancers compared to many Western countries. As a result, it is critical to include husbands in cancer education programs so that they may support their spouses to participate in early warning programs so that they can receive

adequate care sooner (Opoku et al., 2012). Most of the studies on breast cancer in Ghana have focused on knowledge, awareness, and screening practices. Few have focused on determinants of screening and breast cancer screening prevalence in Ghana.

This study sought to assess the determinants of breast cancer screening among female civilian patients of the out-patient-department of the 37 Military Hospital in Accra, using a quantitative, cross-sectional approach.

1.3 Justification of the study

According to the Ghana 2021 Population and Housing Census, the total female population in Ghana was 15.6 million i.e., 50.7% (Ghana Statistical Service (GSS), 2021.). This means that half of its population consists of females. If one in eight of them are likely to get breast cancer and almost half may end up dying, it shows how much breast cancer has an impact on society. Women play huge roles in society and therefore need to be protected and taken care off. If women are aware of breast cancer, know the significance of breast cancer screening and the numerous types of screening methods available to them, they will be more likely to participate in breast cancer screening. This will result in a reduction of the breast cancer mortality rate. It was therefore necessary for this study to be conducted especially in the COVID-19 era where people were mostly home and were not attending hospitals regularly.

This research will also encourage stakeholders to strengthen the ongoing health education on breast cancer, help reveal where and who to focus breast cancer advocacy on, increase breast cancer awareness and encourage women to screen often by teaching them how to examine their breasts correctly. Furthermore, policy makers, government agencies and non- governmental agencies (NGO's) should be encouraged to make screening affordable and easily accessible to all females in Ghana. In addition, the study can contribute to the development of interventions

and programmes to promote screening and develop guidelines. It also adds to the literature already known about breast cancer in Ghana.

A study done by Merdiemah (2016) at the 37 Military Hospital, focused on the level of knowledge and determinants of breast cancer screening among personnel of Ghana Armed Forces. Asuming-Bediako (2018) conducted a study on the knowledge, attitudes, and practices of BSE among female soldiers at the 37 Military Hospital. The studies done so far have focused on the staff of the Hospital. The researcher did not come across studies that had been done to assess the knowledge of breast cancer or explore the determinants associated with breast cancer screening in civilian patients seeking healthcare at this facility.

1.4 Objectives of the study

This section presents the objectives of the study grouped into general and specific as below.

1.4.1 General Objective

The general objective of the study was to assess factors associated with breast cancer screening among female civilian patients at the out-patient department of the 37 Military Hospital Accra, Greater Accra Region.

1.4.2 Specific Objectives

The general objective was achieved by addressing the following specific objectives;

- i. To assess the level of awareness of breast cancer screening among female civilian OPD patients at the 37 Military Hospital.
- ii. To examine the level of knowledge of breast cancer screening among female civilian OPD patients at the 37 Military Hospital.
- iii. To assess the level of practice of breast cancer screening among female civilian OPD patients of the 37 Military Hospital.
- iv. To identify the determinants of breast cancer screening amongst female civilian patients of the 37 Military Hospital OPD.

- v. To determine the breast cancer screening prevalence of female OPD patients of the 37 Military Hospital.

1.4.3 Research Questions

The specific objectives were addressed by answering the following questions;

1. What is the level of awareness of breast cancer screening in female civilian OPD patients of the 37 Military Hospital?
2. What is the level of knowledge of breast cancer among female civilian OPD patients of the 37 Military Hospital?
3. What are the breast cancer screening practices of the female Civilian OPD patients of the 37 Military Hospital?
4. What are the determinants of breast cancer screening amongst female Civilian OPD patients at the 37 Military Hospital?
5. What is the prevalence of breast cancer screening in female Civilian OPD patients of the 37 Military Hospital?

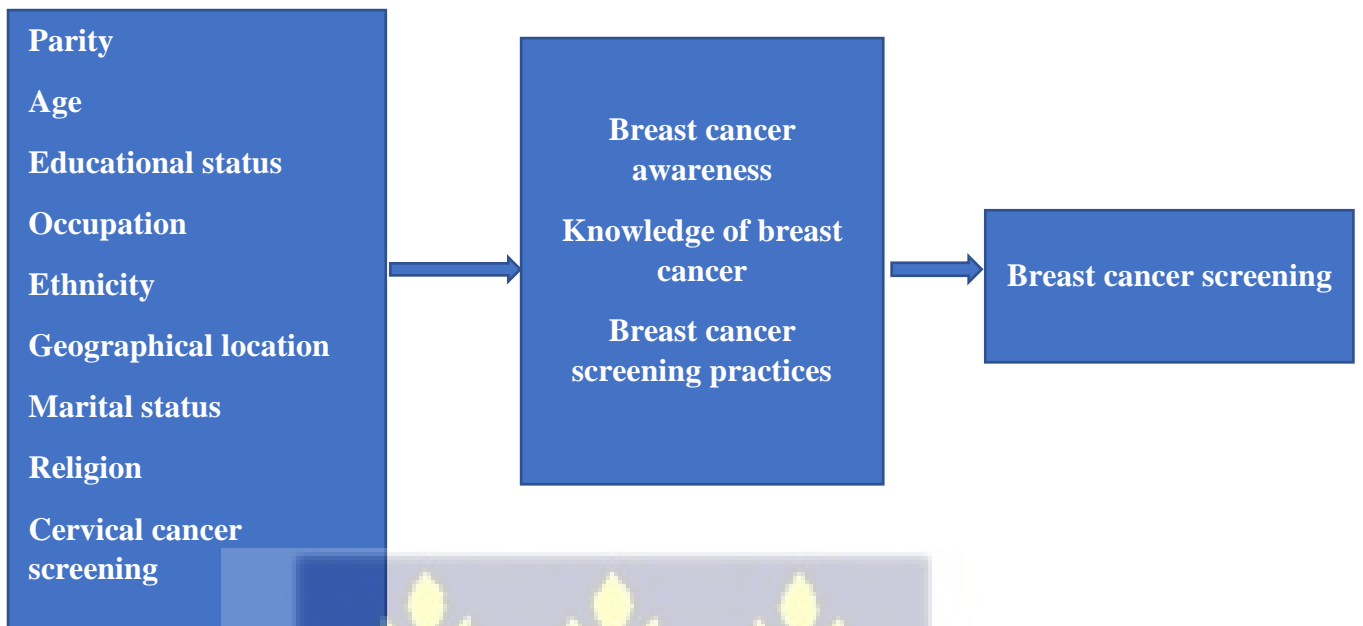
1.5 Outline of the dissertation

This dissertation comprises six chapters namely: introduction; literature review; methodology; results; discussion of results with limitations; conclusion and recommendations based on the study findings. Chapter 1 which is the introduction consists of the background of the study, the problem statement, the justification of the study and the study objectives with associated research questions. Chapter 2 discusses the literature and chapter 3 discusses the methods used in this study. Chapter 4 consists of all the results i.e major findings obtained during this study, in-line with the study objectives including tables and charts. Chapter 5 presents an overview of the findings, the findings compared to previous literature and the limitations of the study. The final chapter is chapter 6 and in this chapter, the conclusion, and recommendations for future research and to the various stakeholders are discussed.

1.6 Conceptual Framework

For many years, social cognition models established in the fields of health and social psychology have attempted to predict and explain health behaviours. The theory of planned behaviour, the transtheoretical model, and the health belief model are all popular models (McAlaney & Benson, 2019). The Health Belief Model, a method used by scientists to predict health behaviours, was updated, and incorporated into the conceptual framework as seen in Figure 1. 1 below. This model was first introduced in the 1950's and later updated in the 1980's (Boskey, 2022). The health belief model is a method that scientists use to try to anticipate how people will behave in terms of their health. The approach is founded on the idea that a person's willingness to change their health behaviours is largely determined by their views of their own health. People will not modify their habits unless they sense that they are in danger. Those with a family history of breast cancer or older women, for example, are more likely to screen for breast cancer since they know that they are at a higher risk of developing the disease. It is difficult to persuade a woman to get a mammogram if she does not know its importance. If a woman believes that breast cancer screening can help her avoid having breast cancer later in life, she is more likely to inspect her breasts on a frequent basis. Changing your health habits takes time, money, and effort. Expenses, discomfort, inconvenience, and social implications are all commonly considered impediments (Boskey, 2022). To encourage breast cancer screening in Ghana, we can increase accessibility, reduce costs of mammograms and breast ultrasound scans, and promote self-efficacy beliefs. External circumstances that drive a person to modify his health are examples of cues to action. This could be in the shape of a poster, a newspaper article, or television commercials. The Health Belief model can be used to figure out how people feel about breast cancer screening. Examining factors such as women's views of the risk of breast cancer, the advantages of cancer screening, and the barriers to screening might help health care providers find ways to encourage women to get examined.

Figure 1.1 Conceptual Framework



Source: Author's own construction



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature review consists of the following sub-sections: breast cancer; burden of breast cancer including incidence and prevalence of breast cancer, symptoms and signs of breast cancer, knowledge, and awareness of breast cancer; determinants of breast cancer screening; interventions to promote breast cancer screening, breast cancer screening methods and breast cancer screening prevalence.

2.1 Breast Cancer

Cancer is a disease in which the cells of the body proliferate uncontrollably. Cells are meant to grow and multiply at rates and there are mechanisms in place to stop the growth. However, with cancer, the cells continue to grow because of failure of the mechanisms to stop the growth of cells. Breast cancer is cancer of the breasts. It can affect the glands, ducts, or connective tissue (Clegg Lamptey, 2012). Breast cancers are classified according to the cells that are impacted. They are divided into stages based on the spread. The prognosis and therapy of breast cancer are frequently influenced by tumour stage and grading (Clegg Lamptey, 2012).

Sometimes the abnormal growth can be 'benign' or non-cancerous. It may also be 'malignant' meaning it is cancerous and can spread to other parts of the breasts and other organs such as the brain, spine, lungs and liver. The United States of America (USA) usually records 250,000 and 2,300 cases of breast cancer annually in women and men, respectively. 420,000 women and 510 men die each year from breast cancer. Black women usually have high mortality rates when they have breast cancer as compared to White women (Centers for Disease Control and Prevention (CDC), 2021). Breast cancer is usually treated surgically- lumpectomy or mastectomy and use of chemotherapy and radiotherapy.

2.2 Burden of Breast Cancer

In African women, breast cancer is the primary cause of cancer deaths, accounting for 28% of all cancers and 20% of all cancer fatalities. Incidence rates are low in Africa with an estimated 35 per 100,000 women compared to over between 90 to 120 per 100,000 in Europe or North America (Brinton et al., 2014). In Africa because there appears to be a lack of cancer registers, it is difficult to give precise incidence rates (Clegg Lamptey, 2012). Young African women, on average, are diagnosed with breast cancer when they are 50 years old or younger compared to Caucasians who have breast cancer being seen in elderly women (Boafo, 2020).

The report published by the International Agency for Research on Cancer (IARC) showed that 2,261,419 cases of breast cancer were newly diagnosed in both sexes and all ages. This is 11.7 % of all the cancers reported. Out of these new cases 684,996 died. In West Africa, the new cases in female breast cancer and deaths were 49,339 and, 25,626, respectively. Eastern, Middle, Northern and Southern Africa reported the following new cases 45,709, 17,896, 57,128 and 16,526, respectively (IARC, 2021). No new case of breast cancer was recorded for men. The corresponding deaths in Eastern, Middle, Northern and Southern Africa were 240,479, 500, 21,524 and 5,090, respectively. The 5-year prevalence of Breast cancer for both sexes globally are 41.3 % in Asia, 27.4 % in Europe, 15.3 % in Northern American, 9.1 % in Latin America and the Caribbean and 5.5 % in Africa. The current incidence and mortality rates in West Africa are 41.5 % and 22.3 % respectively showing that almost half of the women getting breast cancer in West Africa are dying from the disease (GLOBACON, 2021).

New Zealand and Australia currently have the highest incidence of breast cancer for both sexes - 95.5 %. However, only 12.1 % died from the disease (GLOBACON, 2020). The 2020 GLOBACON estimates that 4,482 (31.8%) new cases were reported, and breast cancer was the primary cause of female cancers in Ghanaian women. The source of the incidence data was from the Kumasi cancer registry. An estimated prevalence of 10,134 per 100,000 women for

all ages was recorded (GLOBACON, 2021). Late diagnoses and delayed treatment have been observed to be the reasons for the increased incidence rates in Ghana. Over 60% of Ghanaians living with breast cancer, present at either stage three or four and these are the advanced stages. The most essential approach for detecting breast cancer early and reducing its mortality rate is for women in their reproductive ages to screen for breast cancer as often as they can.

2.3 Signs and Symptoms of Breast Cancer

Symptoms of breast cancer include nipple discharge, which is usually bloody, a lump in the breast, change in the size or shape of the breast, anorexia, weight loss, skin dimpling, axillary lymph nodes, inverted nipples, and discolouration of the breast. Breast cancer is not usually painful but when advanced, it tends to be painful. In advanced stages, where the cancer has spread i.e., metastasis to the liver, lungs, spine and brain, there will be additional symptoms such as jaundice, back pain, chest pain, difficulty in breathing, delirium, and coma.

2.4 Risk Factors of Breast Cancer

Some of the risk factors of breast cancer are nulliparity; having an early menarche or late menopause; having children after 35 years; having a positive family history of breast cancer such as a sister, daughter, father or mother having breast cancer; having a past history of breast cancer or certain non-malignant breast disorders such as atypical ductal hyperplasia; having BRCA1 or BRCA2 genetic mutations; being overweight; getting older; previous treatment with radiation therapy to the breast or chest; using hormonal replacement therapy (usually used in post-menopausal women), low socio-economic status, using oral contraceptives, drinking alcohol; smoking and being physically inactive (American Breast Cancer Society, 2021). Research shows that older women have an increased breast cancer prevalence compared to younger ones because of their weaker immunity, prolonged exposure to multiple risk factors and sedentary lifestyles.

2.5 Interventions to Promote Breast Cancer Screening

Breast cancer early detection strategies have been recommended by the World Health Organization (WHO) as part of a comprehensive national cancer control measure and yet Ghana does not have structured screening programmes for women (Opoku et al., 2012). To achieve early detection of breast cancer in Ghana, breast self-examination (BSE) and clinical breast examination (CBE) which are screening tools that cost less, can be used. These tools have shown a low rate of advanced breast cancer in screened women compared to unscreened women (Bonsu et al., 2019).

Understanding regional and country-specific variations in breast cancer screening prevalence is critical for tailoring strategies to enhance breast cancer screening uptake among women of reproductive age in Sub-Saharan Africa (SSA). This will assist countries better understand probable reasons for the low incidence of breast cancer screening and will direct the prioritization of intervention measures to the most at-risk countries in SSA (Ba et al, 2020).

The Malawian Ministry of Health indicated that, breast and cervical cancer screening should be integrated into primary health care and made available to all women. However, recent assessments showed that these services had a limited capacity and were not widely available. Although Breast cancer screening has been included in the national Sexual and Reproductive Health and Rights Policy (SRHR), a national programme has not yet materialised. Meanwhile most cancer patients in Malawi are young and so they could really benefit from such interventions (Pittalis et al., 2020).

A study done reported that, personnel and material resources were insufficient to establish breast cancer screening programmes (Opoku et al., 2012). This study was conducted in Kumasi, Ghana and researchers showed the peak age of breast cancer to be in the range of 30 to 39 years. These cancers had poor prognostic characteristics which were unlikely to respond to

hormonal treatment (Ohene-Yeboah & Adjei, 2012). The researchers suggested that programmes (health education, advocacy, and screening) for breast cancer control in Kumasi should be designed and targeted at young women. Some of the reasons most Ghanaians delay seeking medical help for any changes observed in their breasts is due to the lack of national breast cancer screening programmes in Ghana. The methods used for their study included clinical examinations, imaging studies and pathological examination.

2.6 Awareness and Knowledge of Breast Cancer Screening Methods

Numerous studies have shown that awareness of breast cancer and knowledge of breast Ghana screening methods is generally high (Bonsu et al., 2019). Mass media (radio and television) is one of the main ways women get breast cancer related information and so women who tend to have access to these, are more likely to screen for breast cancer since they are more aware of the disease. Misconceptions and false information about the condition can have a negative impact on women's attitudes toward it (Bonsu et al., 2019).

A study in Ethiopia, revealed that a lot of women believed that supernatural forces caused breast cancer (Agide et al., 2019). These misconceptions affected the pattern of Breast cancer screening behaviour (Agide et al., 2019). Kudzawu et al (2016) showed that lack of knowledge resulted in women not performing BSE regularly. This researcher demonstrated that only 27% of women performed BSE in line with the recommended week following their periods due to lack of knowledge of the basic skills required to do the examination (Kudzawu et al., 2016).

Ajayi et al (2013) conducted research on breast and cervical cancer awareness in Ibadan, Nigeria. The screening practices in women living in a non-urban environment showed that 52% of them knew something about breast cancer (Ajayi et al., 2013). However, knowledge of breast cancer screening methods was poor irrespective of demographics. Only 28.8% and 5.8% of the respondents who knew about breast cancer, named CBE and BSE respectively as breast cancer

screening methods. Half of the respondents (53.8%) had practiced BSE and 17.3% had CBE done as part of antenatal care or physical examination (Ajayi et al., 2013).

2.7 Factors associated with Breast Cancer Screening

This section presents analysis of factors associated with breast cancer screening based on existing literature. These factors have been grouped under the following sections: individual (socio-demographic characteristics), level of awareness of breast cancer screening, level of knowledge of breast cancer screening, A woman's geographical location, particularly if she lives in a rural area is associated with a lower likelihood of the woman being screened for breast cancer. Furthermore, women who are poorer, less educated and do not have a health insurance are less likely to have their breasts screened (Antabe et al., 2020). Age, ethnicity, and chronic disease status affects breast cancer screening (Ayanore et al., 2020). Poor screening environments, perceived quality of care and convenience of screening influence breast cancer screening in Malawi (Pittalis et al., 2020).

A study done by Opoku et al shows that having a higher education was associated with better appreciation of breast cancer and breast cancer screening practices in Ghana (Opoku et al., 2012). A study done by Tsai et al in Taiwan showed that the total number of breast cancer screenings reduced by more than 22.2% because of the COVID-19 pandemic and this was more obvious in hospital examinations and medical outreaches (Tsai et al., 2020).

Household socio-economic status, staying in a rural environment, country health expenditure and having access to healthcare were significant determinants of breast cancer screening (Akinyemiju, 2012). A study done by Agyeman et al (2020) showed an estimated breast cancer screening prevalence of 4.5 % in older Ghanaian women (which is quite low). Women who are older, have screened for cervical cancer and have attained a senior secondary or higher education and those that usually participate in club meetings were likely to screen for Breast

cancer. They used a cross-sectional survey data set from the 2014/2015 (wave II) study on global ageing and adult health and a complex survey design methodology for their study. Descriptive statistics of the demographic characteristics of the respondents in their study were assessed as well (Agyemang et al., 2020).

A study done by Opoku et al (2012), showed a low knowledge of breast cancer and breast cancer screening methods and a reduced prevalence of breast cancer screening practices in Ghanaian women. The methods used was a mixed one. The information was collected via questionnaires. A cross-sectional descriptive study was done in Accra and Sunyani (Opoku et al., 2012). The data collected were analyzed using themes, the Chi squared test and Mann Whitney U Test. Grounded theories were derived from data collected during their interviews.

A study done by Ajayi et al, showed that respondents who did not examine their breasts gave reasons such as: ‘they did not think that they should’ (54.2 %), ‘they did not have any problems with their breasts’ (54.3 %), ‘they did not know how to examine their breasts’ (37.5 %), and 33.3% felt that health workers should be the ones to examine their breasts for them. For this study, three of the six rural wards were chosen by balloting and the three largest communities in each ward were purposively selected. The data was analyzed using descriptive statistics and the Chi-square test after structured interviews were conducted with 276 consented women. Rural women lack appropriate information on breast cancer. Primary health workers need to improve on their outreach services and train their colleagues to cascade training to the community women (Ajayi et al., 2013).

2.8 Breast Cancer Screening Methods

There are different breast cancer screening methods. The commonly practised ones include BSE, CBE, breast ultrasonography, mammography, and MRI (Magnetic Resonance Imaging).

The less common ones are Positron Emission Mammography (PEM), Breast-Specific Gamma Imaging (BSGI) and thermography (Amato et al, 2014).

Mammography is the use of minimal X-ray radiations that pass through the breast and produce images on a film. It usually identifies malignant tumours not easily seen or felt by the hand. Post-menopausal women have denser breasts and therefore, mammograms are a more effective Breast cancer screening tool for them. There may be false positives or negatives associated with mammograms. Ultrasonography creates images from reflected high-frequency sound waves. This technique is used to identify fluid-filled cysts which are benign from solid tumours. They are also useful for guiding needle biopsies. They are used to evaluate abnormalities that may be seen in mammograms. Women with dense breasts should combine mammograms with ultrasounds as the ultrasonography can increase breast cancer detection rates by 1.9 - 4.2% (Thigpen et al., 2018).

MRI's capture images of organs and tissues using high magnetic fields and radio frequency pulses that are analyzed by a computer. Usually, an intravenous contrast injection is given and prior to this, a kidney function test is done to be sure the kidneys are effectively working since the contrast is excreted via the kidneys. MRIs are not routinely used, and they are recommended for screening at high-risk women for breast cancer. They are effective at detecting invasive breast cancer. However, they tend to give false positives i.e., they can falsely identify benign lesions as cancerous (Othman et al., 2011).

A clinical breast exam is a physical examination of the breasts performed by a skilled health care practitioner, either as part of a routine annual check-up or during antenatal clinic visits. Lumps may be picked up during the examination and the correct investigations will be done. Usually, BSEs are done by women monthly, preferably a week after their menses, to identify any of the signs and symptoms of breast cancer such as breast lumps, inverted nipple, change

in size, shape, and colour of the breasts. BSE is a great approach for people to get to know their bodies. Scientific studies have shown that women who do BSEs are unlikely to die from breast cancer than women who do not perform (Takkar et al., 2017).

Mammography is commonly utilized in high-income countries, although it has numerous setbacks in SSA. BSE and CBE are early detection methods used more widely in SSA (Black & Richmond, 2019). The WHO recommends mammography annually for women between 50 to 69 years. In the United Kingdom, breast cancer screening programmes invite women between 50 and 70 years to have a mammogram every three years. Starting at 40 years, the American Cancer Society recommends yearly mammograms and CBEs for as long as a woman is in good health. Breast cancer mortality is reduced by 20-35% in women who are 50-69 years and reduced a bit in women between the ages of 40-49 years, who use mammography as a screening method (Takkar et al., 2017). In addition, the study conducted by Takker et al, indicated that India did not have an organized, government-funded, systematic breast cancer screening program. Furthermore, breast cancer screening in developing countries could be referred to as 'opportunistic screening' (Takkar et al., 2017).

Nartey and Cox (2017) compared the use of ultrasound and mammograms as breast cancer screening methods in Southwest Nigeria. They used a cross-sectional comparative descriptive analysis in a Lagos Tertiary Hospital in 300 consenting women between 30 and 60 years. The data was analyzed using the Chi-square test. Their study confirmed that breast ultrasound scans can be utilized as a first line of screening especially in rural or distant areas in low-income countries (Nartey & Cox, 2017).

The availability of advanced breast cancer screening programmes globally will lower breast cancer mortality rates and DALYs. Factors such as diabetes, high levels of low-density

lipoprotein (LDLs) and smoking can increase breast cancer mortality rates and so they need to be factored in the intervention programmes (Molassiotis et al., 2021).

2.9 Prevalence of Breast Cancer Screening

Understanding regional and country-specific variations in breast cancer screening prevalence is critical since it allows countries understand why there is a low incidence of screening and will direct the prioritization of intervention measures (Ba et al., 2020). A study in 14 low-resource countries (LRCs) showed that breast cancer screening prevalence in African countries was 14.3% (Mahumud et al., 2020). In the USA, 70% of women underwent mammographies. This percentage was higher in white women (72.1%), women with a higher educational level (80.1%), women born in the USA (71.6%) and women with health insurance (73.6%) (Vieira et al., 2017). The prevalence of breast cancer screening in four SSA countries was 12.9% (Ba et al, 2020). Akinyemihu et al (2012), did a study in 70 African countries which showed that 2.2% of women between 40-69 years had received breast cancer screening in the last five years. Agyeman et al (2020) estimated breast cancer screening prevalence of 4.5% in older Ghanaian women.

2.10 Summary of the literature review

The literature review discussed breast cancer and breast cancer screening methods in detail. Additionally, it provided some interventions that promote breast cancer screening globally and established the disease burden and prevalence both internationally and nationally. It also looked at similar research on the determinants of breast cancer screening and prevalence. The subsequent chapter, i.e the chapter three will discuss the methodology of the study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter discusses the research design, the study area, the study population, the sampling method, sample size, the study variables, the data collection tools, process, analysis, and ethical considerations for the study.

3.1 Research Design

It was a facility-based cross-sectional study with a descriptive, analytical design. This design was chosen because cross-sectional study designs are used for assessment of disease prevalence, knowledge of patients and for analytical purposes of associations between an exposure and outcome (Kesmodel, 2018). Furthermore, similar studies on breast cancer screening determinants and prevalence, used cross-sectional study designs (Ayanore, 2018; Osei-Afryie et al, 2021; Okoh, 2018)

3.2 Study Area

The researcher chose 37 Military Hospital because it is a tertiary institution and patients from different socio-demographic, cultural, and economic backgrounds are seen at the main OPD on a regular basis. The 37 Military Hospital is also one of the largest referral centers in Accra, Ghana. It is opened to both Civilians and military personnel, insured and uninsured. It is patronized by a lot of people because of the specialists and various departments that are available.

After Korle-Bu Teaching Hospital, the 37 Military Hospital is Ghana's second largest hospital. In the West African sub-region, it is a United Nations Level IV hospital that acts as the government's disaster and emergency hospital. It is a 400-bed general hospital which provides health care services to several international organizations and NGO's operating in Ghana and

West Africa (Military Medicine, 2021). It can be found on the Liberation Road and is a kilometre away from the Jubilee House.

The main OPD which is the first point of contact for most people, is also referred to as the polyclinic. There are two polyclinics at the 37 Military Hospital - the civilian and the military ones. The military one is only opened to military personnel and runs on Mondays to Fridays from 8 am till 2 pm. The civilian polyclinic is open to civilians (public) and runs 24 hours daily, weekends inclusive. Military personnel use the civilian clinic when the is closed. The breast cancer screening services available at 37 Military Hospital include breast ultrasound scans and mammograms. CBEs are available upon request of patients, but they are not routinely done. During October, which is breast cancer month globally, free clinical breast examination services are provided by the public health team at the hospital. Pink ribbons are worn by the staff in October to raise awareness on breast cancer.

The Public Health Department provides CBEs throughout the year at a fee of GHS 10 (equivalent to 1.75 USD). There are a few breast cancer posters on the doors and walls of the main OPD, surgical OPD and the Public Health Unit to encourage screening in women. That of cervical and prostate cancer can be seen on the walls and doors of the various OPDs at 37 as well. Figure 3.1 below shows the map of 37 Military Hospital. The map was designed by the Centre for Remote Sensing and Geographic and Information Systems (CERGIS, 2022) of the University of Ghana Legon campus.



Figure 3.1: 37 Military Hospital Map



Source: Centre for Remote Sensing and Geographic and Information Systems

3.3 Study Population

The study population were 180 female civilian patients receiving healthcare at the 37 Military Hospital's OPD who met the inclusion criteria.

3.3.1 Inclusion Criteria

Female, relatively stable (not ill-looking), Civilian patients between the ages of 20 and 60 years who were willing to partake in the study. Only Ghanaians and non-health care personnel partook in this study.

3.3.2 Exclusion Criteria

Female health care workers of 37 the Military Hospital, military personnel, severely ill patients, and foreigners (non-Ghanaians).

3.4 Sampling strategies

This section presents the methods applied to sample civilian female patients into the study.

3.4.1 Sample size

For cross-sectional studies, the following formula can be used once the prevalence of a previous study is known. The estimated breast cancer screening prevalence obtained from a similar study was 12.9% at a 95% confidence interval and 5% significant error (Ba et al, 2020). This was used to determine the sample size using Cochran's formula (1963):

$$N = \frac{z^2 P (1-P)}{d^2}$$

Where,

n=sample size

Z is the statistic corresponding to the level of incidence (1.96)

P= expected prevalence (obtained from similar studies)

d= precision or margin of error (0.05)

Substituting,

$$N = \frac{1.96^2 \times 0.129 \times 0.871}{0.05^2}$$
$$= 172.65$$

Adding a 5% non-response rate which was 8.63, the total sample size was estimated to be 181.28 was approximated to 180.

3.4.2 Sampling method

Potential participants were recruited by the research assistants using convenience sampling. Furthermore, simple random sampling, by balloting was used to select the participants at the

OPD answering the questionnaires. Women over 20 years old were used for this study because experts and studies show that women at that age are likely to begin BSE monthly (Boafo et al. 2019). 360 patients that were part of the inclusion criteria were made to pick up little pieces of paper with a 'yes' or 'no' written on it. The ones with the 'yes' on the paper took part in the study after providing informed consent. Those that selected the 'yes' paper were 180 in total.

3.5 Study variables

The variables measured in the study were divided into both dependent and independent as shown below.

3.5.1 Dependent variable

The dependent variable for this study was breast cancer screening

3.5.2 Independent variables

The independent variables for this study were as follows:

1. Age
2. Educational status
3. Marital status
4. Occupation
5. Ethnicity
6. Religion
7. Geographical location
8. Parity
9. Cervical cancer screening
10. Breast cancer awareness
11. Breast cancer knowledge

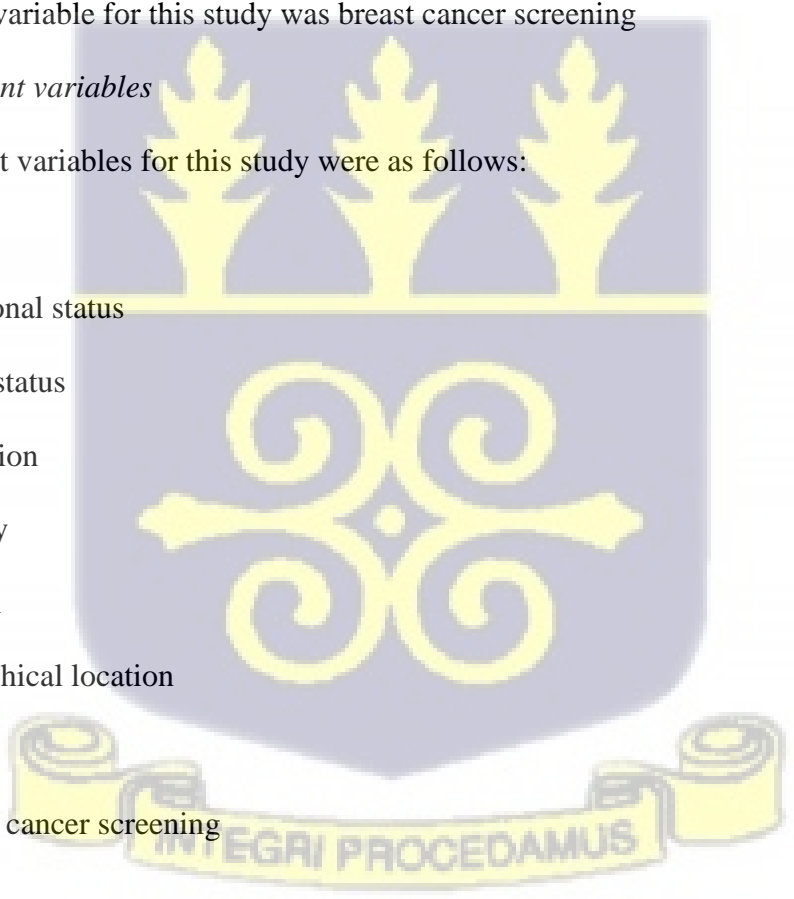


Table 3.1 below defines the key study variables used in this study.

Table 3.1: The definitions of the key study variables of this study

Variable	Type of Variable	Operational Definition	Scale of measurement
Breast cancer screening	Dependent	The type of breast cancer screening method used by respondents History of breast cancer screening in study participants	Categorical Self-examination Clinical examination Ultrasonography Mammography, MRI Binary Yes No
Breast cancer awareness	Independent	Having heard of breast cancer The source the information on breast cancer was obtained	Binary Yes or No Categorical Television, radio, newspaper, healthcare worker
Breast cancer knowledge	Independent	Knowing the cause of breast cancer, signs and symptoms and treatment of breast cancer	Categorical Lump in the breast, nipple turned inwards, swelling of the breasts, bloody nipple discharge, breast pain, dimpling Categorical Surgery Chemotherapy Radiotherapy Prayer camp
Parity	Independent	The number of children that a woman has in her lifetime	Nominal No child 1 2 3 and above
Age	Independent	Age at time the study was conducted in completed years	Categorical 20-30 31-40

			41-50 51-60
Educational status	Independent	Level of education that the participant last obtained	Categorical No schooling Primary education Secondary education Tertiary education
Employment status	Independent	Whether study participant is employed (working) or not	Binary Yes No
Ethnicity	Independent	The tribe you belong to	Nominal Akan, Ga, Ewe, Fante, Dagbani
Geographical location	Independent	Place of residence	Binary Urban rural
Marital status	Independent	The respondent indicates her current marital status.	Nominal married, single, divorced, separated
Religion	Independent	The respondent indicates her religious affiliation	Nominal Muslim, Christian, Traditionalist, Atheist
Cervical cancer screening	Independent	Examination of cervix to observe any pre-cancerous lesions either using a Pap smear test or visual inspection of the cervix with acetic acid.	Binary Yes No

3.6 Data Collection: Questionnaire Design and Administration

Data was collected from women aged 20 and 60 years of age from 10th June to 10th July 2021 at the 37 Military OPD waiting area. The recruitment of the study participants was done at the entrance of the OPD. Questionnaires were self-designed, self-administered and both open and closed ended questions were asked. The research assistants also administered some of the

questionnaires. Although the questionnaires were in English, they were interpreted in the local dialect - Akan or Ga, for those who were illiterate. All COVID-19 protocols were duly observed during the data collection process. These administered questionnaires were divided into different sections, which included demographic data, questions on breast cancer awareness, knowledge, and screening practices. The respondents had about twenty minutes to answer the questions which were 23 in total. These sub-sections were explained to the participants of the study prior to them answering either in English or a language that they were comfortable with. The questionnaires had mostly closed-ended and two open-ended questions

3.6.1 Quality assurance

Daily checks were done during the data entry process and the collected data was carefully analyzed. Any inconsistencies detected were corrected to ensure good quality control.

3.6.2 Pretesting

To ensure that accurate data were derived, pretesting of the questionnaires were done in a similar environment (Greater Accra Regional Hospital OPD formerly Ridge Hospital). Permission was sought from the chief executive officer of the Ridge hospital and once approved, the pretesting was done. The questionnaires were distributed to 20 women at the main OPD via convenience sampling during the first week in June 2021. Any questions that were observed to be difficult or ambiguous were modified before the data collection began at the 37 Military Hospital.

3.7 Data Management and Analysis

This section discusses how the data collected was entered, processed, and analyzed.

3.7.1 Data Entry and Processing

The data collected was entered and cleaned before it was processed using the SPSS (Statistical Package for Social Sciences) version 25.

3.7.2 Data Analysis

Graphs and tables were drawn with Microsoft Excel Version 25. Percentages and frequencies were obtained during the data analysis process of the demographic data, breast cancer awareness and knowledge and breast cancer screening practices. The statistical analysis was achieved by using the Stata IC 16 software. Inferential statistics used Prevalence Ratios and the multivariable modified Poisson regression model to determine between the relationship between the dependent and independent variables. Since the level of significance was 5%, a Confidence Interval of 95% was used during the analysis.

3.8 Ethical Considerations

3.8.1 Ethical approval

Ethical clearance was obtained from the 37 Military Hospital Institutional Review Board before the study was conducted (37MH-IRB/UG/MP/504/2021). Participants filled consent forms prior to filling of questionnaires. To ensure privacy and confidentiality, they did not write their names, initials, phone numbers or any other personal information on the questionnaires. The research assistants explained the details of the consent forms to the respondents before their participation. Permission was sought from the commanding officer of the 37 Military Hospital and approval was granted prior to data collection.

3.8.2 Potential Risks/ Benefits of the Study

The study had no potential risks. The results obtained may influence breast cancer promotion and screening programmes. It will also help us to know which groups of women require more health education on breast cancer and to identify areas where there will be the need to focus advocacy on. Furthermore, this study may help develop future policies for breast cancer screening programmes in Ghana.

3.8.3 Privacy/ Confidentiality

This was a strictly confidential study. No names or contact numbers were written on the questionnaires.

3.8.4 Conflict of Interest

There was no conflict of interest.

3.8.5 Compensation

No compensation was given to the study participants.

3.8.6 Data storage and usage

All the data will be stored on my personal laptop, and I will be responsible for this storage. I will be the only one with access to the collected data and this data will be password protected. Collected data will only be used for academic and publication purposes and data will be destroyed after study has been published.

3.8.7 Results dissemination

Results will be disseminated by sending a report to the 37 Military Hospital; publishing dissertation findings in national journals and state-wide publications and presenting these findings at national conferences and meetings if given the chance to do so.

3.8.8 COVID-19 Protocols

These Covid-19 protocols included wearing face masks, ensuring social distancing amongst the participants and the research assistants during the data collection, and using alcohol-based hand sanitizers. There was also a Veronica bucket and soap at the entrance of the OPD for patients to wash their hands before entering the waiting area of the OPD where the study was conducted.

3.8.9 Voluntary withdrawal

Participants were informed of withdrawal at any time, and this did not affect the health care received at the facility.

3.8.10 Funding

This research was self-funded.

3.9 Summary of chapter 3

This chapter illustrated the sampling strategies and the study method used in the study. In addition, the study variables involved, the data collection, management, and analysis, as well as the ethical considerations were discussed. Quantitative data was obtained using structured questionnaires. The subsequent chapter i.e chapter four discusses the study results.



CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the results of the study. The respondents' demographic characteristics are discussed first, followed by the awareness of breast cancer, knowledge of breast cancer, breast cancer screening practices, breast cancer screening prevalence and the determinants of breast cancer screening in Civilian patients of the OPD at 37 Military Hospital.

4.1 Demography of the Respondents

Table 4.1 shows the respondents' demographic characteristics. Majority of the respondents were between 31 and 41 years (70/180, 38.9%) and the lowest ages were between 51 and 60 years (23/180, 12.8%). They were mostly Christians (138/180, 76.7%) with 21.1% (38/180) being Muslims, 1.67% (3/180) being Atheists and 0.56% (1/180) being a Buddhist. Many of them had attained tertiary educational level (64/180, 35.6%), 24.4% (44/180) had obtained a senior high school certificate, 20% (36/180) had obtained a junior high school certificate, 12.8% (23/180) had never been to school and 7.2% (13/180) had received primary education. Those who were employed constituted 84.4% (152/180) and the unemployed people were 15.6% of the respondents (28/180). Most of the employed respondents were traders (52/180, 28.9%). Twenty seven percent (49/180) had white collar-jobs (bankers, secretaries, accountants, lawyers, and managers). Sixteen percent (29/180) were housewives with 15.6% being unemployed (28/180), and 3.3% (6/180) being artisans (mechanics, carpenters, painters, hairdressers, and seamstresses). The 'others' in this category consisted of students, pensioners, cleaners, teachers, cleaners, and waitresses. Most of the respondents were married (81/180, 45%) with 35.6% (64/180) being single, 6.1% (11/180) being separated, 5% being widowed (9/180), 4.4% (8/180) co-habiting and 3.9% (7/180) divorcees. Many of the respondents were Akan (64/180, 35.6%). The Ewes, Ga-Adangbes, and Dagombas were 18.3% (33/180), 13.9%

(25/180) and 8.9% (16/180) respectively. The Fante and Hausa ethnic groups constituted 11.7% of the respondents. The place of residence for majority of the respondents was urban (86.7%). Most of the respondents had no children (55/180, 30.6%). Twenty one percent (38/180) and nineteen present (34/180) of the respondents had two and three children respectively. In addition, 7.2% (13/180) had four children while 7.8% (14/180) had more than four children.

Table 4.1 below illustrates the demographic characteristics of the respondents.

Table 4.1: Demographic Characteristics of Respondents

	Frequency (n=180)	Percentage (100%)
Age		
20-30 years	53.00	29.44
31-40 years	70.00	38.89
41-50 years	34.00	18.89
51-60 years	23.00	12.78
Religion		
Christian	138.00	76.67
Muslim	38.00	21.11
Atheist	3.00	1.67
Others †	1.00	0.56
Education Level		
never been to school	23.00	12.78
Primary	13.00	7.22
JHS	36.00	20.00
SHS	44.00	24.44
Tertiary	64.00	35.56
Occupation		
Unemployed	28.00	15.56
Employed	152.00	84.44
Marital status		
Married	81.00	45.00
Divorce	7.00	3.89
Single	64.00	35.56
Co-habiting	8.00	4.44
Widowed	9.00	5.00
Separated	11.00	6.11
Ethnicity		
Akan	64.00	35.56
Ga-Adangbe	25.00	13.89
Ewe	33.00	18.33

Fante	21.00	11.67
Hausa	21.00	11.67
Dagomba	16.00	8.89
Place of residence		
Urban	156.00	86.67
Rural	24.00	13.33
Parity		
no child	55.00	30.56
1	26.00	14.44
2	38.00	21.11
3	34.00	18.89
4	13.00	7.22
more than 4	14.00	7.78

Key - F: Buddhists and Traditionalists

4.2 Awareness of Breast Cancer amongst Respondents

To assess the awareness of breast cancer amongst the respondents, they were asked if they have heard of breast cancer before and their sources of breast cancer information. Questions on the signs and symptoms as well as different types of breast cancer treatments and the causes of breast cancer were asked. The results showed that when asked if they had heard of breast cancer before, 97.8 % of them said yes and 2.2 % said no (Figure 4.1). Majority of the respondents indicated mass media (television, radio, and newspaper) as their main source of information (44%). The least source of breast cancer information was from other sources such as school and books (1.2%).

Table 4.2 shows the different types of breast cancer screening methods known to the respondents. Multiple responses were provided. Most of the respondents (36%) knew of BSEs whereas 24.7%, 9%, 12.5% and 2.3% knew about CBEs, breast ultrasound scans, mammograms, and MRIs respectively. Fifteen percent of the respondents were not aware of any screening method. Majority of the women thought that women should screen for breast cancer, when they were less than 20 years old (51.4%), 17.5 % thought that women should

screen for breast cancer between 20 and 29 years and 16.9 % had no idea the age at which women should screen for breast cancer.

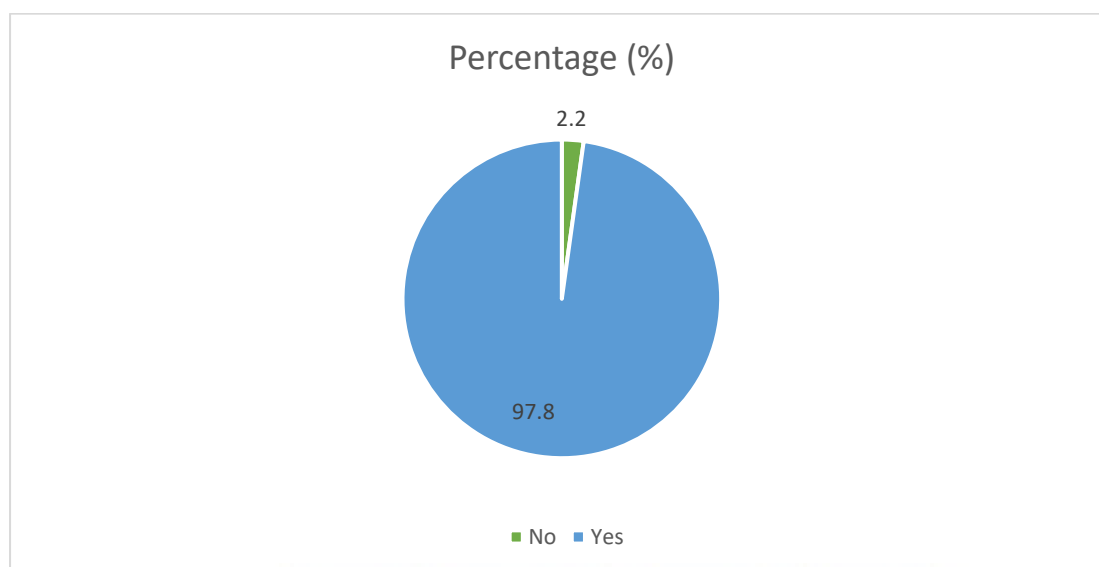


Figure 4.1: Pie Graph Showing Whether the Respondents Had Heard of Breast Cancer

Table 4.2 Breast Cancer Awareness of the Respondents

Variable	Frequency	Percentage (%)
Source of breast cancer information		
Family/friend	30.00	9.17
Health worker	53.00	16.21
Mass media	144.00	44.04
Social media	43.00	13.15
Church	53.00	16.21
Others	4.00	1.22
Breast cancer screening method aware of		
Breast-self examination	109.00	35.86
Clinical breast examination	75.00	24.67
Breast ultrasound scan	28.00	9.21
Mammography	38.00	12.50
MRI	7.00	2.30
None	47.00	15.46
Awareness of cause of breast cancer		
Yes	16.00	8.89
No	164.00	91.11
Awareness of signs/symptoms*		
Lumps in the breast	118.00	33.52
Nipples turned inwards	8.00	2.27

Swelling of the breasts	53.00	15.06
Change in colour of breasts	10.00	2.84
Bloody nipple discharge	13.00	3.69
Breast pain	102.00	28.98
Dimpling	23.00	6.53
Sores on the breasts	5.00	1.42
All the above	3.00	0.85
No idea	17.00	4.83
Treatment of breast cancer		
Surgery	109.00	46.6
Chemotherapy	38.00	16.2
Radiotherapy	24.00	10.3
Prayer camps	1.000	0.40
Have no idea	62.00	26.5
Age a women should screen for breast cancer (years)		
Less than 20	91.00	51.41
20-29	31.00	17.51
30-39	11.00	6.21
40 and above	14.00	7.91
Have no idea	30.00	16.95

**Multiple responses were provided*

4.3 Knowledge on Breast Cancer

Ninety percent of the respondents did not know the cause of breast cancer. Four percent of the respondents mentioned that breast lumps caused breast cancer whereas, three percent said it was caused by the overgrowth of the breast cancer cells. Two percent and a percent of the respondents said breast cancer was caused by a positive family history of breast cancer and poor diets respectively. Most of the respondents (46.6%) knew that surgery was used to treat breast cancer.

The knowledge on breast cancer was assessed by giving a point each to answers correctly provided for the cause of breast cancer, signs and symptoms of breast cancer and breast cancer treatment. The maximum score that each respondent could obtain, was 13 points. The respondents were individually graded and placed in different categories depending on the

scores obtained. A score of 0 - 4 was categorized as poor knowledge of breast cancer. A score of 5 – 9 was categorized as moderate knowledge of breast cancer. Additionally, a score of 10 - 13 was categorized as having good knowledge of breast cancer. Fifty-five percent of the respondents had poor knowledge of breast cancer. Thirty-three percent of the respondents had moderate knowledge of breast cancer and twelve percent of the respondents had good knowledge on breast cancer. Table 4.3 below summarizes the knowledge of breast cancer in the respondents.

Table 4.3 Knowledge of Breast Cancer among the Respondents

Knowledge of breast cancer	Percentage of patients (%)
Good (10-13 points)	12
Moderate (5-9 points)	33
Poor (0-4 points)	55

4.4 Breast Cancer Screening Practices

The breast cancer screening method that was mostly used by the respondents was BSE (24.3%), followed by CBE (21.3%). The screening method that was the least used was the breast ultrasound scan (4.3%). Majority of the respondents did a yearly BSE (38.4%) and 4.1% of them did a monthly BSE. Most of the women started screening for breast cancer between 30 and 39 years (37%) and 5.5% of the women screened when they were less than 20 years. The COVID-19 pandemic did not prevent the respondents in this study, from screening for breast cancer (82.3%). Table 4.4 below summarizes the screening practices of the respondents.



Table 4.4 Breast Cancer Screening Practices of the Respondents

Variable	Frequency	Percentage (%)
Breast cancer screening method ever used		
Breast self-examination	57.00	24.25
Clinical breast examination	50.00	21.28
Breast ultrasound scan	10.00	4.26
Mammography	11.00	4.68
Never screened	107.00	45.53
Frequency of BSE		
Monthly	3.00	4.11
3-6 months	12.00	16.44
Yearly	28.00	38.36
Every 2 years	10.00	13.69
3 or more years	20.00	27.40
Age at which women began screening (years)		
Less than 20	4.00	5.48
20-29	25.00	34.24
30-39	27.00	36.99
40-49	12.00	16.44
50 and above	5.00	6.85
Did COVID-19 prevent you from screening		
Yes	31.00	17.71
No	144.00	82.29

4.5 Breast Cancer Screening Prevalence

Out of the 180 respondents, 73 (40.6%) patients had screened for breast cancer in the past. 107 people (59.4%) had not screened for breast cancer before (95% CI, 33.58 – 47.00). Figure 4.2 below, illustrates these percentages in a pie-chart.

Table 4.5 below summarizes the prevalence of breast cancer screening of the independent variables of the female Civilian OPD patients at the 37 Military Hospital. The highest prevalence for breast cancer screening was 43.4% in the 51 - 60 years group (95% CI: 26.12 - 63.82). The lowest prevalence was 38.6% (95% CI: 27.89 - 50.48) and was recorded in the 31 - 40 years group. The Muslims, Buddhists and atheists had a higher prevalence of breast cancer screening - 42.9% (95% CI: 28.84 - 58.12), as compared to the Christians with a screening prevalence of 39.9% (95% CI: 31.98 - 48.28).

Those who were employed had a higher prevalence of 46.5% (95% CI: 36.90 - 54.44) than the unemployed who had a breast cancer screening prevalence of 29.8% (95% CI: 19.36 -42.94). The prevalence of breast cancer screening was 50% for both the Akans (95% CI: 37.91 - 62.09) and Dagombas (95% CI: 16.80-52.31). The lowest prevalence was recorded in the Fantes - 23.81% (95% CI:10.21 - 46.20). The prevalence of breast cancer screening in respondents living in a rural area was 29.2% (95% CI: 14.51 - 49.97) and that of those living in an urban area was 42.3% (95% CI: 34.75 - 50.24). Those with one child had a higher breast cancer screening prevalence of 50% (95% CI: 31.56 - 68.44) as compared to the nulliparous women or those with multiple children.

With regards to the educational level, the respondents that had obtained tertiary education had the highest prevalence of breast cancer screening i.e 57.8% (95% CI: 45.40 - 69.31). The lowest prevalence was recorded in those respondents who had never been to school or had attended primary school and this was 11.1% (95% CI: 4.20 - 26.25). Women that had screened for cervical cancer had a higher breast cancer screening prevalence of 82.2% (95% CI: 68.18 - 90.90) as compared to those who had not screened yet for cervical cancer.

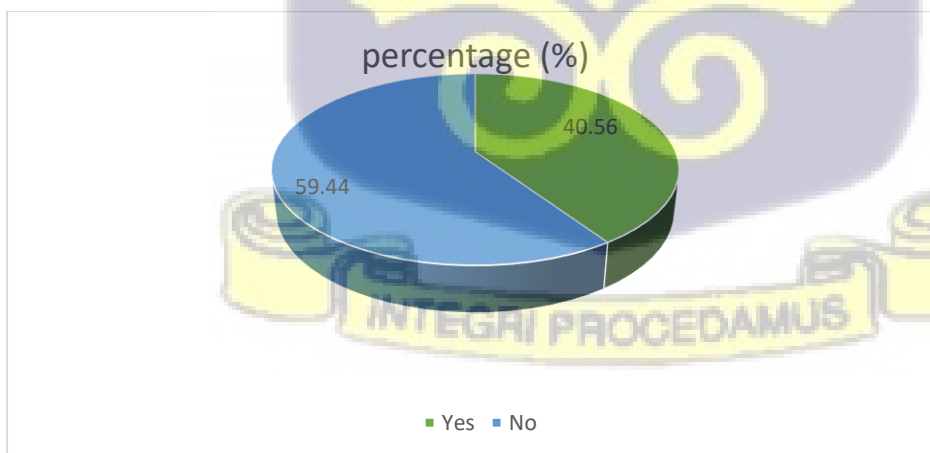


Figure 4.2 Breast Cancer Screening Prevalence in Female Civilian OPD patients of the 37 Military Hospital

Table 4.5: Prevalence of Breast Cancer Screening amongst Female Civilian OPD Patients of the 37 Military Hospital

Variables	Percentage (%)	95% CI
Age (years)		
20-30	41.51	29.05 - 55.16
31-40	38.57	27.89 - 50.48
41-50	41.18	26.03 - 58.20
51-60	43.48	26.12 - 63.82
Religion		
Christians	39.86	31.98 - 48.29
Others	42.86	28.84 - 58.12
Employment		
Unemployed	29.82	19.36 - 42.94
Employed	45.53	36.90 - 54.44
Marital status		
Married	53.09	42.17 - 63.71
Divorced	28.57	7.13 - 67.58
Single	28.13	18.44 - 40.38
Co-habiting	37.50	12.43 - 71.71
Widowed	22.22	5.55 - 58.16
Separated	45.45	20.15 - 73.35
Ethnicity		
Akan	50.00	37.91 - 62.09
Ga-Adangbe	32.00	16.80 - 52.31
Ewe	30.30	17.07 - 47.87
Fante	23.81	10.21 - 46.20
Hausa	47.62	27.74 - 68.28
Dagomba	50.00	27.16 - 72.84
Residence		
Rural	29.17	14.51 - 49.97
Urban	42.31	34.75 - 50.24
Parity		
no child	30.91	20.10 - 44.31
1	50.00	31.56 - 68.44
2	45.88	35.56 - 56.57
3 and above	28.57	11.07 - 56.25
Educational level		
never been to school/primary	11.11	4.20 - 26.25
JHS	27.78	15.58 - 44.49
SHS	50.00	35.55 - 64.45
Tertiary	57.81	45.40 - 69.31
Cervical cancer screening		
Yes	82.22	68.18 - 90.90

4.6 Determinants of Breast Cancer Screening

In the multivariate regression analysis, those who completed JHS ($p=0.04$, 95% CI: 1.03-11.94), SHS ($p<0.05$, 95% CI: 2.20-22.77) or a tertiary degree ($p<0.05$ 95% CI: 2.56-26.67) were 3.52, 7.08 and 8.2 times more likely to screen for breast cancer respectively than those who had never been to school or had just attained primary school. The other variables in the model were not associated with breast cancer screening. The educational level of the respondents involved in the study was the most significant of all the other determinants of breast cancer screening. Table 4.6 below, shows the relationship between the independent variables and screening uptake as discussed.

Table 4.6 Multivariable Modified Poisson Regression Model to Determine the Relationship between the Independent Variables and Screening Uptake

Variable	aPR	p-value	95% CI
Age (years)			
20-30	1		
31-40	0.77	0.45	0.39 - 1.51
41-50	0.66	0.32	0.29 - 1.49
51-60	1.26	0.63	0.49 - 3.23
Religion			
Christians	1		
Others*	0.99	0.99	0.41 - 2.39
Employment			
Unemployed	1		
Employed	0.39	0.58	0.62 - 2.26
Marital status			
Married	1		
Divorced	0.74	0.70	0.16 - 3.41
Single	0.47	0.11	0.18 - 1.18
Co-habiting	0.62	0.46	0.18 - 2.19
Widowed	0.47	0.32	0.10 - 2.10
Separated	0.82	0.69	0.30 - 2.24
Ethnicity			

Akan	1		
Ga-Adangbe	0.9	0.82	0.38 - 2.13
Ewe	0.65	0.25	0.31 - 1.35
Fante	0.62	0.34	0.22 - 1.68
Hausa	1.09	0.87	0.38 - 3.11
Dagomba	1.08	0.88	0.36 - 3.24
Residence			
Rural	1		
Urban	1.47	0.92	0.65 - 3.34
Parity			
no child	1		
1	1.53	0.35	0.62 - 3.76
2	1.26	0.61	0.51 - 3.06
3 and above	1.37	0.39	0.44 - 7.84
Educational level			
Never been to school/primary	1		
JHS	3.52	0.04	1.03 - 11.94
SHS	7.08	p<0.05	2.20 - 22.77
Tertiary	8.20	p<0.05	2.56 - 26.27

4.7 Summary of Results

The study participants were mostly young, had attained tertiary educational level, were mostly employed, mostly married and Akans. Majority of the respondents were aware of breast cancer and the most common screening method they knew was the BSE. Overall, the patients had a poor knowledge of breast cancer especially with regards to the cause of breast cancer and the treatment regimen for breast cancer.. The breast cancer screening prevalence in this study was 40.6%. The determinant of breast cancer screening that was significant in this study population was educational level. The next chapter i.e the chapter 5, discusses the results in detail.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter discusses the results of the study that was conducted. The purpose of this research was to assess the determinants of breast cancer screening amongst female Civilian patients at the OPD of the 37 Military Hospital in Accra, Ghana. The research questions that guided the study were:

- What are the levels of awareness of breast cancer in female Civilian OPD patients of the 37 Military Hospital?
- What are the levels of knowledge of breast cancer among female Civilian OPD patients of the 37 Military Hospital?
- What are the breast cancer screening practices of the female Civilian OPD patients of the 37 Military Hospital?
- What are the determinants of breast cancer screening amongst female Civilian OPD patients at the 37 Military Hospital?
- What is the prevalence of breast cancer screening in female Civilian OPD patients of the 37 Military Hospital?

5.1 Overview of Findings

Almost all the respondents were aware of breast cancer although the knowledge was poor (55%). Breast cancer screening prevalence was low in the patients. Breast ultrasound scans and mammograms were the least used screening tools, and this may be because the BSE was more cost-effective. The frequency at which BSE was being done was less than normal. Instead of the usual monthly screening, most (38.4%) of the respondents were examining their breasts annually. The age at which the women screened their breasts for breast cancer, was late. Instead of screening for their breasts at the recommended age of 20 years, the respondents were

screening after the age of 30 years. Breast cancer screening prevalence was increased in the employed and educated patients.

5.2 Findings Compared to Other Literature

It was good seeing a high level of awareness of breast cancer in the respondents. This was probably due to the health talks on radio and television and health blogs on social media. Osei-Afriyie et al (2021) showed that 73% of their respondents had heard about breast cancer. Their study also showed that social media was the most common source of information for breast cancer. However, this study recorded the commonest source of information for breast cancer to be from mass media i.e radio and television. A cross-sectional study done by Ogungisi et al (2017) on African migrant women in Australia, recorded 76.1 % of breast cancer awareness in those women. The knowledge of breast cancer was poor, and this could possibly be because people may not understand the terms health-care workers used during their health advocacy programmes. Although 97.8% of the respondents had heard of breast cancer, only 40.6% had screened for breast cancer. This means that being aware of breast cancer did not necessarily lead to screening.

As shown in table 4.3, the most common breast cancer screening method used by the respondents was the BSE. Amenuke-Edusei & Birore (2020) also showed BSE to be a common tool used by their respondents. Their study showed 71% of women performed BSE and 14% has done a mammogram (Amenuke-Edusei & Birore, 2020) as compared to this study showing 24.3% of the women performing BSE and 4.7% performing mammography. This may be because it is cost-effective. It is an easy skill to learn as well. Although majority thought women should screen when they are less than 20 years, most of the respondents started screening for breast cancer between ages 30 and 39 years. The reasons for this could not be explained. However, they were not screening at an early age as recommended by WHO (2021). Instead

of the BSE to be done monthly, majority of the respondents were performing it yearly and this should be discouraged.

With regards to the determinants of breast cancer screening, educational level was significant, and as demonstrated in table 4.5, the higher the educational level, the higher the likelihood of screening for breast cancer. These findings were similar to a previous study (Agyeman et al.,2020) who observed that older women and those with a higher certificate, were likely to screen for breast cancer. Opoku et al (2012) showed that having a higher education was associated with knowing and performing breast cancer screening. This study showed that married women are more likely to screen for breast cancer than separated, widowed, or divorced women. A similar result reported that 65% of married respondents adhered to mammography (Ahmadian et al.,2012). This could be because of spousal support. This study reported women in the urban areas to be likely to screen for breast cancer as compared to those who lived in the rural areas. This could be because of more health programmes and advocacy being held in the urban areas and those who live in the urban areas are more educated with higher incomes and so can afford to screen for breast cancer. This could also be because tertiary hospitals are more accessible to people in the urban areas. Antabe et al (2020), also showed that women living in rural areas were less likely to screen for breast cancer. Findings from a study in Australia, showed that employment was a determining factor for doing mammograms (Ogunsiji et al., 2017).

Table 4.4 shows that breast cancer screening prevalence was higher in married women (53.1%), employed women (45.5%), women with one child (50.0%), women residing in an urban area (42.3%), women aged 51 to 60 years (43.5%) and women that had screened for cervical cancer (82.2%). The prevalence of breast cancer screening is higher in married women because most husbands may notice abnormalities in their wives' breasts and encourage their wives to have a clinician examine them. Another study showed that breast cancer prevalence was low in

married women (Ghanbari et al., 2020). Breast cancer screening prevalence increases with educational level (Jatoo, 2002). This may be because the more educated one is, the more informed she is with regards to her health, and she is likely to go for regular health visits.

Also, the tendency to be employed when you have a higher education, makes it easier for women to afford breast ultrasound scans and mammograms (Ayanore et al., 2020). Employed people usually have a steady source of income. Moreover, there is a possibility that employers encourage their employees to screen for breast cancer or organize screening programmes for them and that is why employed women tend to screen for breast cancer than the uneducated ones.

Although majority of the respondents were Christians, breast cancer screening prevalence was less in Christians than Muslims and other regions. This is different from a study done by Osei-Afriyie (2021) who demonstrated that women with no religious affiliation were 60% less likely to screen for breast cancer than their male counterparts. Those who screened for cervical cancer had an increased breast cancer screening prevalence and this was because most of these women were concerned about their general health so when they attend the women's clinic, they screen for both breast and cervical cancer. The highest prevalence of breast screening was seen in women aged 51-60 years (43.48%). This is worrying because younger people especially those with a positive family history of breast cancer are likely to get breast cancer and therefore, they should be encouraged to screen more than their older counterparts (CDC, 2021).

5.3 Limitations to the study

- i. Because of the small sample size and data being collected at one public hospital in Ghana rather than several ones, it is difficult to generalize the results obtained after the study was conducted.

- ii. The use of questionnaires for research is limited in that people can provide answers that they presume are socially acceptable rather than being totally honest. Conclusions are drawn based on the answers provided by the respondents. Therefore, the results of the study will be affected if accurate responses are not provided, and we may not have an actual reflection of the problem.
- iii. People tend to skip or not answer questions they are not comfortable with such as income when filling questionnaires and this makes it difficult to assess income as a direct determinant of breast cancer screening.
- iv. Qualitative interviews with the patients could not be done because there were no breast cancer registries available to track former breast cancer patients. The numbers obtained from the records of breast cancer were mostly incorrect or patients had died and so they could not be reached. These interviews could have helped to provide some explanations to the quantitative results/findings obtained in the study.

5.4 Summary of discussion

This chapter discussed the overview the findings and compared the findings observed in other literature. It also provided limitations for the study. The next chapter i.e chapter 6 provides a summary, conclusion and a few recommendations based on the study findings.



CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This section provides a summary of the study, the conclusion of the study and recommendations for future research and to the appropriate stakeholders.

6.1 Summary of the study

The aim of this study was to explore the determinants of breast cancer screening in female patients of the 37 Military Hospital OPD. The educational level was the only significant determinant observed amongst the respondents. The higher the woman's educational level, the more likely she was to have screened for breast cancer. It was worth noting that although the women knew the correct age to screen for breast cancer, they were doing it at a later age. The proportion of respondents that screened for breast cancer was 0.406 (CI: 95%, 0.34-0.48) i.e the percentage of women that screened for breast cancer was 40.6%. There was generally a poor knowledge of breast cancer.

6.2 Conclusion of the study

To conclude, the findings in this study showed that health education on breast cancer needs to be increased in Ghana. People need to know the importance of screening so that it will encourage them to screen often. By practicing BSE, abnormalities can be detected on time so that women will not have to die from breast cancer. Breast cancer education can be added to the Ghana Educational Service curricula as well so that girls learn how to examine their breasts right from an early age. Breast cancer screening tools should be easily accessible and affordable to every woman in Ghana especially those in the rural areas.

6.3 Recommendations

6.3.1 Recommendations for future research

1. To do a qualitative research on breast cancer survivors to see how the various screening methods helped them with their management and prognosis.
2. Research should be done in other OPDs of tertiary hospitals such as Greater Accra Regional Hospital, Police Hospital and Korle Bu Teaching Hospital to see if similar results will be obtained. This will show the magnitude of concerns and need for more policies to be implemented when it comes to breast cancer screening.
3. Future studies could seek to increase the sample size to enhance generalisation beyond the 37 Military Hospital.

6.3.2 Recommendations to the management of the 37 Military Hospital

1. Pamphlets and videos on how to correctly examine the breasts for breast cancer should be available at the OPD.
2. Doctors and nurses should encourage patients to do mammograms and regularly examine the breasts of female patients. Breast cancer education and examinations should not be limited to pink October only. The management of the 37 Military Hospital can provide institution-based policies that would ensure routine breast cancer screening at their facility.
3. Combined programmes can be implemented since women who screen for Pap smears are more likely to screen for breast cancer screening. We can run clinics or go round with mobile ultrasound machines that would screen women in the rural environments. Public health or community health nurses can be trained to screen breasts as well.
4. There should be breast cancer registries at the 37 Military Hospital, so it is easy to track and follow-up on past breast cancer patients. This will help in the data collection process of the research.

5. The staff at the OPD (nurses and doctors) should be taught how to do breast self-examinations so that they can teach the patients how it is done correctly. The staff must also teach the patients the age at which to start screening for breast cancer so that early signs of breast cancer can be identified for prompt interventions.

6.3.3 Recommendations to the Ministry of Health/ Ghana Health Service

1. The public should be educated on the importance of research so that obtaining information from them during our studies is a bit easier and respondents will be more cooperative.
2. Since the source of information on breast cancer was through television and radio, more of these programmes should be encouraged and done in various dialects so that people can understand them easily. For those without access to television, radio or social media, other innovative forms of education should be considered so that more people can understand breast cancer.
3. Policy makers at the Ministry of Health/ Ghana Health Service can establish new policies on breast cancer screening especially a national programme.

6.3.4 Recommendations to Breast Cancer Advocacy Groups

1. The staff of all advocacy groups in Ghana that propagate the breast cancer screening or care should organize free breast cancer screenings for women in the rural areas.
2. They should sensitize the public on breast cancer and the importance of breast cancer screening.

6.3.5 Recommendation to Patients/Women

1. Women should regularly examine their breasts by themselves monthly and have them examined by a clinician annually. they should try to learn how to do the BSE.

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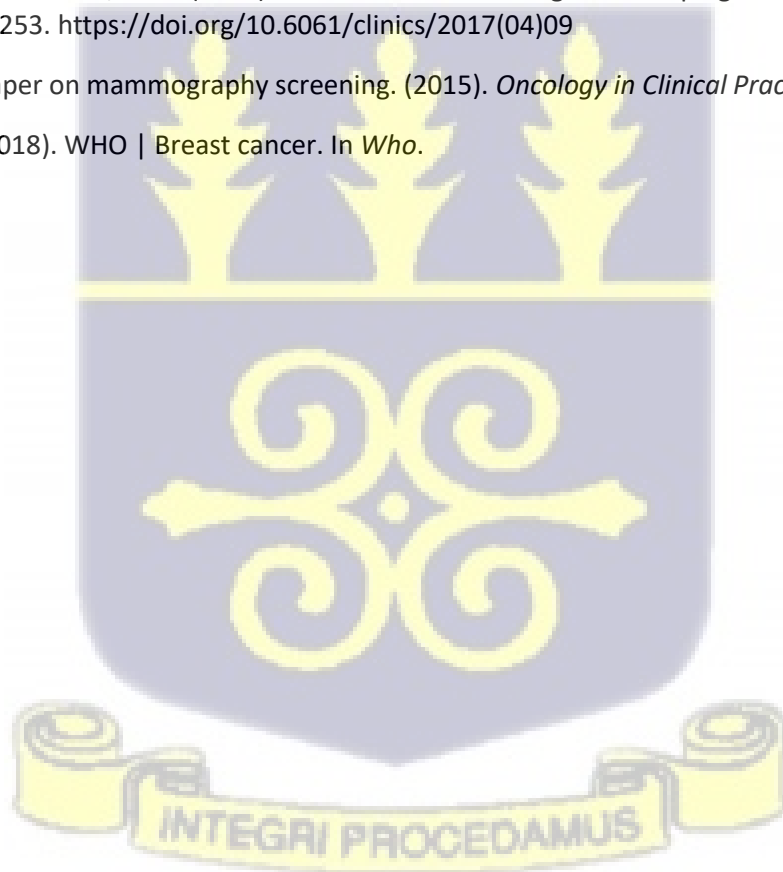
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APPENDICES

APPENDIX 1: QUESTIONNAIRE

Title of Study: Determinants of Breast Cancer Screening Among Female Civilian OPD Patients of the 37 Military Hospital in Accra, Ghana.

DATE:

QUESTIONNAIRE NO:

I, Ewura Adjoa Ahimah Nunoo, a student pursuing a Master in Public Health at the University of Ghana, Legon is conducting a research on the determinants of breast cancer screening amongst female Civilian Out-Patient Department (OPD) patients at the 37 Military Hospital. All data is strictly confidential and none of your personal details are required. You can stop answering the questions at any point in time and this will not affect the services that you will receive at this facility.

DEMOGRAPHY:

1. Age
 - a) 20-30 years
 - b) 31-40 years
 - c) 41-50 years
 - d) 51-60 years
2. Religion
 - a) Christian
 - b) Muslim
 - c) atheist
 - d) traditionalist
 - e) other (specify):
3. Educational level



- a) never been to school
- b) primary
- c) JHS
- d) SHS
- e) tertiary
- f) post-graduate.

4. Occupation

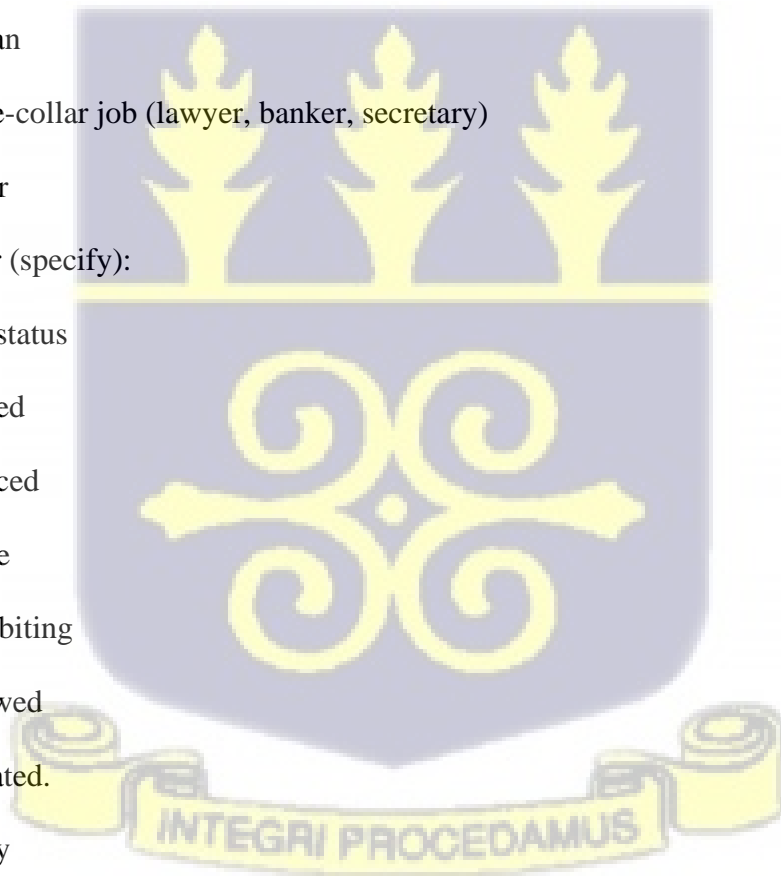
- a) unemployed
- b) housewife
- c) trader
- d) artisan
- e) white-collar job (lawyer, banker, secretary)
- f) pastor
- g) other (specify):

5. Marital status

- a) married
- b) divorced
- c) single
- d) co-habiting
- e) widowed
- f) separated.

6. Ethnicity

- a) Akan
- b) Ga-Adangbe
- c) Ewe



- d) Fante
- e) Hausa
- f) Dagomba
- g) Other: please specify.....

7. Place of residence

8. a) Urban

9. b) Rural

10. Number of children

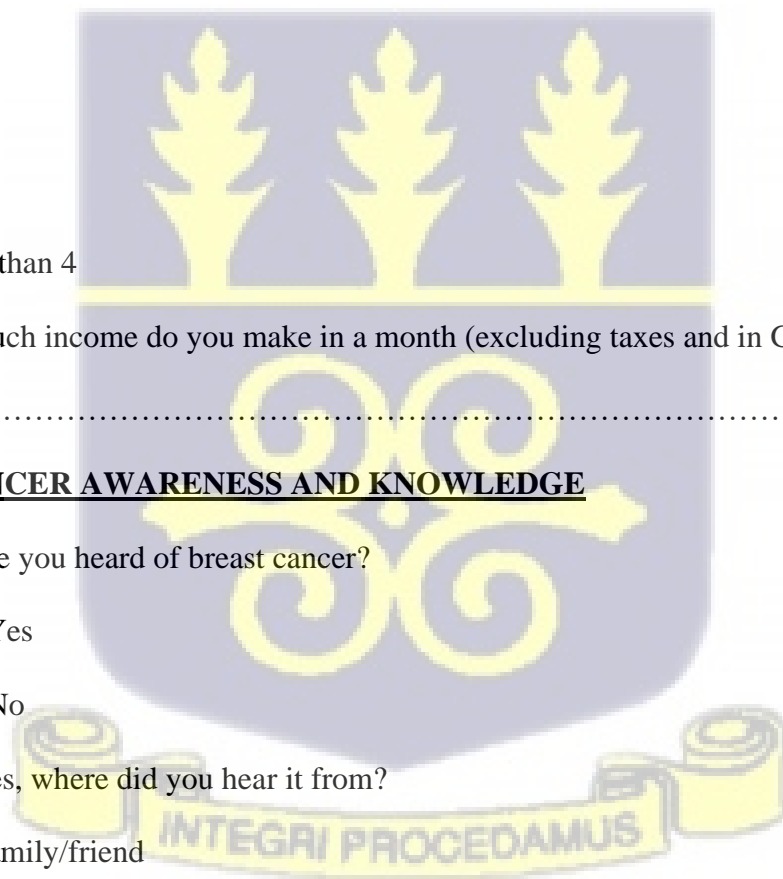
- a) 0
- b) 1
- c) 2
- d) 3
- e) 4
- f) more than 4

11. How much income do you make in a month (excluding taxes and in Ghana Cedis)?

.....

BREAST CANCER AWARENESS AND KNOWLEDGE

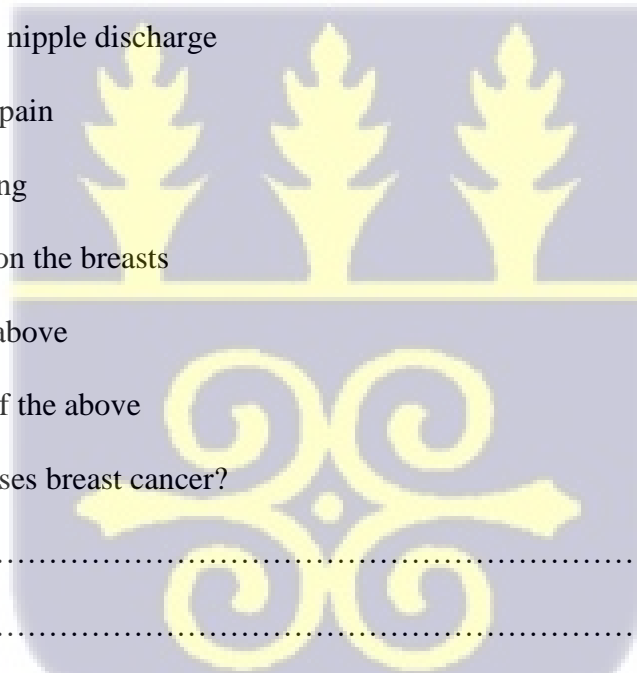
- 1. Have you heard of breast cancer?
 - a) Yes
 - b) No
- 2. If yes, where did you hear it from?
- 3. a) family/friend
- 4. b) health worker
- 5. c) mass media (TV, newspaper, or radio)
- 6. d) social media (Facebook, Instagram, or twitter)



7. e) church
8. f) other (please specify):
9. Do you know of any breast cancer screening methods?
 - a) Yes
 - b) No
10. What signs and symptoms of breast cancer do you know?
 - a) lump in the breast
 - b) nipple turned inwards
 - c) swelling of the breasts/ increase in breast size
 - d) change in colour of the breasts
 - e) bloody nipple discharge
 - f) breast pain
 - g) dimpling
 - h) sores on the breasts
 - i) all the above
 - j) none of the above
11. What causes breast cancer?

.....

.....
12. How is breast cancer treated?
 - a) surgery (removal of lump or breast)
 - b) chemotherapy
 - c) radiotherapy
 - d) prayer camp
 - e) I have no idea.



BREAST CANCER SCREENING

13. Have you screened for breast cancer before?

- a) Yes
- b) No

14. If no, will you ever screen for breast cancer?

- a) Yes
- b) No
- c) Uncertain.

15. Do you think it is important to screen for breast cancer?

- a) Yes
- b) No

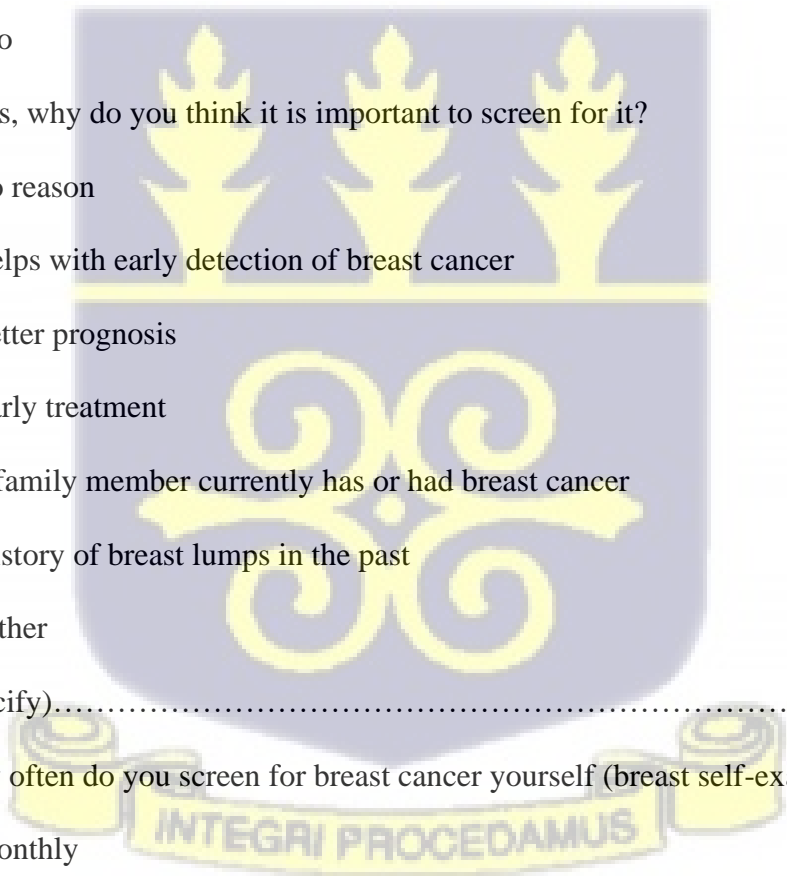
16. If yes, why do you think it is important to screen for it?

- a) no reason
- b) helps with early detection of breast cancer
- c) better prognosis
- d) early treatment
- e) a family member currently has or had breast cancer
- f) history of breast lumps in the past
- g) other

(specify).....

17. How often do you screen for breast cancer yourself (breast self-examination)?

- a) monthly
- b) every three months
- c) every four months
- d) every six months



- e) yearly
- f) every two years
- g) every three years
- h) more than 3 years

18. Which type of breast cancer screening method are you aware of? (Tick the answer that is applicable, multiple responses are allowed)

- a) breast self -examination
- b) clinical breast examination
- c) breast ultrasound scan
- d) mammogram
- e) MRI (Magnetic Resonance Imaging)
- f) all the above
- g) none of the above

19. Which type of breast cancer screening method do you perform?

- a) breast self-examination
- b) clinical breast examination
- c) breast ultrasound scan
- d) mammogram
- e) MRI
- f) all the above
- g) none of the above

20. At what age did you start screening for breast cancer?

- a) 15-19 years
- b) 20-24 years
- c) 25-29 years

- d) 30-34 years
- e) 35-39 years
- f) 40-44 years
- g) 45-49 years
- h) 50-54 years
- i) 55 years and above
- j) never screened

21. At what age should a woman screen for breast cancer?

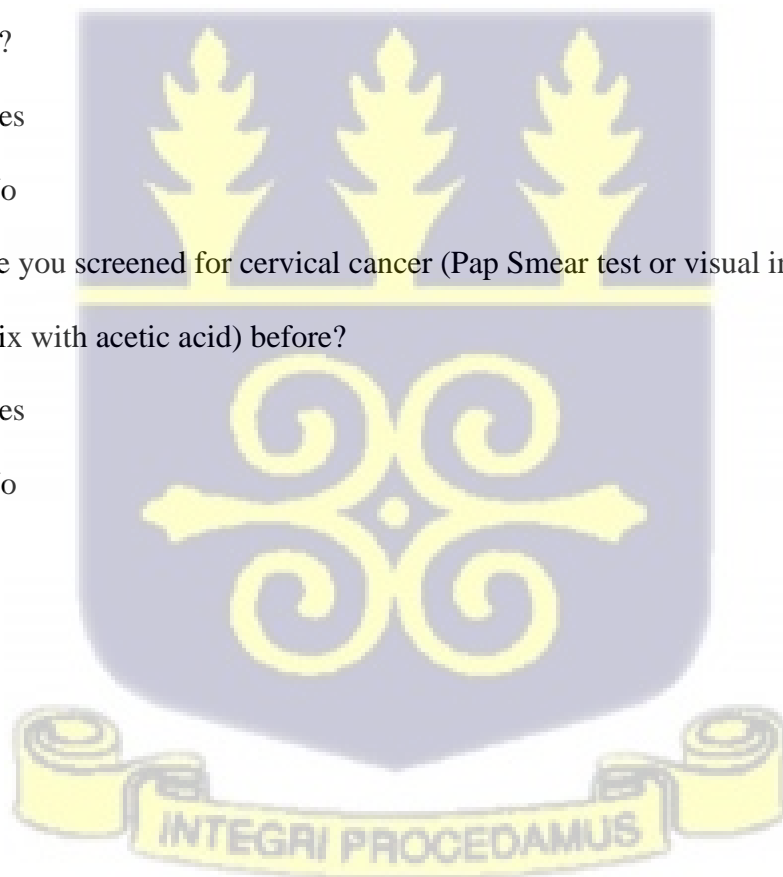
.....

22. Did the Coronavirus (Covid-19) prevent you from screening from breast cancer last year?

- a) Yes
- b) No

23. Have you screened for cervical cancer (Pap Smear test or visual inspection of the cervix with acetic acid) before?

- a) Yes
- b) No



APPENDIX 2: PARTICIPANTS INFORMATION SHEET

Title: Determinants of breast cancer screening among female Civilian patients at the Out-Patient Department (OPD) of the 37 Military Hospital in Accra, Ghana.

Principal Investigator: Ewura Adjoa Ahimah Nunoo

Address: P.O Box LG 926, Legon, Accra, Ghana.

Phone number: 0546923934

E-mail address: drewura@gmail.co.com

General Information about Research

The main aim of the study is to assess factors influencing breast cancer screening amongst Civilian patients at the OPD (Out-Patient Department) of the 37 Military Hospital in Accra, Ghana. I am a student currently pursuing my master's degree at the School of Public Health (University of Ghana, Legon campus). I am conducting this study as an academic research in partial fulfilment for the award of Master of Public Health degree. The study involves administering questionnaires randomly to 180 patients who fit the criteria. Participants are advised to answer all questions. However, if at any point, they want to stop participating in the research, this would not affect the healthcare they receive. Consent forms will be filled prior to taking part in the study. The questionnaires will be filled in the waiting area of the OPD while waiting to be attended to. All covid-19 safety protocols will be observed when conducting this research. The questionnaires should last about 15 to 20 minutes. Pens will be provided for those who may not have any. Only female patients aged between ages 20 and 60 years will be allowed to partake in the study. Severely ill patients, military personnel and health care workers of 37 Military Hospital will not be allowed to partake in this study.

Possible Risks and Discomforts

This research has no foreseeable risk (either physical, social, or psychological) and will not cause any discomfort to the participants.

Possible Benefits

The results of the study will benefit the study population, 37 Military Hospital and the society at large. This study will let us know the prevalence of breast cancer screening and what influences a woman's decision to have her breasts screened for cancer. This will affect our breast cancer promotion and screening programs and we would know which groups to target. It would also strengthen our health advocacy and education programs. Furthermore, this study may help develop future policies for breast cancer screening programs in Ghana.

Alternatives to Participation

This is non-applicable to this study.

Confidentiality

Personal information such as names, phone numbers or email addresses will not be added to the questionnaires. Any information provided during the surveys and interviews will be strictly confidential and only be shared with the members of the research team. Some staff of the School of Public Health, University of Ghana (Head of Department, Dean and or Supervisor) may access the research records.

Compensation

There will be no compensation for the participants in this study.

Additional Cost

The participants will not incur any costs if they choose to participate in this study. Only a few minutes of their time will be needed.

Voluntary Participation and Right to Leave the Research

The research is voluntary, and the participant can withdraw at any time. Access to healthcare services will not be affected if she does so.

Funding

This is research is self-funded

This is not applicable to this study.

Feedback to participant and outcome

There will be no feedback of findings to the participants. The collected questionnaires will be destroyed after data analysis.

Contacts for Additional Information

In case participants have any questions about the research or need any additional information you can call my supervisor Dr Leonard Baatiema on 0541230757.

Provision of Information and Consent for participants

Participants will be given copies of the information sheet and consent forms to keep after it has been signed or thumb printed.

Your rights as a Participant

This research has been reviewed and approved by the 37 Military Hospital Institutional Review (37MH-IRB). If you have any questions about your rights as a research participant, you can contact the IRB Office between the hours of 7:30am-2:00pm through the mobile phone 0591759506 or email addresses: irbmilhosp@gmail.com.

APPENDIX 3: INFORMED CONSENT FORM

STUDY TITLE: DETERMINANTS OF BREAST SCREENING IN FEMALE CIVILIAN PATIENTS AT THE OPD OF THE 37 MILITARY HOSPITAL IN ACCRA.

PARTICIPANTS' STATEMENT

The above document describing the benefits, risks, and procedures for the research title (Determinants of breast cancer screening amongst female Civilian OPD patients at the 37 Military Hospital) has been read and explained to me in a language that I understand (*.....name of language*). I have been given an opportunity to have any questions about the research answered to my satisfaction. I fully understand the contents and any potential implications as well as my right to change my mind (i.e withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Date

Name and signature or thumb print of volunteer

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the (*.....name of language*) language to his proper understanding.

All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to his/her satisfaction.

Date

Name and signature of interpreter

Contact Details

STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language she understood (...*name of language*)

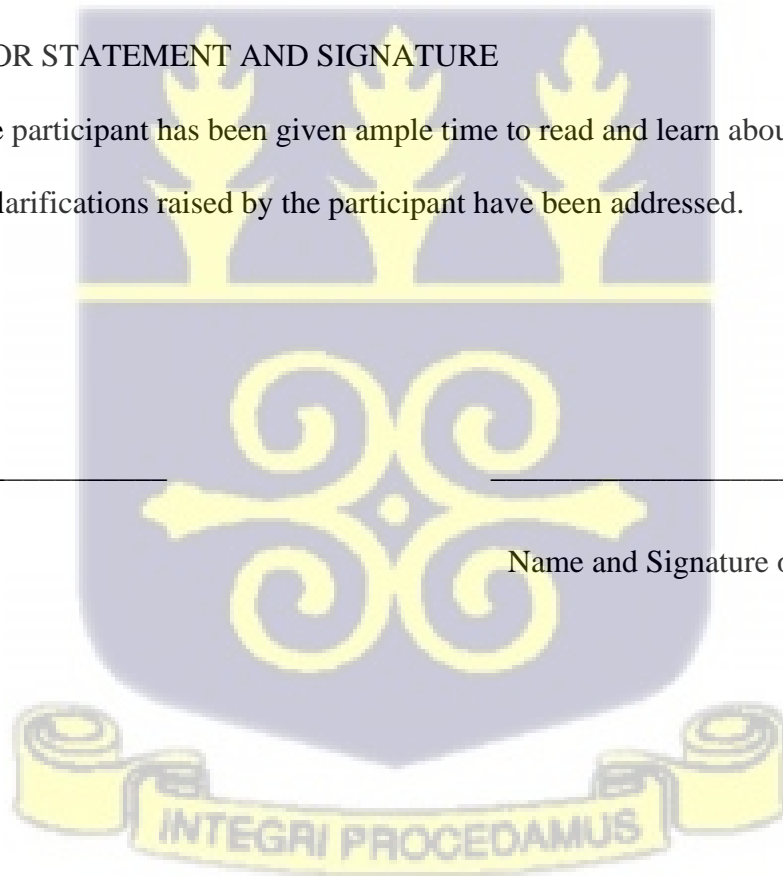
I confirm that she was given the opportunity to ask questions/seek clarifications and same were duly answered to her satisfaction before voluntarily agreeing to be part of the research.

Date Name and Signature of Witness

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Date Name and Signature of Researcher



APPENDIX 4: ETHICAL CLEARANCE



Institutional Review Board

37 Military Hospital
Neghelli Barracks
ACCRA

Tel: 059 1759506

Email: irbmilhosp@gmail.com

09 June 2021

ETHICAL CLEARANCE

37MH-IRB/UG/MP/504/2021

On 09 June 2021 the 37 Military Hospital (37MH) Institutional Review Board (IRB) approved your protocol.

TITLE OF PROTOCOL: Determinants of Breast Cancer Screening in Female Patients at the OPD of the 37 Military Hospital, Accra, Ghana

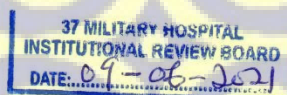
PRINCIPAL INVESTIGATOR: Ewura Adjoa Ahimah Nunoo

Please note that a final review report must be submitted to the Board at the completion of the study.

Please report all serious adverse events related to this study to 37MH-IRB within seven (7) days verbally and fourteen (14) days in writing.

This certificate is valid till 08 June 2022.

DR EDWARD ASUMANU
(37MH-IRB, Vice Chairman)



Cc: Brig Gen NA Obodai
Commander, 37 Military Hospital

INTEGRI PROCEDAMUS