THESIS ABSTRACT

Master of Public Health

Adventist University of Africa

School of Postgraduate Studies

TITLE: DETERMINANTS OF BREAST CANCER AWARENESS AND SCREENING PRACTICES OF WOMEN WITHIN TAMALE, GHANA

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Breast cancer is now ranked the most common cancer worldwide, increasing from 1.7 million incident cases in 2005 to 2.4 million cases in 2015. Both early detection and treatment have been shown to be the most effective methods to address the impact of this devastating disease. This study assessed the determinants of breast cancer awareness and practice of breast cancer screening among women in the Tamale, Ghana. A cross-sectional survey of 396 adult women, chosen by stratified random sampling was undertaken using a questionnaire. Results showed that the majority of the respondents were below 40 years of age (75.5%). Almost all participants (99.0%) had heard of breast cancer (awareness). Interestingly, the majority (51.3%) knows the cause of breast cancer to be bacteria. The most practiced method of screening was breast self-examination (86.4%), clinical breast examination and mammogram had 77.3%. We found that 93.4% of the population respectively

never practiced either. Age, religious affiliations and ethnicities were seen to have statistically significant relations to awareness and practice.

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A thesis

presented in partial fulfillment

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Master of Public Health

by

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April 2019

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Dedicated to my senior sister and the entire Adams' family,

and God for healing mercies.

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LIST OF ABBREVIATIONS

BC	Breast Cancer
BSE	Breast self-examination
Ca	Cancer
CBE	Clinical Breast Examination
Edu	Education
GHS	Ghana Health Service
MOH	Ministry of Health
WHO	World Health Organization

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CHAPTER 1

INTRODUCTION

Background of Study

Globally, cancer is the leading cause of morbidity and mortality among women, accounting for about 17.5 million cases and nine million deaths in 2015. Breast cancer is now ranked the most common cancer worldwide, increasing from 1.7 million incident cases in 2005 to 2.4 million cases in 2015 (Fitzmaurice et al., 2017). The estimated number of new cases each year is expected to reach 15 million by 2025, with 60% of those cases occurring in low and middle-income countries (Takeda et al., 2000).

Insights into the epidemiology and risks associated with breast cancer have seen relative improvements in the response to breast cancer across population groups, particularly in high-income settings. However, in Africa and many low- and middle-income countries (LMICs), several challenges including poor health infrastructure, incomplete vital registrations, lack of adequate population awareness, delayed health-seeking behavior and low levels of female education, as well as empowerment, have led to high mortality from breast cancer (Adeloye et al., 2018). Globally, a diagnosis of breast cancer is made every 19 seconds (Komen, 2014).

In poorly resourced settings, access to services offering breast screening is still a challenge, it is estimated that more than 50% of women in low and middle-income countries have never had a single screening test for breast (WHO, 2013).

In recent years, cancer has become an important contributor to the global burden of disease(Bangalore & Armshiya, 2014). Breast cancer has become a major public health concern that affects both high-income and low and middle-income countries (Doumit, 2017). The incidence, mortality and survival rate in different parts of the world vary from four to 10-fold (WHO, 2013). Early detection is a cornerstone for improving breast cancer outcomes, assuming effective treatment can be promptly provided once a cancer diagnosis is made. Both early detection and treatment have been shown to be the most effective methods to address the impact of this devastating disease (Liu et al., 2017).

A report from GLOBACON (Ferlay et al., 2013) indicates that, globally, Africa currently has the highest age-standardized breast cancer mortality rate. Some implicated factors to this are Westernized diet and, urbanization specific contributions though they are yet to be fully established (as cited by Azubuike, Muirhead, Hayes, & McNally, 2018). For instance, breast cancer in Ghana is the leading malignancy among women, with 70% of cases presenting in late stages (Gyedu et al., 2017). Its incidence in Ghana seems to be increasing. According to the World Health Organization, 2,000 Ghanaian women were diagnosed of breast cancer in the year 2012; with about 2,900 cases being diagnosed annually since 2012, and at least one of eight women with the disease dying (as cited by Ghana News Agency, 2015).

Breast cancer prevention and control in Africa is limited relatively, partly due to a lack of reliable epidemiologic risk factor data and information from which evidence-based interventions could have been developed (Brinton et al., 2017). A national cancer registry with relevant data on cancer statistics about age, sex, marital status, different types of cancers, diagnostic and treatment status, as well as survival and mortality rates of cancer patients currently do not exist in Ghana. The 2016

Annual Ministry of Health (Ministry of Health, 2017) Ghana Holistic Report, under Cancer control, states "advocacy is on-going to merge all the cancer registers in the country to have a national cancer register" (Ministry of Health, 2016, p. 81). To the researcher, this is a major reason why policymakers are not able to concentrate on this fast-growing problem in Ghana.

Even though health care providers should provide total holistic care, in low and middle-income countries and semi-deprived areas such as the three Northern regions of Ghana, there is a scarcity of professional health workers as compared to the ratio recommended by the World Health Organization (as cited in the Ministry of Health, 2016, pp. 12, 27). For this purpose, it has played a role in making it an option for health care seekers to seek healthcare from different sources before seeking professional care. To an end, it alters the health care seeking behaviors of clients in whichever setting, and Tamale metropolis is no exception. In this case, before the women seek medical care outside their comfort zone, their presenting signs and symptoms (not necessarily of breast cancer disease) might have worsened or advanced.

My observations through daily interactions and health history taking exercises as a staff and Nurse Manager at the Out-Patient Department (OPD) of the Tamale Teaching hospital for six years now, has indicated that a good number of women, who report with abnormal clinical manifestations of the breast, usually confess they had been experiencing the symptoms ranging from days to years. Most often, clients from the deeper hinterlands would have sought alternative means of treatment, before finally coming to the hospital when all these have failed.

According to Ohene-Yeboah and Adjei (2012), in Kumasi as in other parts of Ghana, breast cancer affects mostly young pre-menopausal women, who present with

advanced disease. The peak age they identified was between 40-49 years. Ghartey, Anyanful, Eliason, Mohammed and Debrah (2016) also identified the highest incidence rate of breast cancer and benign mass cases; invasive ductal carcinoma cases between 25- 44 years for women in Kumasi. It indicates the incidence rate is gradually reducing to early reproductive ages of women. Consequently, this current study assessed breast cancer awareness, the perception of/and screening practices of adult women within Tamale Metropolis, the Northern Regional capital of Ghana.

Problem Statement

In Ghana, nearly 70% of women diagnosed with Breast cancer are in the advanced stages of the disease, mostly owed to low awareness, resulting in limited treatment success and high death rate (F. N. J. Ghartey et al., 2016). Little evidence exists on the extent of breast cancer awareness, perception, and level of practice of screening methods among adult women in the Tamale Metropolis. As a professional Registered Nurse in Ghana and working in the Northern region, empirical studies concretely outlining the level of breast cancer awareness, perceptions of adult women in the Tamale metropolis of breast cancer and towards its screening practices, is seen to be very sparse. More so, studies related to breast cancer in Ghana are usually concentrated in Accra and Kumasi, the two largest cities in Ghana.

In current global health issues, most preventive measures build on data and statistics of the problem, to know the way forward in addressing it. Hence this study sought to bridge this gap of scientifically identifying data on breast cancer amongst women in Tamale metropolis, and use it to help address this fast-growing global health menace.

Research Objectives

Generally, this study was aimed at assessing breast cancer awareness and practices of breast cancer screening among adult women in the Tamale metropolis in Ghana. Specifically, the study sought to:

1. To assess the level of breast cancer awareness among adult women in the Tamale Metropolis.
2. To examine the perception of adult women towards breast cancer screening in Tamale metropolis.
3. To assess breast cancer screening practices among adult women in the Tamale metropolis.
4. To determine the relationships between breast cancer awareness and screening practices amongst adult women in the Tamale metropolis and the following socio-demographic characteristics
    a. Age
    b. Religion
    c. Educational level
    d. Ethnicity

Null Hypotheses

Based on the listed research objectives, the following null hypotheses were formulated and tested:

1. There is no significant relationship between breast cancer awareness of women in the Tamale metropolis and the following socio-demographic characteristics
    a. Age
    b. Religion
    c. Educational level
    d. Ethnicity
2. There is no significant relationship between breast cancer screening practices of women in Tamale metropolis and the following socio-demographic characteristics:
    a. Age,

b. Religion

c. Educational level

d. Ethnicity.

Conceptual Framework

Figure 1 presents the conceptual framework of the study. The dependent variable is the level of breast cancer awareness and screening. Both early detection and treatment have been shown to be the most effective methods to address the impact of rapidly increasing global health burden (Liu et al., 2017). Breast screening is the only way to diagnose or detect early any abnormality with the breast. However, closely connected to screening is awareness.

More so, the independent variables show that factors such as socio-demographic variables and the general perceptions of women regarding breast cancer affect the extent to which women are interested in becoming aware of the disease and also engaging in screening practices. Figure 1 shows the relationships among the variables in the study.

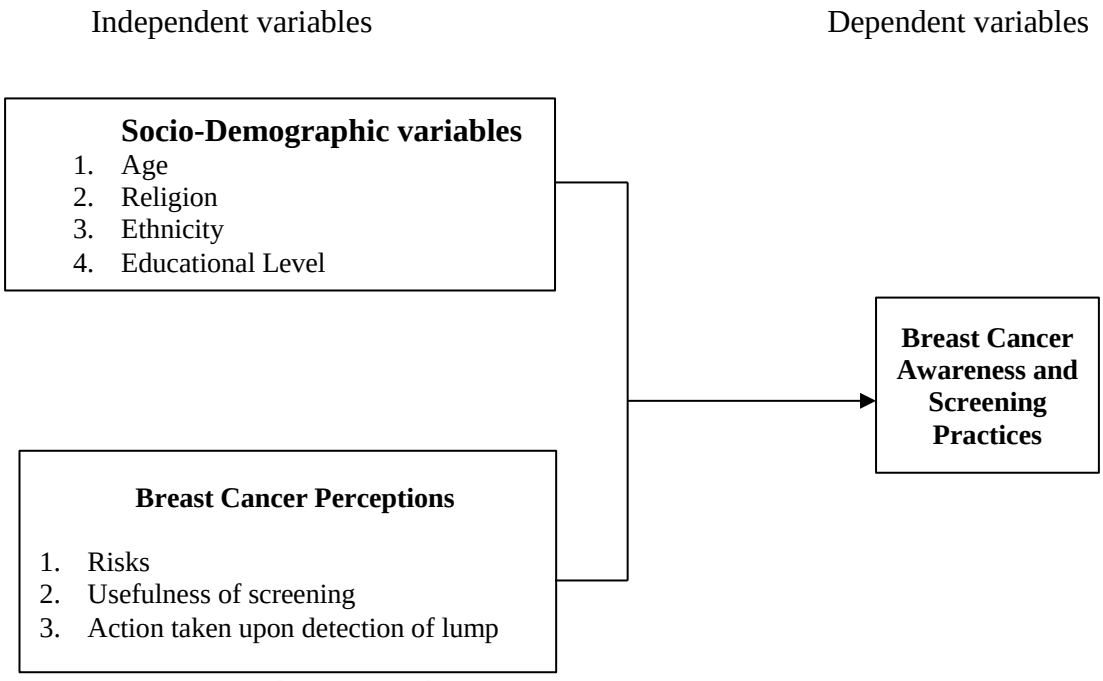

Figure 1. Conceptual Framework

Significance of the Study

Breast cancer is now ranked the most common cancer worldwide, increasing from 1.7 million incident cases in 2005 to 2.4 million cases in 2015 (Adeloye et al., 2018). Knowledge about breast cancer and its risk factors are important in determining appropriate health-seeking behaviors, aimed at preventing and/or reducing breast cancer disease and its subsequent mortality rates.

The 2016 annual Ministry of Health (MoH) Ghana Holistic report, recorded "N/A (not applicable) and 'dashes' "for a number of deaths attributable to selected cancers" throughout the years 2012 – 2016 (Ministry of Health, 2016). If records of an important health indicator such as mortality due to cancers have not been available in a national health database for these number of years, when cancers have fast become a global health burden; it follows that qualitative data on the knowledge and perceptions of women will also not be available. This kind of information forms the basis for preventive health, which is of high global preference now (in relation to cancers).

Results of the study will be useful to all stakeholders involved in public health, as well as maternal health issues from the metropolis, through to the region (Northern) to the country, by providing adequate knowledge to ensure that women are given practical and realistic and evidence-based information to help in the fight against breast cancer.

The findings from this study will also be useful at the policy level, to complement existing knowledge and awareness about BC. It will delve into the reproductive health of women; socio-demographic effects and give a definitive direction towards education and screening practices to the general public. It will serve as a baseline data on the Tamale metropolis for the National Cancer Registry.

Identification of knowledge deficits will pave the way for the development of evidence-based appropriate targeted interventions aimed at reducing the high incidence of breast cancer in the country.

Scope of the Study

The researcher decided not to consider male breast cancer as it accounts for less than 1% of breast cancer cases. In order to work successfully within the limited time and available resources, the study focused on only breast cancer awareness, perceptions and, screening practices among adult women in the Tamale metropolis. Though the study is limited to a specific metropolis, Tamale (thus the capital city of the) Northern Region of Ghana, it is expected that study will provide data representative of the current status of breast cancer and women's perception towards it in the region as a whole. Socio-demographic variables assessed with awareness and screening practices were limited to only four (namely age, ethnicity, religion and, education).

Limitations

1. Very technical terms could only be explained in "literal" terms for participants of either ethnic groups other than Dagbani and Twi when the need arose.
2. Most educated women approached gave excuses and reasons for being too busy.
3. The researcher had financial constraints.

Operational Definition of Terms

Breast Cancer – Breast cancer is the cancer of the breast, it occurs when cells in the breast begin to grow out of control, usually forming a tumor that can either be malignant if the cells grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body or benign.

Breast cancer awareness – The ability to know and understand Breast Cancer; its cause, risk factors, signs and symptoms, treatment and, prevention.

Breast cancer perception – The intuitive manner in which an individual (female) accepts facts about Breast Cancer and will practice or perform any activities (such as screening or seeking medical care upon detection of changes in the breast) in relation to Breast cancer.

Breast cancer screening – The act of medically testing for the presence of or, signs of Breast cancer in a woman.

CHAPTER 2

LITERATURE REVIEW

Cancer

Cancer is an increasing problem in Africa due to several factors including aging populations and the increasing adoption of risk behavior such as unhealthy diets, lack of physical exercise, smoking, alcohol consumption, obesity, physical inactivity, and reproductive behaviors (Parkin, et al., 2018). Ferlay et al. (2013) predict that the number of new cancer cases per year will increase by 70% in Africa between 2012 and 2030 due to demographic changes alone. Also, Bray (2014) attributes the rise in cancer incidence to the increasing urbanization of Africa and the associated lifestyle changes.

According to the World Health Organization (WHO), Breast cancer is the most frequent cancer among women, impacting 2.1 million women each year, and also causes the greatest number of cancer-related deaths among women. In 2018, it was estimated that 627,000 women died from breast cancer – that is approximately 15% of all cancer deaths among women. While breast cancer rates are higher among women in higher-income regions, rates are increasing in nearly every region globally. Breast cancer is "the most common cancer among women in 26 of the 54 countries in Africa" (Parkin et al., 2018, p. 186).

Breast Cancer Epidemiology and Incidence

It is said that the control and prevention of breast cancer have in Africa is basically limited, partly due to a lack of reliable epidemiologic risk factor data and

information from which evidence-based interventions could have been developed (Brinton et al., 2017). An example is where 20 (43.4%), out of 46 World Health Organization (WHO) member states in Sub Saharan Africa, only 20 (43.4%) have active cancer registries (Gakunga & Parkin, 2015). Globally, Africa currently has the highest age-standardized breast cancer mortality rate, with the highest incidence rates being recorded within the sub-Saharan African sub-region. Some implicated factors to this are Westernized diet and, urbanization specific contributions though are yet to be fully established (Azubuike et al., 2018).

Africa is noted to have a poor health care system. These systems as well have a declining capacity to lead cancer preventive initiatives, and response to the overall health needs of the population, as compared to developed countries (Adeloye et al., 2018). This is a major concern. In relation to breast cancer, it has reported that "there are significant differences in age and stage at presentation between women in Africa and Europe, with more than half of breast cancer patients in Nigeria and Libya presenting at a relatively younger age, mostly with advanced stage III or IV disease". (Abdulrahman & Rahman, 2012, p. 2). Issues from available data include inconsistency in data collation and quality across existing cancer registries, with however the little available evidence being suggestive of a growing incidence of breast cancer in Africa (Silverstein, Sood, & Costas-Chavarri, 2016).

In Ghana, data and research on cancer have mainly focused on specific cancers and have been hospital-based with no reference population. The first attempt at population-based cancer registration study in Ghana conducted by Laryea et al., (2014) showed that among females, the commonest cancers were cancers of the Breast (33.9%), Cervix (29.4%), Ovary (11.3%) and Endometrium (4.5%). Histology of the primary tumor was the basis of diagnosis in 74% of cases with clinical and

other investigations accounting for 17% and 9% respectively. Parkin et al. (2008) equally noted that the lifetime risk of dying from breast cancer in young African women is about twice the risk in high-income countries. According to them, the average age of diagnosis of breast cancers among women in Africa tends to be 50 years or younger, a considerably younger age than seen in Caucasian populations. Women in Africa "develop unique breast tumor subtypes, which could also be an important contributory factor, to the unusual age distribution noted." To them, many of the tumors have been reported as hormone receptor negative (Parkin et al., 2008).

Wahba and El-Hadaad (2015) realized in their study that, high rates of triple-negative cancers reported, with a number of studies showing that the majority of African women are diagnosed with such tumors. Thus, most of our women delay in seeking medical care until the tumors are quite advanced. For instance, in Ghana and Nigeria, a mean delay of about 10 months between the onset of symptoms and presentation has been confirmed (Wahba & El-Hadaad, 2015).

Interestingly, cancer is often viewed as a disease of the spirit (Clegg-Lamptey, 2018). On the other hand, age seems to play a key role in breast cancer cases. For instance, Mensah, Yarney, Nokoe, Opoku, and Clegg-Lamptey (2016) conducted research from 2008 to 2011 on the "Survival Outcomes of Breast Cancer in Ghana: An Analysis of Clinicopathological Features." One of their objectives of the study was to identify and describe breast cancer survival pattern in Ghana. Two thousand three hundred and ninety-seven (2397) women were sampled for the study from the Korle-Bu Teaching Hospital (KBTH), of which 1022 (42.64%) were diagnosed with breast cancer. In their research they found out that the mean age for the cases was 47.97 years, they reinforced the urgent need for improved screening techniques for early detection.

Ohene-Yeboah and Adjei (2012) upon assessing nineteen thousand four hundred and twenty-three (19,423) patients came out with the findings that, the mean age for breast cancer amidst women in Kumasi was 49.1 years. A palpable breast lump was detected in 248 patients. Two hundred and eighty–one patients presented with stages III and IV, 271 invasive and 230 high-grade carcinomas. Their study concluded that, in Kumasi, as in other parts of Ghana, breast cancer affects mostly young pre-menopausal women who present with advanced disease. The cancers have unfavorable prognostic features and are unlikely to respond to hormonal therapy.

Similarly, Quayson, Wiredu, Adjei, and Anim (2014) conducted a study aimed at looking at the pattern of breast cancer over a period of five years and comparing the findings to similar studies done in Ghana and elsewhere within the African sub-region. According to their findings, breast cancer in Accra is mostly of the ductal type or its variants affecting relatively younger age groups. The mean age of incidence of breast cancer in Ghana is 48 years, and about 67% have lymph node metastases (at least Stage II or N1) and 74% are of high grade at the time of diagnoses.

Thus, the reviewed literature highlights quite clearly that incidence age ranges from the late 40s and above of the female. However, there is also evidence that the pattern of incidence seems to be changing.

In a study, "Pattern of Breast Cancer Distribution in Ghana: A Survey to Enhance Early Detection, Diagnosis, and Treatment" conducted by Ghartey et al., in 2016. They diagnosed 23 (0.76%) breast cancer cases out of 194 (6.46%) participants with clinically palpable breast lumps. Seventeen out of these 23 (0.56%) were premenopausal (<46.6 years) with seven (0.23%) being below 35 years. With an overall breast cancer incidence of 0.76% in their study, they noted that about 30% of these cancer cases were below 35 years. Hence, indicating a relative possible shift of

cancer burden to women in their early thirties in Ghana, compared to Western countries.

Some have also argued that the increased breast cancer incidence reported among younger age groups in Africa can be attributed to the relatively lower life expectancy on the Continent. However, according to (Adeloye et al., 2018), epidemiological transitions, rapid urbanization with increased adoption of unhealthy lifestyles, increasing prevalence of obesity in younger populations, changing reproductive behaviors, including early menarche, low parity, advanced age at first pregnancy, and low self-breast examination for breast cancer among adolescents and young women are possible risk factors to the shift of incidence to younger adult females.

Breast Cancer Awareness and Screening Practices

Monthly Breast self-examination, according to Pilevarzadeh (2016), is an important screening behavior for early detection of breast cancer. Nonetheless, despite these advantages, many people refuse this medical behavior. Pilevarzadeh, (2016) conducted a study aimed at identifying the barriers to women's breast self-examination. Based on their study results, the lack of training programs in the field of breast self-examination, the attitudes, and beliefs towards self-examination and; inadequate skills in the diagnosis of mass, as well as lack of perceived benefits and efficacy of breast self-examination were the major barriers identified in the study.

More so, in a Malaysian study, data analysis findings showed that the vast majority of the female university students had inadequate knowledge of breast cancer. The percentile total knowledge score of the students was 60.7%. More than two-thirds of the students were aware of breast self-examination (BSE) and clinical breast examination (CBE). The students also had positive perceptions of the treatment

outcomes of breast cancer. The study however still highlighted the need for a breast cancer awareness campaign, which should also stress the importance of early detection and reporting (Hadi, Hassali, Shafie, & Awaisu, 2010). Syeed (2011), wanted to evaluate the knowledge and practices of breast cancer among women. He collected data from 250 female respondents in different locations of Dhaka. From his analysis, breast cancer was known to 70% of women; knowledge about signs and symptoms, diagnosis and treatment were good among the women. His results further showed that 21% of women had knowledge about performing breast self-exam, and 17% had heard about mammography in as much as they had on the condition screening practices was low. As part of his recommendations, stated that more should be done to spread the knowledge and awareness about breast cancer (Syeed, 2011).

Generally, respondents to a study in Accra displayed a knowledge deficit about breast cancer (Opoku, Benwell, & Yarney, 2012). The study aimed at exploring breast cancer-related knowledge and practices, in order to develop an appropriate socio-economic and culturally specific model, to improve breast cancer care in Ghana. It was realized from the findings that, higher levels of education were associated with the better appreciation of the disease, which this current researcher seeks to assess amidst Tamale women. The respondents' attitudes included fear of the disease which was linked to death in most cases; denial and guilt; as well as supernatural attributes. The self-reported breast cancer screening rate (BSE 32%, CBE 12%, and mammogram 2%) was poor, however, higher educational level of the respondents was noted significant for breast cancer screening practices. The study found that routine mammography screening is not feasible in Ghana at the moment. (Opoku et al., 2012).

Women's perceptions and attitudes towards breast cancer, and its treatment are influenced by a myriad of economic and socio-cultural factors, which practitioners need to consider when planning public health initiatives (Asobayire & Barley, 2015). Thus, Asobayire and Barley (2015), findings from their study revealed that there are a number of economic challenges facing breast cancer education and awareness programs, mainly is a lack of adequate numbers of specialized health personnel and breast cancer screening facilities in the district. Additionally, they submitted that socio-cultural factors such as the absence of biomedical terminology in the local language, gender inequality and the prevailing influence of traditional health practitioners further compound the situation.

If husbands of married women and respective community heads are targeted by public health educators to get actively involved in education and awareness campaigns then indicatively, knowledge, awareness, and attitudes of women towards breast cancer can also be improved. There is the need to infuse local languages, in public health educational materials for breast cancer in remote communities of deprived districts of Ghana. This will be an added advantage to the rural illiterate woman who also needs awareness of the disease condition. Community awareness is crucial to the early detection of breast cancer in low- and middle-income countries (Mena et al., 2014).

Sarfo, Awuah-Peasah, Acheampong, and Asamoah (2013) conducted a study to determine the knowledge, attitude, and practice of Breast Self-Examination among female university nursing students. Their study revealed 95% of respondents had ever heard of breast cancer and BSE. Even though that majority of the respondents claimed they had heard of BSE, only 80% knew how to perform it. Breast cancer awareness; perceptions; attitudes (especially self-breast examination) campaigns were therefore

alluded to as necessary to improve early breast cancer detection, amongst all categories of women, irrespective of their race, creed, religious status, educational level, occupational or professional status and the like (Sarfo et al., 2013).

With distance to closest health facility and its relationship to breast cancer screening practices, Jensen, Pedersen, Andersen, Fenger-Grøn, and Vedsted (2014) analyzed in detail the association between distance to the screening site and non-participation. According to their results, the risks of nonparticipation grew with increasing road distance to screening site when data were adjusted for socio-demography. They also found out that women without access to a vehicle were at special risk of non-participatory irrespective of their distance to the screening site.

Religion and Relationship with Breast Cancer Awareness and Screening

Religion is said to be the belief in and worship of a superhuman controlling power especially a personal God or gods. It describes a particular system of faith and worship. The five largest religious groups by world population; estimated to account for 5.8 billion people and 84% of the population is Christianity, Islam, Buddhism, Hinduism and traditional folk religion (as cited by Central Intelligence Agency, n.d.).

The goal of research by Padela et al. (2015), was to study how religion-related factors influence screening patterns in a diverse sample of American Muslims. 240 women completed the survey. Out of this, 77% reported ever having a mammogram while only 37% had a mammogram within the past 1-2 years. Their survey suggested that "religion-related factors such as positive religious coping and perceived religious discrimination influence breast cancer screening patterns among American Muslims." To this end, programs of influentially shared religious networks, such as mosques and

Imams, may be a means to address religious barriers that impede screening across ethnic and racial lines (Padela et al., 2015).

A cross-sectional survey administered to female members of Islamic and Christian organizations in Ghana, where participants were asked about their personal experience with breast concerns, knowledge of breast cancer, performance of breast self-examination, and experience with clinical breast exam, identified the following: Fewer Muslim women knew someone with breast cancer (31% v 66%) or had previously identified a concerning mass in their breast (16% v 65%). Both groups believed that new breast masses should be evaluated at a clinic, but Muslim women were less likely to know that breast cancer can be effectively treated and less likely to have performed breast self-examination or to have undergone clinical breast exam (Gyedu et al., 2017). The study also included 432 Muslim and 339 Christian women. Muslim women were found to be less likely involved in breast health activities compared with Christian women. This points out the importance of religious customs within sub-populations and their impact on a woman's engagement in breast health activities.

However, in another study by Lofters, Slater and Vahabi (2018) and the academic Family Health Team of St. Michael's primary care practice, examined whether there are cancer screening inequalities among people of Muslim faith and culture, given that Muslims are the fastest growing immigrant population in Canada. The study used a voluntary survey combined with a retrospective review of the screening history of 5,311 patients of St. Michael's primary care practice. Of the people surveyed, Muslim women were most likely to be up-to-date on breast cancer screening. Both Muslim women and women who self-identified with other religions

were more likely to be up-to-date on breast cancer screening than those with no religious affiliation (85.2 percent vs. 77.5 percent vs. 69.5 percent respectively).

This was the case, however, even though Muslim women in this study were also most likely to live in low-income neighborhoods, which can often be a barrier to accessing proper health care (Lofters et al., 2018).

Education and Breast Cancer Awareness and Screening

In an attempt to evaluate the impact of occupation and education level of Chinese female breast cancer patients, on their cancer staging at diagnosis and selection of treatment, the medical charts of 4211 female patients were reviewed. Concurrently, the relationships between different occupations and level of educational attainment were analyzed in relation to tumor stage. There were significant differences among different occupational groups and the educational level of patients in regards to pathological characteristics and treatment choice. For patients within the lower-income occupation or lower educational attainment group, the tumor stage was at the later stages (Liu et al., 2017).

The prognosis of breast cancer patients is also greatly affected by the stage at diagnosis and treatment option standards. The study showed that occupation and education had a significant impact on prognostic factors. It also identified that there is a need to strengthen publicity of breast cancer knowledge for lower-income occupational groups or those with lower education levels to enable them to better understand the importance of recognizing early clinical symptoms and treatment options (Liu et al., 2017).

As deemed very important, breast self-examination is key for early diagnosis of breast cancer. However, the majority of Turkish women do not perform regular

breast self-examination. In an attempt to evaluate the effects of education level on the attitudes and behaviors of women towards breast self-examination, a descriptive cross-sectional study was conducted on 413 women, divided into university graduates (Group I, n = 224) and high school or lower graduates (Group II, n = 189). Most of the women in Group II did not believe in the early diagnosis of breast cancer. And most of the women in Group I had conducted breast self-examination at least once, and frequency was significantly high. A significantly lower number of Group I women considered themselves to not be at risk for breast cancer and the scores for "perceived susceptibility" and "perceived barriers" were significantly higher. The study analysis identified the university graduate group to have a higher likelihood of performing breast self-examination, by 1.8 times.

Nonetheless, the overall, results suggested that Turkish women, regardless of their education level, still need more education on screening methods, specifically breast self-examination. The primary cause in both groups for not performing regular breast self-examination appears to be a lack of education and understanding of how to perform breast self-examination. The second most common responses for not performing regular breast self-examination included "neglecting because of duties" and busy schedules in the university graduate group and "considering herself not at risk" in the lower graduate group, demonstrated significant differences between the groups. Together with the lower perceived susceptibility score of Group II, and higher perceived barriers score of Group I, it appears that while less educated women consider themselves to have a lower breast cancer risk, university graduate women do not allocate time for breast self-examination due to their duties, despite a higher awareness of breast cancer risk.

Popoola, Igwilo, and Sowunmi, (2013), explored and evaluated the relationship between literacy and early detection of breast cancer amongst patients attending an oncology tertiary healthcare facility in Nigeria. Out of a total of 184 histologically diagnosed breast cancer patients recruited in the study, the awareness and practice of both breast self-exam and mammography dwindled with decreasing educational attainment. It was inferred that in order to improve women's health, providing equal educational opportunities for women especially for the low literacy groups in our society, is necessary.

Respondents with some form of tertiary level of education numbered the largest group who were aware of breast cancer. Reasons for not carrying out a mammogram ranged from the test being too embarrassing (1%); blatant refusal, thoughts that no health problems necessitating the test to be done (2%); poor accessibility to diagnostic center (4%); fear of radiation exposure (5%); too costly(5%); fear of finding cancer (6%); thought of not needing the test (9%); not being aware they should do the test (20%); to the largest proportion of these respondents who claimed that their unawareness of the test is to blame for this poor practice. It is important to note here that more of those that have no formal education and those that have primary education, 66.7% & 71.9% respectively, have not heard about mammogram before than those that have secondary education (44%) and tertiary education (23.7%) (Popoola et al., 2013).

In terms of breast cancer screening and educational level, a cross-sectional study to evaluate the knowledge, attitude and practice towards breast cancer and breast self-examination was conducted by Alwan, Al-Attar, Eliessa, Madfaie and Tawfeeq (2012). Among 387 (302 females and 85 males) educated Iraqis affiliated to two Iraqi universities, results showed that about half of the participants had a low

knowledge score, however, most participants (90.9%) had heard of breast self-examination. However, only 48.3% practiced breast self-examination; the most common reason for not doing so was a lack of knowledge of how to perform the technique correctly.

In-depth knowledge on the condition (cause; signs and symptoms, risk factors; prevention) regular performance of screening practices is very key to slowing down and halting this fast-growing breast cancer menace. The above-related studies show that breast cancer may sometimes be affected or dependent on socio-demographic factors; religion; educational level; age and many more. This study sought to find out scientifically if the same is true among the women of Tamale metropolis of Ghana.

CHAPTER 3

RESEARCH METHODOLOGY

This section presents the research methodology of the study describing the study design, study population, sample size and sampling procedure, research instruments, data collection procedure and analysis, and ethical considerations.

Research Design

A research design guides the researcher in planning and implementing the study in a way that is most likely to achieve the intended goal. A descriptive cross-sectional research design was used for this research. The researcher chose this design because descriptive surveys are also carried out to describe populations, to study associations between variables and to establish trends and possible links between variables. This type of design is used to obtain information on the current status of phenomena so as to describe what exists with respect to variables or conditions (Sim & Wright, 2001).

Target Population

Tamale metropolis was chosen for the study because of its demographic characteristics such as high fertility rate, a central point for business activities; which is dominated by women; and adherence to religious and socio-cultural practices, which largely affect the health care of women in the Metropolis. More so, studies related to breast cancer in Ghana is usually concentrated in Accra and Kumasi, the two largest cities in Ghana.

The target population was defined in terms of age. The age category for this study was adult women from 18 years and above, in Tamale Metropolis. According to the 2010 population census of Ghana (the most current), the population of females above 18 years in Tamale metropolis was 43,205 (Ghana Statistical Service, 2014). Though the epidemiology of the disease in the country has guided the decision-making process in the selection of women in the study, it is important to note that, decisions on age was taken on the basis of peak age-related incidence rates of breast cancer, percentage distribution by age of clinically detected cases of breast cancer in the country, as per limited available literature.

Sample and Sampling Technique

The sample size was determined for the study was attained using the formula:

$$n = \frac{N}{1+N(e^2)}$$

where n is the sample size,

'N' is the population size, and

'e' is the level of precision (0.05).

Therefore, with the population of 43,205, the study was 396.

The researcher then used the Stratified sampling technique to select the 396 participants for the study. The target population was first separated into mutually exclusive homogenous categories (strata), in which case for this research was area councils within Tamale metropolis. The proportional allocation method was used in distributing the sample size across the strata, based on the size of the population within each stratum (Table 1). Convenience sampling was now used to select the respondents from each stratum, with proportionate representation from each stratum. Thus, within each area council, the researcher performed a proportional allocation to

identify the probability proportionate sample size. This was calculated using the formula:

$$\frac{population\ of\ women\ at\ the\ area\ council\ level}{total\ population\ of\ women\ in\ tamale} \times sample\ size$$

This sampling technique helped the researcher make better inferences to the target population within each stratum (area council) with less sampling error and higher equal chances.

Table 1. Proportional Sampling Allocation

S/No.	Community Name	Female (18 years and above)	Proportional Allocation
1	Lamashegu	6318	58
2	Tishigu	4791	44
3	Moshie Zongo	4354	40
4	Zogbeli	3825	35
5	Chengli	3825	35
6	Gumbihini	3591	33
7	Aboabo	3484	32
8	Dabokpa	3267	30
9	Gukpegu	3122	29
10	Sabongida	3267	30
11	Sakasaka	1299	12
12	Bilpeila	1191	11
13	Kukuo	871	8
		43,205	396

Data Collection Tool

The main data collection tool was a questionnaire designed by the researcher to obtain participants' relevant socio-demographic characteristics, awareness and perception towards breast cancer. Due to the nature of the study, the types of questions were mostly closed-ended questions and dichotomous. Questionnaires were used because they could be administered to large numbers of study participants concurrently with uniform instructions and explanations. The questionnaire was

designed in line with the study objectives. The study instrument was also translated into the main languages spoken by study participants (Dagbani and Twi) to enhance proper understanding.

Research Instrument Validity and Reliability

The researcher made available the research instrument to at least five experts in the field of Public Health to assess the content and appropriateness of the questions. In addition, the instrument was subjected to scrutiny by a panel of judges during proposal evaluation and defense. After revision of the questionnaire based on the opinion of the experts and academicians, the questionnaire was administered through a pilot study to 30 women with the same characteristics as the sample. This was to determine the overall effectiveness of the self-designed questionnaire and to ensure that the questions are clearly understood by the respondents.

Ethical Considerations

Upon approval of the research proposal and instrument from the Adventist University of Africa, the following steps were followed to ensure ethical responsibility in the entire research process. For instance, the study participants were informed about the nature of the study and were asked to voluntarily participate in the study. They were encouraged to ask questions about the study and the questionnaire. No participant was forced or intimidated to participate in this study. The data from the respondents were treated with high confidentiality and the respondents were assured during the time of distributing questionnaires.

In addition, the several sources of intellectual materials quoted directly or paraphrased in this research have been acknowledged by in-text citations with full bibliographic details in the reference list according to the American Psychological Association (APA) referencing style. More so, in reporting results from the study, no

data was fabricated or falsified. Hence data analysis and results are based on actual data collected.

Data Analysis Method

The returned questionnaires were crossed checked for completeness and accuracy. The data were summarized using Microsoft Excel and Statistical Package for Social Sciences (SPSS).

Descriptive analysis was presented in tables using frequencies and percentages. Inferential analysis, which involved testing for statistically significant relationships to make inferences, was done using Pearson Chi-Square Test of association for distributions where the frequency counts of the cells were five or more. Where the frequency counts in the cells of distribution were less than five, Fisher's Exact Test was employed to check for significant associations. Significant associations existed at an alpha level of less than or equal to 0.05 ($p \leq 0.05$).

CHAPTER 4

RESULTS AND DISCUSSION

This chapter presents and discusses the results of data collected from the participants. The results and discussion are presented under separate subheadings, taking into consideration the research objectives and hypotheses. This research sought to assess breast cancer awareness and perceptions of adult women, about breast cancer and screening practices in the Tamale metropolis. A cross-sectional survey of 396 adult women from 18-55 years in Tamale Metropolis, was undertaken. The researcher successfully sampled the participants, with all of them agreeing to take part in the study, resulting in a questionnaire return rate of 100%.

Socio-demographic Characteristics of Respondents

As shown in Table 2, the majority (34.1%) of the respondents were between 18 to 24 years, followed by 25 to 29 years (21.5%), 30 to 34 years (13.1%) and 45 to 49 years (10.1%). The rest of the age ranges had frequencies below 10%. On marital status, most of them (63.4%) were married, 30.8% were single. And the rest were either separated (2.8%) or divorced (3.0%). The majority were Moslems (66.4%), with the rest being Christians. Ethnically, most of the respondents were from ethnic groupings found in the northern part of Ghana, with the majority of the respondents being Dagomba (62.1%). The Akan ethnic group were (9.1%), Mamprusi and Frafra were 7.8% each, with the rest recording less than 5% each.

As per the sampling technique used (stratified sampling), participants were from Lamashegu were 14.6%; Tishegu 11.1%; Moshie Zongo 9.8%; Changli 8.8%

and; Zogbeli 8.8%, all suburbs of the Tamale metropolis. On the educational front, the majority (33.1%) had no formal education, 30.1% had SHS education and 24.0% had JHS education, with only 6.8% having tertiary level education. Most of the participants were self-employed (65.0%), with over a quarter of them (28.0%) being unemployed. An overwhelming majority (97.2%) were registered with the National Health Insurance Scheme. This implies a free health care system. Hence financial status or level could be considered out of reason for participants' inability to go for screening.

Table 2. Socio-demographic Characteristics of Respondents

Characteristic	Category	Frequency	Percentage
Age	18 – 24	135	34.1
	25 – 29	85	21.5
	30 – 34	52	13.1
	35 – 39	27	6.8
	40 – 44	20	5.1
	45 – 49	40	10.1
	50 and Above	37	9.3
	Total	396	100
Marital Status	Single	122	30.8
	Married	251	63.4
	Separated	11	2.8
	Divorced	12	3.0
	Total	396	100
Religion	Christian	133	33.6
	Moslem	263	66.4
	Total	396	100
Educational Level	No formal education	131	33.1
	Primary	24	6.1
	JHS	95	24.0
	SHS	119	30.1
	Tertiary	27	6.8
	Total	396	100
Ethnicity	Akan	36	9.1
	Bissa	8	2.0
	Builsa	14	3.5
	Dagao	8	2.0
	Dagomba	246	62.1
	Frafra	31	7.8
	Ga	3	0.8
	Konkomba	9	2.3
	Mamprusi	31	7.8
	Moshie	10	2.5
	Total	396	100
Community/Area Council	Aboabo	32	8.1
	Bilpela	11	2.8
	Changli	35	8.8
	Dabokpa	30	7.6
	Gukpegu	29	7.3
	Gumbihini	33	8.3
	Kukuo	8	2.0
	Lamashegu	58	14.6
	Moshie Zongo	39	9.8
	Sabongida	30	7.6
	Sakasaka	12	3.0
	Tishegu	44	11.1
	Zogbeli	35	8.8
	Total	396	100
Employment Status	Student	12	3.0
	Civil Servant	16	4.0
	Self-employed	257	65.0
	Unemployed	111	28.0
	Total	396	100
Registered with NHIS	No	11	2.8
	Yes	385	97.2
	Total	396	100

Source. Field Survey (2018)

Distance to Closest Health Facility

As shown in Table 3, 41.9% of the respondents were one to 30 minutes away from the nearest health facility, followed by 26.3% who were 31 to 60 minutes away from the nearest health facility. The rest lived over one hour away from the nearest health facility. According to results by Jensen et al. (2014) in their study, the risk of nonparticipation of screening grew with increasing road distance to a screening site. However, respondents of this study were identified to have almost half of them live close to a nearby health facility, and yet the performance of CBE, for instance, was poor (see Table 7).

Table 3. Frequency Distribution of Distance of Closest Health Facility

Distance of Closest Health Facility	Frequency	Percent
1 - 30 minutes	166	41.9
31 - 60 minutes	104	26.3
61 - 90 minutes	55	13.9
91 - 120 minutes	62	15.7
121 minutes and above	9	2.3
Total	396	100.0

Source. Field Survey (2018)

Research Objective One: Level of Awareness of Breast Cancer among Adult Women in the Tamale Metropolis

As shown in Table 4, almost all the participants (99.0%) had heard of breast cancer, with an equal number alluding that the disease actually exists. When asked of their source of breast cancer information, the majority (43.4% and 42.2% respectively) pointed to health workers and the media. Friends (12.6%), family members (0.8%) and social media (1.0%) were the other sources of information about breast cancer.

Majority of the participants perceived the cause of breast cancer to bacteria (51.3%), a significant number (32.6%) indicated that the cause was unknown. Interestingly, about 10% perceived the cause of breast cancer to be from curses, while 4.5% attributed to breast cancer to witchcraft. This could greatly affect their level of practice on screening and even alluding to treatment options. Most participants were also able to identify risk factors to the development of breast cancer to include a family history of breast cancer (74.2%), smoking (71.7%) and menopause (27.3%).

Knowledge on signs and symptoms were not so impressive, as it would be realized only a greater number of the participants had knowledge of a symptom as the condition deteriorated, but not during its early curable stages. Participants were able to identify painless breast lump (64.6%), nipple discharge (82.3%), change in shape and skin color (82.1%) and sore on the breast that refuses to heal (92.2%). Only 38.4% considered lumps under armpit as possible signs of breast cancer, which is the first and most important sign to seek for further health assessment. This means they had less knowledge of this symptom. Implying it will delay health care seeking if one had noticed a lump.

Knowledge on risk factors which also plays a key role, however, was not so impressive. Almost three-quarters, 74.2%, saw the family history of breast cancer as a risk factor; 71.7 % smoking; Menopause 27.3%; First child at 30 years 15.9%; Use of oral contraceptives 13.6%; Early menarche 7.3% in that order respectfully. Before developing the symptoms and knowing these are the symptoms (which they had a good knowledge of (table 3); one should know factors that place her at risk. Making a conscious effort to avoid the avoidable risk factors is key when it comes to prevention. So, knowledge plays a highly key role.

Table 4. Distribution of Participants Awareness of Breast Cancer

Level of awareness of breast cancer	Frequency	Percentage
Heard of breast cancer?		
No	4	1.0
Yes	392	99.0
Total	396	100
The existence of Breast Cancer		
No	4	1.0
Yes	392	99.0
Total	396	100
Source of Breast Cancer Information		
Family member	3	0.8
Friends	50	12.6
Health Worker	172	43.4
Media	167	42.2
Social media	4	1.0
Total	396	100
Diagnoses of Breast Cancer in the Family		
No	361	91.2
Yes	35	8.8
Total	396	100
Cause of Breast Cancer		
Bacteria	203	51.3
Curse	40	10.1
Witchcraft	18	4.5
Too much sugar intake	6	1.5
Cause not known	129	32.6
Total	396	100
Knowledge of Risk Factors of Breast Cancer		
Menopause	108	27.3
Family history of Breast Cancer	294	74.2
Smoking	284	71.7
Use of oral contraceptives	54	13.6
First child at 30 years	63	15.9
Early menarche	29	7.3
Knowledge of signs and symptoms		
Painless breast lump	256	64.6
Lump under armpit	152	38.4
Nipple discharge	326	82.3
Change in shape and skin color	325	82.1
Sore on the breast that refuses to heal	365	92.2

Source. Field Survey (2018)

These findings gleaned from Table four point to a very high level in few aspects of breast cancer awareness and knowledge but not of major aspects as causes, risk factors and, signs and symptoms (in order of lowest level on knowledge), among women of the Tamale metropolis. Awareness is one of the essential steps in detecting breast cancer as early as possible and increasing the chances of successfully managing and treating the disease in the event of an occurrence.

The relatively high level of the respondents' awareness could be attributed to education by health workers and a good mass media / social media education (43.4% and 42.2% respectively; table 3). Similar findings were made by Syeed (2011) and Sarfo et al. (2013), who respectively found higher levels of awareness and knowledge about breast cancer among women (70% and 95% respectively) attributed to health workers and media.

Research Objective Two: Perception and Attitude of Women towards Breast Cancer Screening in the Tamale Metropolis

Perceptions and attitudes are very important in fighting the menace of breast cancer, particularly in Ghana. Therefore, one of the key objectives of the study was to examine how women in Ghana (Tamale) perceive the causes of breast cancer, the risks involved, the usefulness and benefits of screening and self-examination; as well preventive measures. Tables 5 and 6 present the results.

As captured in Table 5, participants had varied perceptions and attitude towards breast cancer and its screening. The majority (89.1%) felt they were at risk of breast cancer, as much as 10.9% felt they weren't at risk. Summing up and taking out those who actually had the answer correct (cause unknown 32.6%); the remaining percentage who perceived there is a cause was greater (67.4%). This, the researcher believes will affect their attitude to the condition and also an attitude to screening.

Thus, those who believe breast cancer is caused by witchcraft or a curse will definitely have no reason to show up for a screening and vice versa seek medical care if the need be.

Nonetheless, despite their low perception of the cause, the majority deemed breast cancer screening as a useful tool for early detection. Almost all of the participants (99.0%) agreed that breast screening is a useful tool for early breast cancer detection. Equally, 93.2% of them agreed that they would go for free breast cancer screening if they get the opportunity. Also, almost 90% of the participants indicated that they believed breast cancer was curable. The overwhelming majority of the women (93.9% and 90% respectively) indicated that they would visit the hospital should they discover an abnormality on breast self-examination or clinical breast screening. This, the researcher deems very good. Though on a smaller scale, about 1.0% indicated they would visit a traditional healer, while up to 5.1% indicated that they would do nothing about it respectively, though small but not negligible when it comes to breast cancer. Hence, this minority should still be included and targeted during health educations.

Table 5. Perception and Attitude towards Breast Cancer

Perception and Attitude towards Breast Cancer	Frequency	Percentage
Being at Risk of Breast Cancer		
No	43	10.9
Yes	353	89.1
Total	396	100
Usefulness of Breast Screening for Early Detection		
No	4	1.0
Yes	392	99.0
Total	396	100
Willingness to go for Free Breast Cancer Screening		
No	27	6.8
Yes	369	93.2
Total	396	100
Discovery of Abnormality during Breast Self-exam		
Visit the hospital	372	93.9
Pray over it	0	0
Visit a traditional healer	4	1.0
Do nothing	20	5.1
Total	396	100
Discover Abnormality during Clinical Breast Exam		
Visit the hospital	357	90.2
Pray over it	15	3.8
Visit a traditional healer	4	1.0
Do nothing	20	5.0
Total	396	100
The cure for Breast Cancer		
No	40	10.1
Yes	356	89.9
Total	396	100

Source: Field Survey (2018)

Table 6 presents the perceived benefits of breast cancer screening, as well as, measures what respondents believe can do to prevent the occurrence of breast cancer. On the perceived benefits of breast cancer screening, notably, 69.4% said that it aids in early detection and cure, 12.9% it affords them health education on breast cancer, while 6.8% mentioned it will help them get early treatment. On the perceived preventive measures against breast cancer, allowing husband to suck breast (9.1%), wearing a brassier always (7.6%), avoiding over massaging of the breast (6.6%),

avoid putting money/mobile phones in brassier (16.2%), breast self-examination (8.1%), stopping smoking (5.3%), check-up/screening at the hospital (12.4%), exercising regularly (6.0%) and going for traditional healing (1.0%) were some of the perceived ways of preventing breast cancer according to the participants. Checkup/screening at the hospital recorded the second highest. This is a method of early detection and not a preventive measure. This confirms the need to clarify early detection and prevention during breast cancer educational campaigns.

Table 6. Perception of Breast Cancer Screening Benefits and Prevention

Perception of breast cancer screening benefits and prevention	Frequency	Percentage
Benefits of breast cancer screening		
Early detection of breast cancer helps in its cure	275	69.4
Health education on breast cancer	51	12.9
Early treatment if discovered	27	6.8
Helps save the lives of women	15	3.8
Helps in preventing breast cancer development	8	2.0
No answer	20	5.1
Total	396	100
What to do to prevent breast cancer		
Allow your husband to suck breast	36	9.1
Wear a brassier always	30	7.6
Avoid chemicals around the breast	21	5.3
Avoid tattoos on the breast	19	4.8
Avoid over massaging of the breast	26	6.6
Avoid putting money/mobile phones in brassier	64	16.2
Breastfeed your baby	12	3.0
Do breast self-examination	32	8.1
Stop smoking	21	5.3
Go for check-up/screening at the hospital	49	12.4
Only God can protect/prevent breast cancer	15	3.8
Exercise regularly	24	6.0
Avoid drug abuse	12	3.0
Go for traditional healing	4	1.0
Stop taking fatty foods	3	0.8
No answer	28	7.0
Total	396	100

Source: Field Survey (2018)

Research Objective Three: Breast Cancer Screening Practices among Adult Women in the Tamale Metropolis

The third objective of the study was to determine the level of practice of breast cancer screening amidst adult women of Tamale Metropolis. Table 7 shows the distribution of the types of breast cancer screening tests done by the participants.

Table 7. Respondents' Practice of Breast Cancer Screening

Breast Cancer Screening Tests Performed	Frequency	Percentage
Breast Self-Examination		
No	54	13.6
Yes	342	86.4
Total	396	100
Clinical Breast Examination		
No	306	77.3
Yes	90	22.7
Total	396	100
Mammogram		
No	370	93.4
Yes	26	6.6
Total	396	100

Source: Field Survey (2018)

As shown, 86.4% undertook breast self-examination, 22.7% undertook clinical breast examination, with only 6.6% undertaking mammogram examination. Clinical breast examination and mammogram were the two screening methods least used by the participants, with 77.3% and 93.4% respectively having never undertaken or gone through any of these two screening methods. This implies that hardly do women in the Tamale metropolis go to a health facility to get screened. This conclusion is based on the fact that both clinical breast examination and mammogram are usually done at a health facility or by a qualified health professional. This suggests that even though

the study participants engage in breast self-examination, they hardly consider professional breast screening that is deemed more reliable in detecting breast cancer.

Research Objective Four: Relationship between Breast Cancer Awareness; Practices and Socio-demographic Characteristics of Women in the Tamale Metropolis

Awareness of Breast Cancer

Analysis of the relationship between some selected socio-demographic characteristics and breast cancer awareness among women in the Tamale metropolis was carried out. These are outlined below.

Age. As shown in table 8, 135 participants out of 396 aged 18-24 years had 134 being aware of breast cancer and 1 not being aware of breast cancer. The ages 25-29; 30 -34; 35 – 39; 40 – 44; 45 – 49; all had 85, 52, 27, 20 and 40 participants, with all of them being aware of breast cancer. Out of 37 participants for age 50 and above 34 were aware of breast cancer and three had not. The outliers identified were ages below 24 and 49. Creation of awareness can be increased when it gets to these ages in Tamale Metropolis.

The age of the respondents was found to have a statistically significant relationship with their awareness of breast cancer (χ^2 (6, n=396) = 9.433, p = 0.035). Therefore, the null hypothesis that claiming, “there is no significant relationship between the awareness of breast cancer and the age of women in the Tamale metropolis” is rejected. The alternate hypothesis is therefore accepted since a statistically significant relationship between the age of the women and their awareness of breast cancer existed.

Table 8. Relationship between Age and Awareness

Variables	Total	Awareness of breast cancer n (%)		p-value
		Yes	No	
Age				0.035*
18 – 24	135	134 (99.3)	1 (0.7)	
25 – 29	85	85 (100)	0 (0)	
30 – 34	52	52 (100)	0 (0)	
35 – 39	27	27 (100)	0 (0)	
40 – 44	20	20 (100)	0 (0)	
45 – 49	40	40 (100)	0 (0)	
50 and above	37	34 (91.9)	3 (8.1)	
Total	396	392 (98.99)	4 (1.01)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Ethnic group. Out of 36 Akans, 35 were aware of BC and 1 was not; all three Ga who participated were not aware of BC; eight Bissas, 14 Builsas, eight Dagaris 246 Dagombas, 31 Frafras, 10 Moshies, nine Konkombas, and 31 Mamprusis all were aware of breast cancer respectively. The ethnic group identified not having 100% awareness level and 0% awareness level respectively Akan and Ga are all of the southern part of Ghana. The researcher identifies that migration could have been a factor in the low level of awareness. Attention should be more focused on citizens who migrate from their region of ethnicity to other regions.

Table 9 shows that a very strong statistically significant relationship was observed between the ethnic affiliation of women of the Tamale metropolis and their awareness of breast cancer (χ^2 (9, n=396) = 36.833, $p < 0.001$).The researcher, therefore, fails to accept the null hypothesis that "there is no significant relationship between the awareness of breast cancer and the ethnicity of women in the Tamale metropolis." The alternate hypothesis is therefore accepted since a statistically significant relationship exists between the ethnic affiliation of the women and their awareness of breast cancer.

Table 9. Relationship between Ethnicity and Awareness

Variables	Total	Awareness of breast cancer n (%)		p-value
		Yes	No	
Ethnicity				0.000*
Akan	36	35 (97.2)	1 (2.8)	
Bisa	8	8 (100)	0 (0)	
Builsa	14	14 (100)	0 (0)	
Dagare	8	8 (100)	0 (0)	
Dagomba	246	246 (100)	0 (0)	
Frafra	31	31 (100)	0 (0)	
Konkonba	9	9 (100)	0 (0)	
Mamprusi	31	31 (100)	0 (0)	
Mossi	10	10 (100)	0 (0)	
Ga	3	0 (0)	3 (100)	
Total	396	392 (98.99)	4 (1.01)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Religion. Christians account for 133 participants in the study. Of these, 129 were aware of breast cancer and four not being aware of BC. Respectively 263 of all Moslem participants were aware of BC. Noting that Islam is the dominant religion in the north; this might account for the 100% awareness. There, however, should be further creation of awareness amidst Christian women. As can be seen in table 10, the religious affiliation of women of the Tamale metropolis was found to have a statistically significant relationship with their awareness of breast cancer (χ^2 (1, n=396) = 8.810, p = 0.012). The researcher, therefore, fails to accept the null hypothesis that "there is no significant relationship between the awareness of breast cancer and the religion of women in the Tamale metropolis". The alternate hypothesis is therefore accepted since a statistically significant relationship exists between the religion of the women and their awareness of breast cancer.

Educational level. Among participants who had attained educational level to JHS, 95 were all aware of BC. Out of the 131 participants who had no formal

education 128 were aware of BC and three were not. 24 and 27 participants who had attained educational level up-to primary level and tertiary level respectively were all aware of BC. 119 participants for SHS had 118 being aware of breast cancer and one not being aware. As shown in table 10, there is no statistically significant relationship between the educational level of women of the Tamale metropolis and their awareness of breast cancer (χ^2 (4, n=396) = 2.654, p = 0.690). The researcher, therefore, accepts the null hypothesis that "there is no significant relationship between the awareness of breast cancer and the educational level of women in the Tamale metropolis". The alternate hypothesis is therefore rejected.

Table 10. Relationships between Socio-Demographic Characteristics and Awareness (Religion & Education)

Variables	Total	Awareness of breast cancer n (%)		p-value
		Yes	No	
Religion				0.012*
Christianity	133	129 (97.0)	4 (3.0)	
Muslim	263	263 (100)	0 (0)	
Total	396	392 (98.99)	4 (1.01)	
Educational level				0.690
No formal education	131	128	3	
Primary	24	24	0	
JHS	95	95	0	
SHS	119	118	1	
Tertiary	27	27	0	
Total	396	392 (98.99)	4 (1.01)	

Test: Pearson's Chi Square *Significant at p<0.05

Relationship between Socio-Demographic Characteristics and Screening Practices

Breast Self-Examination

Age. In as much as recent literature points to the fact that incidence (ages) of BC is reducing to younger female adults, statistics from this study indicates whilst age

ranges between 30 years and 44 years had 100% of their participants practicing BSE; below 29 years to 18 years had lesser practicing BSE. A lot of education has been on incidence ages around the ’40s in times past; such that it seems they are those who have a good understanding of the screening now. More education has to now focus on younger female adults and those above 50 years.

Table 11 shows that ages 30-34, 35-39,40-44 all practiced breast self-examination out 52, 27 and, 20 respectively. Age 18-24 had 120 out of 135 participants practicing BSE. Likewise, age range 25-29 had 75 out of 85; age 45- 49 26 out of 40 and lastly ages 50 and above 22 out of 37 practicing BSE.

Age of the respondents was found to have a strong statistically significant relationship with breast self-examination among women in the Tamale metropolis ($p < 0.001$). The researcher, therefore, fails to accept the null hypothesis that “there is no significant relationship between breast self-examination and the age of women in Tamale metropolis”. The alternate hypothesis is therefore accepted.

Table 11. Relationships between Age and Screening Practices-BSE

Variables	Total	Practice of BSE n (%)		p-value
		Yes	No	
Age				0.000*
18 – 24	135	120 (88.9)	15 (11.1)	
25 – 29	85	75 (88.2)	10 (11.8)	
30 – 34	52	52 (100)	0 (0)	
35 – 39	27	27 (100)	0 (0)	
40 – 44	20	20 (100)	0 (0)	
45 – 49	40	26 (65.0)	14 (35.0)	
50 and above	37	22 (59.5)	15 (40.5)	
Total	396	342 (86.4)	54 (13.6)	

Test: Pearson’s Chi Square *Significant at $p<0.05$

Ethnicity. A number of indigenes of the most dominant tribe of the study population could be seen to not have practiced BSE. But other smaller tribes of the same region recorded 100% and very close to 100% in all cases of the practice of BSE. Only participants of ethnic groups other than the north recorded very poor practice of BSE. As per Table 12 Bissas, Builsaa, Dagaris, Frafras, Konkombas, Mamprusis all had all their participants performing SBE, respectively 8, 14, 8, 31, 9, 31. Akans had 35 out of 36; Gas 0 out of 3; Moshies 0 out of 10 and finally 206 out of 246 females of Dagomba ethnicity practiced BSE.

Table 12 also shows that a very strong statistically significant relationship exists between the ethnicity of women of the Tamale metropolis and their practice of breast self-examination ($p < 0.001$). The researcher, therefore, fails to accept the null hypothesis that "there is no significant relationship between breast self-examination and the ethnicity of women in the Tamale metropolis". The alternate hypothesis is therefore accepted.

Table 12. Relationships between Ethnicity and Screening Practices-BSE

Variables	Total	Practice of BSE n (%)		p-value
		Yes	No	
Ethnicity				0.000*
Akan	36	36 (97.2)	1 (2.8)	
Bisa	8	8 (100)	0 (0)	
Builsa	14	14 (100)	0 (0)	
Dagare	8	8 (100)	0 (0)	
Dagomba	246	206 (83.7)	40 (16.3)	
Frafra	31	31 (100)	0 (0)	
Konkonba	9	9 (100)	0 (0)	
Mamprusi	31	31 (100)	0 (0)	
Mossi	10	0 (0)	10 (100)	
Ga	3	0 (0)	3 (100)	
Total	396	342 (86.4)	54 (13.6)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Religion. Findings indicated most Christians practiced BSE as compared to Muslims. As can be seen in table 13, 117 out of 133 Christians practiced BSE; whereas 225 out of 263 Moslems practiced BSE. Padela et al. (2015) indicated in their survey that religion-related factors such as positive religious coping and perceived religious discrimination influence breast cancer screening patterns. Consequently, programs leveraging shared religious networks, such as mosques, Imams, churches, Pastors (in this case) may be a means to address religious barriers that impede screening across.

The religious affiliation of women of the Tamale metropolis did not have a statistically significant relationship with breast self-examination ($p = 0.508$). The researcher, therefore, accepts the null hypothesis that "there is no significant relationship between breast self-examination and the religion of women in the Tamale metropolis.

Educational level. Findings indicate an overwhelming majority of women who had no formal education (almost 98%) practiced BSE as compared to the educated. Even though only tertiary recorded 27 out of 27 (thus 100%), nonetheless, results of women who had no formal education were very impressive; as compared to literature that proves otherwise for the level of education. Table 13 shows that 81 out 95 JHS graduates practiced SBE; 106 SHS graduates out of 119 also practiced BSE whereas all 27 tertiary graduates all performed BSE. It was however noticed that none of the 24 primary school graduates performed SBE, whereas an overwhelming 128 out of 131 participants who had no formal education practiced BSE

As seen in table 13 also, there was a strong statistically significant relationship between the educational level of women of the Tamale metropolis and their performance of breast self-examination ($p < 0.001$). The researcher, therefore, fails to

accept the null hypothesis that "there is no significant relationship between breast self-examination and the educational level of women in the Tamale metropolis." The alternate hypothesis is however accepted.

Table 13. Relationships between Socio-Demographic Characteristics and Screening Practices-BSE (Religion & Education)

Variables	Total	Practice of BSE n (%)		p-value
		Yes	No	
Religion				0.508
Christianity	133	117 (88.0)	16 (12.0)	
Muslim	263	225 (85.6)	38 (14.4)	
Total	396	342 (86.4)	54 (13.6)	
Educational level				0.000*
No formal education	131	128 (97.1)	3 (2.3)	
Primary	24	0 (0)	24 (100)	
JHS	95	81 (85.3)	14 (14.7)	
SHS	119	106 (89.1)	13 (10.9)	
Tertiary	27	27 (100)	0 (0)	
Total	396	342 (86.4)	54 (13.6)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Clinical Breast Examination

As the screening tests became more involving, (going to a health facility or, to a health professional for CBE to be done); the number who practiced it reduced the more. This finding is very worrying especially since earlier findings made it obvious financial issue was not a problem; having almost all the clients covered with health insurance and; having a high number also living close to a nearby health facility (table 3). What other factors are hindering women from these screenings? Work schedules, attitudes, fear/anxiety?

Age: Table 14 shows ages 30-34, 35-39, 40-44 had 13 out of 52, 18 out of 27 and, eight out of 20 respectively practicing CBE. Age 18-24 had 20 out of 135

participants practicing CBE. Likewise, age range 25-29 had eight out of 85; age 45-49 had 0 out of 40 and lastly ages 50 and above 23 out of 37 practicing CBE.

Age of the respondents was found to have a strong statistically significant relationship with clinical breast examination among women in the Tamale metropolis ($p < 0.001$). We, therefore, fail to accept the null hypothesis that "there is no significant relationship between clinical breast examination and the age of women in the Tamale metropolis." The alternate hypothesis is therefore accepted.

Table 14. Relationship between Age and Screening Practices-CBE

Variables	Total	Practice of CBE n (%)		p-value
		Yes	No	
Age				0.000*
18 – 24	135	20 (14.8)	115 (85.2)	
25 – 29	85	8 (9.4)	77 (90.6)	
30 – 34	52	13 (25.6)	39 (75.0)	
35 – 39	27	18 (66.7)	9 (33.3)	
40 – 44	20	8 (40.0)	12 (60)	
45 – 49	40	0 (0)	40 (100)	
50 and above	37	23 (62.2)	14 (37.8)	
Total	396	90 (22.7)	306 (77.3)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Ethnicity. As per table 15 Bissas, Builsaa, Gas, Moshies and, Konkombas, all had none of their participants performing CBE, respectively 8, 14, 3, 10 and, 9. Akans had 10 out of 36; Dagari eight out of 8; Frafras nine out of 31 and finally 50 out of 246 females of Dagomba ethnicity practiced CBE. Analysis indicates that a very strong statistically significant relationship exists between the ethnicity of women of the Tamale metropolis and their practice of clinical breast examination ($p < 0.001$). We, therefore, fail to accept the null hypothesis that "there is no significant relationship between the practice of clinical breast examination and the ethnicity of women in the Tamale metropolis." The alternate hypothesis is therefore accepted.

Table 15. Relationship between Ethnicity and Screening Practices-CBE

Variables	Total	Practice of CBE n (%)		p-value
		Yes	No	
Ethnicity				0.000*
Akan	36	10 (27.8)	26 (72.2)	
Bisa	8	0 (0)	8 (100)	
Builsa	14	0 (0)	14 (100)	
Dagare	8	8 (100)	0 (0)	
Dagomba	246	50 (20.3)	196 (79.7)	
Frafra	31	9 (29.0)	22 (71.0)	
Konkonba	9	0 (0)	9 (100)	
Mamprusi	31	13 (41.9)	18 (58.1)	
Mossi	10	0 (0)	10 (100)	
Ga	3	0 (0)	3 (100)	
Total	396	90 (22.7)	306 (77.3)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Religion. As can be seen in Table 16 44 out of 133 Christians practiced CBE; whereas 46 out of 263 Moslems practiced CBE. The religious affiliation of women of the Tamale metropolis had a statistically significant relationship with clinical breast examination ($p = 0.001$). We, therefore, fail to accept the null hypothesis that "there is no significant relationship between clinical breast examination and the religion of women in the Tamale metropolis." The alternate hypothesis is therefore accepted.

Educational level. Table 16 shows that 18 out 95 JHS graduates practiced CBE; 32 SHS graduates out of 119 also practiced CBE whereas tertiary graduates had 11 out 27 participants who performed CBE. It was however noticed that none of the 24 primary school graduates performed CBE, whereas 29 out of 131 participants who had no formal education practiced CBE.

Analysis indicated that there was a statistically significant relationship between the educational level of women of the Tamale metropolis and their performance clinical breast examination ($p = 0.003$). We, therefore, fail to accept the null hypothesis that

"there is no significant relationship between clinical breast examination and the educational level of women in the Tamale metropolis." The alternate hypothesis is therefore accepted.

Table 16. Relationships between Socio-Demographic Characteristics and Screening Practices-CBE (Religion & Education)

Variables	Total	Practice of CBE n (%)		p-value
		Yes	No	
Religion				0.001*
Christianity	131	44 (33.1)	89 (66.9)	
Muslim	263	46 (17.5)	217 (82.5)	
Total	396	90 (22.7)	306 (77.3)	
Educational level				
No formal education	131	29 (22.1)	102 (77.9)	0.003*
Primary	24	0 (0)	24 (100)	
JHS	95	18 (18.9)	77 (81.1)	
SHS	119	32 (26.9)	87 (73.1)	
Tertiary	27	11 (40.7)	16 (59.3)	
Total	396	90 (22.7)	306 (77.3)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Mammogram

Mammograms are routinely administered to detect breast cancer (abnormal cells) in women; mostly who have no apparent symptoms yet. It is a low-dose x-ray exam that produces images of the breast. Mammograms help with early detection and screening for breast cancer. The statistics gathered on the practice of mammogram usage by residents was abysmally poor. All demographics recorded only 26 participants out of 396 having practiced it. Age had all ages 18 and above not practicing with the exception of 35 years to 44 years which even recorded 26 out of 47 participants in that age bracket. However, it is understandable for ages below 35 years because of the age range at which one is to start mammogram screening. Unless

otherwise proven (by detection of an abnormal lump in the breast during other types of screening).

A study by Opoku et al. (2012), identified that routine mammography screening in Ghana is not feasible at the moment. Almost six years down the lane respondents of this study have also in a way proven this right. With only one hospital conducting mammogram in the whole region, and also with the cost even though the national health insurance subsidizes it in a way. Nonetheless, the researcher believes with the test being an annually one, women who consider themselves at risk and deem it important will go try to have the test done.

Age. Table 17 shows that ages 18-24; 25-29, 30-34, 45-49, 50 and above all had none of their participants ever gone for a mammogram screening, respectively 135, 85, 52, 40 and 37. Only ages 35-39 and 40-44 had 18 out of 27 and eight out of 20 respectively of their participants' undertaken mammogram. Age of the respondents was found to have a strong statistically significant relationship with mammogram screening among women in the Tamale metropolis ($p < 0.001$). We, therefore, reject the null hypothesis that "there is no significant relationship between mammogram screening and the age of women in the Tamale metropolis." The alternate hypothesis is therefore accepted.

Table 17. Relationship between Age and Screening Practices-Mammogram

Variables	Total	Practice of Mammogram n (%)		p-value
		Yes	No	
Age				0.000*
18 – 24	135	0 (0)	135 (100)	
25 – 29	85	0 (0)	85 (100)	
30 – 34	52	0 (0)	52 (100)	
35 – 39	27	18 (66.7)	9 (33.3)	
40 – 44	20	8 (40.0)	12 (60.0)	
45 – 49	40	0 (0)	40 (100)	
50 and above	37	0 (0)	37 (100)	
Total	396	26 (6.6)	370 (93.4)	

Test: Pearson's Chi Square *Significant at $p<0.05$

Ethnicity. As per Table 18 Bissas, Builsaa, Gas, konkombas, Mamprusi, and Moshies and, all had none of their participants performing CBE, respectively 8, 14, 3, 9, 31 and, 10. Akans had three out of 36; Dagari eight out of eight; Frafras one out of 31 and finally 14 out of 246 females of Dagomba ethnicity who had performed mammogram.

Findings indicate that a very strong statistically significant relationship exists between the ethnicity of women of the Tamale metropolis and their practice of mammogram screening ($p < 0.001$). The researcher, therefore, rejects the null hypothesis that "there is no significant relationship between the practice of mammogram screening and the ethnicity of women of the Tamale metropolis.

Table 18. Relationships between Ethnicity and Screening Practices-Mammogram

Variables	Total	Practice of Mammogram n (%)		p-value
		Yes	No	
Ethnicity				0.000*
Akan	36	3 (8.3)	33 (91.7)	
Bisa	8	0 (0)	8 (100)	
Builsa	14	0 (0)	14 (100)	
Dagare	8	8 (100)	0 (0)	
Dagomba	246	14 (5.7)	232 (94.3)	
Frafra	31	1 (3.2)	30 (96.8)	
Konkonba	9	0 (0)	9 (100)	
Mamprusi	31	0 (0)	31 (100)	
Mossi	10	0 (0)	10 (100)	
Ga	3	0 (0)	3 (100)	
Total	396	26 (6.6)	370 3.4)	

Test: Pearson's Chi Square *Significant at p<0.05

Religion. Religion had mostly Christians dominating in the practice of mammogram as can be seen in Table 19, 17 out of 133 Christians and, nine out of 263 Moslems had practiced mammogram. The religious affiliation of women of the Tamale metropolis had a strong statistically significant relationship with mammogram screening (, p = 0.001). The researcher, therefore, fails to accept the null hypothesis that "there is no significant relationship between mammogram screening and the religion of women in the Tamale metropolis." The alternate hypothesis is therefore accepted.

Educational level. Educational level recorded majority SHS graduates; no formal education; and tertiary (2 out of 27) in that order. Recommendations for intense education on the benefits and details of the mammogram, screening is essential for women in Tamale. Table 19 shows that 18 out 95 JHS graduates practiced mammogram; surprisingly enough tertiary graduates had two out of 27 participants who had ever screened for a mammogram. However, it was noticed that in the case of mammogram none of the 24 primary schools and 119 SHS graduates

had performed mammogram, six out of 131 participants who had no formal education had ever undertaken mammogram.

As seen in Table 19, there was a strong statistically significant relationship between the educational level of women of the Tamale metropolis and their performance mammogram screening ($p < 0.001$). The researcher, therefore, rejects the null hypothesis that "there is no significant relationship between mammogram screening and the educational level of women in the Tamale metropolis." The alternate hypothesis is therefore accepted.

Table 19. Relationship between Socio-Demographic Characteristics and Screening Practices - Mammogram (Religion & Education)

Variables	Total	Practice of Mammogram n (%)		p-value
		Yes	No	
Religion				0.001*
Christianity	131	17 (12.8)	116 (87.2)	
Muslim	263	9 (3.4)	254 (96.6)	
Total	396	26 (6.6)	370 (93.4)	
Educational level				0.000*
No formal education	131	6 (4.6)	125 (95.4)	
Primary	24	0 (0)	24 (100)	
JHS	95	18 (18.9)	77 (81.1)	
SHS	119	0 (0)	119 (100)	
Tertiary	27	2 (7.4)	25 (92.6)	
Total	396	26 (6.6)	370 (93.4)	

Test: Pearson's Chi Square *Significant at $p<0.05$

CHAPTER 5

SUMMARY, CONCLUSION, AND RECOMMENDATION

Summary

The study assessed breast cancer awareness and practices of breast cancer screening among adult women in the Tamale metropolis. To meet this overall aim, the study addressed four research objectives and tested two corresponding hypotheses.

A cross-sectional survey of 396 women aged 18 years and above in Tamale metropolis was undertaken. Using a stratified sampling technique, with the area councils as strata, the 396 women who met the inclusion criteria were randomly selected to participate in the study. The data obtained were entered into IBM SPSS version 24.0 for descriptive and inferential analyses. The data were analyzed using frequency distribution and percentages, Pearson's Chi-Square Test.

The results showed that majority of the respondents were below 40 years of age, with a similar number being married (63.4%). Islam was the predominant religion (66.4% against 33.6%), with the majority of the women being of three Northern (regional Ghana ethnicities (90.1%). On the educational front, a little over half of them (60.2%) had some form of formal education up to the senior high school level, with more than a quarter of them (33.1%) having no formal education.

Also, more than half of them were self-employed (65%), with over a quarter of them being unemployed (28%). Almost all (97.2%) of them were registered with the National Health Insurance Scheme.

Almost all participants had heard of breast cancer, with an equal number believing that the disease actually exists. They got information about breast cancer from health workers, the media, friends, social media family members in order of highest source. Identification of the risks factors and signs and symptoms were however poor as compared to the knowledge of the disease and alluding to its existence.

Also, on causes, the majority of the participants indicated the cause of breast cancer is bacteria (51.3%), over a quarter (32.6%) of them indicated that the cause was unknown, which is quite good. Interestingly, about 10% perceived the cause of breast cancer to be from curses, while 4.5% attributed to breast cancer to witchcraft. This, the researcher identified was alarming. In her view, it will affect women's attitude towards screening and prevention. A person whose knowledge on the cause of breast cancer to be, for example, witchcraft or a curse will definitely have no reason to show up for a screening and vice versa seek medical care if the need be.

On knowledge, on the whole, findings point to a high level of breast cancer awareness (that the condition exists) but, majorly poor on details of the disease such as for cause, signs and symptoms, risk factors, among women of the Tamale metropolis.

The women had varied perceptions of breast cancer and its screening. While the majority felt they were at risk of breast cancer, as much as 10.9% felt they weren't at risk. Alarming; if every metropolis or city in Ghana or worldwide should have 10% of women not seeing themselves as a risk factor for developing Breast Cancer. Then the incidence of mortality and morbidity is foreseen to rapidly continuing to increase.

Almost all (99%) of the women agreed that breast screening is a useful tool for early breast cancer detection, however, and that they would go for free breast cancer

screening out of their will. Nonetheless, this finding was challenged with later results which indicated a very low percentage of participants who they freely or willingly will go for either practiced CBE (22%) or mammogram (6%), Even though majority lived close to a health facility (1 – 30 minutes 41.9%).

Majority of the women also believed breast cancer was curable (89.94%) and for that matter, they would visit the hospital should they discover an abnormality on breast self-examination or clinical breast screening. A small but significant percent (1.0%) indicated they would visit a traditional healer, while up to 5.1% indicated that they would do nothing about it respectively.

The most practiced method of breast screening was breast self-examination, with three-quarters of the women practicing it. Clinical breast examination and mammogram were the two least used screening methods, with 77.3% and 93.4% respectively having never undertaken or gone through any of these two screening methods.

On breast cancer awareness, the findings and results showed that a statistically significant relationship exists between ages of the women, their religious affiliations and ethnicities, and their awareness about breast cancer. Their educational level, however, did not have any significant relationship with their awareness of breast cancer. Further analysis also showed that the age of the women, their educational level and ethnicities had strong statistically significant relationships with the practice of the three breast cancer screening methods (breast self-examination, clinical breast screening, and mammogram). Also, a statistically significant relationship existed between religious affiliation of the women and the practice of clinical breast examination and mammogram screening. However, their religious affiliations did not

have a statistically significant relationship with the practice of breast self-examination.

Conclusion

Based on the findings of this study, it can be concluded that breast cancer awareness on the condition and usefulness of screening was good. However, knowledge on key details such as causes, risk factors, and signs and symptoms were however not too impressive among women of the Tamale metropolis. Interestingly, quite a small number of women perceive the cause of breast cancer to be from curses and witchcraft, and this is of significant importance in the prevention of BC. Women of Tamale metropolis (Ghana) have varying perceptions and attitude towards breast cancer and its screening.

The most used method of breast screening was breast self-examination, with clinical breast examination and mammogram being poorly the list used. Furthermore, age, religious affiliations, and ethnicities of women are significantly related to their awareness about breast cancer. Additionally, the age of the women, their educational level and ethnicities have significant relationships with the practice of the three breast cancer screening methods (breast self-examination, clinical breast screening, and mammogram).

Recommendations

Based on the findings of this study, the following recommendations are made for the attention of the following institutions and professionals.

Ministry of Health/Ghana Health Service

1. Health education and promotion activities on breast cancer should be enhanced, especially on the causes and risk factors, prevention and early detection via the media using qualified health professionals, and through more education at the hospitals when clients visit.

2. Expand breast cancer screening and treatment centers, and decentralized them to the district hospital levels to improve access to breast care services by women.

3. Allocate more budgetary support from the ministry to breast care activities. The ministry of health and the National Health Insurance Authority should include breast cancer treatment as part of the disease conditions, of which treatment is covered under the scheme.

Women of Tamale

1. Women of Tamale should continue to seek information on breast cancer from qualified health personnel.

2. Women of Tamale should report early and visit the nearest health facility for treatment when they discover any abnormality upon conducting any of the breast screenings.

3. Women of Tamale should avail themselves for CBEs and mammograms offered in hospitals apart from breast self-examination.

Suggestions for Further Research

The researcher recommends that further studies should be conducted into the following identified areas to get a better understanding of the breast cancer issues in Ghana and elsewhere:

1. A nationwide survey of knowledge of breast cancer risks and modifiable factors.

2. A study to identify limitation factors for CBEs and mammogram Breast screenings in relation to distance to the closest health facility.

3. A study to assess relationship if any between migration from the region of Ethnicity to another and BC awareness and screening practices.

4. Variables assessed with awareness and screening practices were limited to only four (namely age, ethnicity, religion and, education); other variables such as economic status and / occupational status and its relationship could also be assessed in the future.

APPENDICES

APPENDIX A

QUESTIONNAIRE (ENGLISH VERSION)

February, 2018
This is a research study being undertaken to determine "Breast Cancer Awareness and Screening of Adult women within Tamale Metropolis." The researcher would be very grateful if you could take a little time out of your busy schedule, to candidly answer the questions below. Please, 'be very sincere' in answering the questions since the way you answer the questions will give credit or discredit to the study.
Please fill in the appropriate answers and check the option(s) that best applies to you. Any information provided on this sheet will be kept confidential. Please, know that your cooperation will greatly help the researcher to accomplish the goal of the research.
Thank you.
Yours faithfully,
Miss Adams, Patsy Ago
Master of Public Health Student
Adventist University of Africa
SECTION A: SOCIODEMOGRAPHIC CHARACTERISTICS
Marital status: Single ( ) Married ( ) Separated ( )
Divorced ( ) Widowed ()
Age bracket: 18-24( )25-29( )30-34( )35-39( ) 40-44( )45-49( ) 50 and above( )
Level of education: No formal education ( ) Primary ( ) J.S.S. ( )
S.S.C.E. ( ) Tertiary ( ) Others (Please specify)__
Religion: Christian ( ) Moslem ( ) Others (Please specify)__
Ethnic Group:Dagomba ( ) Mamprusi ( ) Ashanti ( ) Fante ( ) Ewe ( ) Ga( )
Others (Please specify)__
Community: _____
Area Council:_____
Metro:_____
GPS Location of household: _____
Employment status: Unemployed () Civil servant() Self-employed() Student()
Do you have a valid health insurance card? Yes ( ) No ( )
Is there a health facility within your area? Yes ( ) No ( )
How long is the closest health facility a walk from your home?
1 – 30 minutes' ( ) 31-60 minutes' ( ) 61 – 90 minutes' ( ) 91 – 120 minutes' ( )
121 minutes' and above ( )
Has any member of your family been diagnosed of breast cancer? Yes () No()
If your answer to question above is yes, what is her relationship to you?
Mother ( ) Aunt ( ) Sister ( ) Cousin ( ) others (Please specify)_____
SECTION B: BREAST CANCER AWARENESS
GENERAL KNOWLEDGE
Have you ever heard of breast cancer disease? Yes ( ) No ( )

Do you believe such a disease exists? Yes ( ) No ( )
What is/was your source (s) of information about breast cancer? Tick all that apply.
Media ( ) Health worker ( ) Friends ( ) others (Please specify)_____
In your opinion, what causes Breast cancer?
Unknown ( ) Bacteria ( ) Curse ( ) Witchcraft ( ) others (specify)_____
Which of the following do you think are risk factors for developing breast cancer (Tick where appropriate).

RISK FACTORS	YES	NO	UNSURE
Menopause			
Family history of breast cancer			
Cigarette smoking			
Use of oral contraceptive			
First child after the age of 30 years			
Early onset of menses (Before the age of 12 years)			
Late menopause (after the age of 55 years)			

Which of the following do you think are symptoms of breast cancer (Tick where appropriate).

SYMPTOMS	YES	NO	UNSURE
Painless breast lump			
Lump under armpit			
Nipple discharge			
Change in breast shape and skin colour			
Pain in breast region			

SECTION C: KNOWLEDGE AND PRACTICE OF BREAST CANCER SCREENING

Have you heard of any of these screening tests done for Breast examination? (tick)

TEST	YES	NO
Breast self-exam (BSE)		
Clinical breast exam (CBE)		
Mammogram		

Which of the screening tests below have you performed before? (tick all that apply)
Breast self-exam ( ) Clinical breast exam ( ) Mammogram ( )
How often do you perform your selected screening test? If any
Breast self-exam……
Clinical breast exam……
Mammogram …….
At what age should one start screening for breast cancer?
From birth ( ) From puberty ( ) From 20 years ( ) From 30 years ( )
After menopause ( ) No idea ( )
How often should Breast self-exam be done?
Daily ( ) Weekly ( ) Monthly ( )
Yearly ( ) No idea ( )
What is the best time to do Breast self-exam? During menstrual flow ( )A week after menstrual period ( )During pregnancy ( )During breast feeding ( ) No idea ( )

Breast self-exam should be done by: Doctor ( ) Trained Nurse ( ) The individual ( ) Others (Please specify) _____

SECTION D: PERCEPTION TOWARDS BREAST CANCER AND IT'S SCREENING.

As an adult woman are you at risk of acquiring the disease? Yes ( ) No ( )

Do you agree that Breast screening is a useful tool for early detection? Yes ( ) No ( )

If you ticked none of the options in the question above, (29) state why not?

……

……

Will you out of your free will go for screening of your breast? Yes ( ) No ( )

If you discover any abnormality during Breast Self-Examination, what will you do?

Pray over it ( ) Do some lab tests ( ) Visit the hospital ( ) Do nothing ( ) Others (specify)_____

If any abnormality is discovered during Clinical Breast Examination, what will you do?

Pray over it ( ) Visit the Hospital ( ) Visit a traditional healer ( )

Do nothing ( ) Others (specify)_____

Breast cancer is curable when detected early. Yes ( ) No ( ) Unsure ( )

What do you think are the benefits of breast screening?

……

……

What do you do as an adult woman can help prevent you from getting Breast cancer?

……

Thank you.

APPENDIX B

QUESTIONNAIRE (DAGBANI)

Tuma Ŋo nyela yeltɔɣ' shɛli din jendi paɣaba bihi dɔriti ni di zahimbu ti tudu bɔbli Ŋo polo, di bahibahindi ti Tamali tiŊ puuni. Tuma Ŋo lana ni niŊ suhupiɛlli pam a yi tooi ti ti a saha Ŋo puuni saha biɛla n-soŊ labisi ti bɔhisi Ŋan doli Ŋo n-ti ti. Jaande, niŊ mi suɣulo ka labisi bɔhisi maa dintu shem domi a ni yen labisi bohisi maa shem nyela din ni tooi pahi tuma Ŋo darija bee ka di booi di jilima.
NiŊmi suɣulo ka labisi bɔhisi maa n niŊ poli sheŊa din che m-bahi maa puuni viɛnyelinga. A ni yɛli yeltoɣa sheli n-ti ti gban Ŋo puuni nyela ti ni yen gbubi sheli ashili. Dim suɣulo, mi ni ka dama a yi taɣi deei ti tuma Ŋo maa ni a nuhi ayi, di nyela din ni sɔŊsi tuma maa tumbu viɛnyela.
M' paɣiya.
A yedalana

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SUURU YINI: TAGIBU DIN BE BIEHIGU NI
1. Dooyili yeltɔɣa: Paɣazinli ( ) Mali yidana ( ) Yi bela yi yinsi ( ) Yi chela taba () Pakoli n nye a ( )
2. Yuma yaɣili: Pishi ayi ka _ Pishi ni anahi ( ) Pishi ni anu _ Pihita yini ka ( ) Pihita _ Pihita ni anahi ( ) Pihita ni anu _ Pihinahi yini ka ( ) Pihinahi _ Pihinahi ni anahi ( ) Pihinahi ni anu _ Pihinu yini ka ( ) Pihinu zaŊ chana ( )
3. Shikuru baŊsim yaɣili: Bi chaŊ shikuru ( ) Primary shikuru ( ) Jinia Haai shikuru ( ) Sinia haai shikuru ( ) KarimzoŊ kara la ni ( ) Din pahi (jaande, sabi sɔŊ)……
4. Adiini yeltɔɣa: Dolo dolo ( ) musulimi ( ) Din pahi (Jaande, sabi sɔŊ)……
5. Bala pubu yaɣili: Dagbana ( ) Ŋmampriga ( ) KambɔŊa ( ) Fanti ( ) Aligbɛ ( ) Ankarain ( ) Din pahi (Jaande sabi sɔŊ)……
6. AfɔŊ……
7. A bɔbili maa kaansili……
8. A ya Metro……
9. GPS soli zaŊti a yiŊa……
10. Tuma yaɣili: Ka tuma ( ) Gomlanti tuuntumda ( ) A maŊmaŊ' tuma ( ) shikuru bila ( )
11. A mali alaafee bontimaŊ' shɛhira gbaŊ? Iin ( ) Iinhi ( )
12. Ashibiti be yi fɔŊ ni? Iin ( ) Iinhi ( )
Saha wula ka di yen di a, di yi niŋ ka a yen chaŋ tiŋa n-kpe ashibiti din miri a yiŋa? 1 – 30 saha ( ) 31-60 saha ( ) 61 – 90 saha ( ) 91 – 120 saha ( ) 121 saha and above ( )

13. A daŋ puuni so na min mali bihili doro? Iin ( ) Iinhi ( )
14. A labisigu zaŋ ti bɔhigu din pahiri pia ni ata maa yi nye Iin, a bo n-lee nye lala nir' maa? Ma ( ) Piriba bee mapira ( ) Tuzopaɣa ( ) Dachia ( ) Din pahi (Jaande sabi sɔŋ)……

SUURU AYI: BIHA DORO YELTɔɣA BAŋSIM ZILINLI

15. A min wum biha doro yeltoɣa? Iin ( ) Iinhi ( )
16. A dihitabili ni lala doro biɛni? Iin ( ) Iinhi ( )
17. Ya ka a na min wum lala doro Ŋɔ damli? Piimi din tuhi
Lahabalichuri ni ( ) Alaafee tuuntumdi sani ( ) Zonima ( )
Din pahi (Jaande sabi sɔŋ)……
18. A tiɛha puuni bo n-lee tiri biha doro? M bi mi ( ) Binniɛma () Noli yelibu ( ) Sotali ( ) Din pahi (Jaande sabi soɔŋ)……
19. Yel' shɛŋa din do gbunni Ŋo puuni dini ka a lee tiɛhiri ni din tooi kpaŋsi biha doro nyabu (Piimi din tuhi)

Yel' shɛŋa din ni kpaŋsi li	Iin	Iinhi	M' bi mi
Dɔɣim yi Ŋmaai			
Di yi be daŋ puuni			
Shigaari nyubu			
Dɔɣisaɣisi tima nyubu			
A yi yaɣi yuum pihita ka naan dɔɣi a tuuli bia			
A yi daŋ a sɔrilim nyabu (pɔi ka naan paai yuum pia ni ayi)			
Dɔɣim yi yuui n-ti naan Ŋmaai (a yi yaɣi yuum pihinu ni anu)			

20. Din do gbunni Ŋo puuni dini n lee nye biha doro taɣimalisi (Piimi din tuhi)

Doro taɣimalisi	Iin	Iinhi	M' bi mi
Bihili puuni kariwali yi biɛra			
BoɣuloŋŋNi kariwali			

Bihizuɣu yi toɣira			
Bihili biɛhigu ni nahingbaŋ yi taɣi			
Biha shee yi biɛra			

SUURU ATA: BIHA DORO BAŋSIM NI DI ZAHIMBU SOYA

21. A min wum biha zahimbu sochibisi ŋo sheli yeltoɣa?

Zahimbu	Iin	Iinhi
A maŋ zahimbu		
Ashibitinim' zahimbu		
N ŋmaai li anfooni		

22. Biha zahimbu din dɔ gbunni ŋɔ puuni dini ka a na min niŋ? (Piimi din tuhi)
A maŋ zahimbu ( ) Ashibiti ni zahimbu ( ) N ŋmaai li anfooni ( )

23. Bula ka a tooi zahindi a biha? A yi tooi zahindi li m bala
A maŋ zahimbu……
Ashibiti ni zahimbu……
N ŋmaai li anfooni……..

24. Yuma ala n-tu ni nir' paai ka pili o biha zahimbu?
A doɣim saha ( ) A yi ti bi paɣa ( ) A yi ti nya yuum pishi chana ( ) Ayi ti nya yuum pihita chana ( ) Doɣim ŋmaaibu nyaanŋa ( ) M bi mi ( )

25. Bula zuɣu n-tu ni nir' maŋ tooi zahindi o biha?
Biɛɣu kam ( ) Bakɔi kam ( ) Gɔli kam ( ) Yuuni kam ( )
M bi mi ( )

26. Saha dini n-tu ni nir' maŋ tooi zahindi o biha?
A yi ti nyari a sɔrilim ( ) Sɔrilim yi ŋmaai, bakɔi din paya maa ( ) A yi mali pua ()
A yi ti mɔɣisiri bia bihili ( ) M bi mi ( )

27. A maŋ biha zahimbu tumi ni ŋun niŋ li?
Dɔɣite ( ) Ashibiti nɛɛsi ( ) A maŋmaŋa ( ) Din pahi (Jaande sabi sɔŋ)……

SUURU ANAHI: TIɛHA ZAŋKPA BIHA DORO MINI DI ZAHIMBU POLO

28. Nyin' paɣa, a tiɛhiya ni biha doro nyela din ni tooi gbaaigi a? Iin ( ) Iinhi ( )

29. A saɣiti ni biha zahimbu nyela sochibi' shɛli din ni song zaŋkpa doro maa yela daŋ banŋ nir' niŋgbuna ni? Iin ( ) Iinhi ( )

30. A yi ka labisibu zaŋ ti bɔhigu din be zuɣusaa ŋɔ, nyin timi a daliri……

31. A ni saɣi n zaŋ a maŋ chaŋ ni bɛ zahim a biha? Iin ( ) Iinhi ( )

32. A yi zahim a biha a maŋmaŋa ka nya taɣibu a biha ni, wula ka a yen niŋ?
A ni suhi Naawuni bahi di zuɣu ( ) A ni chaŋ Ashibiti ( ) Ani chaŋ ŋun tibiri dagbandohili sani ( ) A ku niŋ sheli zaŋ kpa di polo ( ) Din pahi (Jaande, sabi sɔŋ)……

33. A yi chang Ashibiti n ti zahim ka be nya taɣibu a biha ni, wula ka a yen niŋ?
A ni suhi Naawuni m bahi di zuɣu ( ) A ni chaŋ ʒimduu ti zahim a ʒim ( )
A ni chaŋ Ashibiti ( ) A ku niŋ shɛli zaŋkpa di polo ( )
Din pahi (Jaande sabi sɔŋ)……

34. Biha doro tibiri nyanda, di yi niŋ ka di daŋ baŋ li. Iin ( ) Iinhi ( ) M bi mi ( )

35. A tiɛha puuni, biha zahimbu daanfaani nyela dini?

.....

.....

. 36. Bo ka a lee niŋdi a maŋmaŋa ni di sɔŋ n gu a ka taɣi a ka che biha doro?

……

…….....

Tipayaa!!!

APPENDIX C

QUESTIONNAIRE (TWI)

NS}MMISA NHYEHY}E}
Yei y] nhwehw]mu a wrey] de afa nufo[mu kokoram yade], ne]ho dawub[.
}y] nhwehw]mu a]fa mmaa mpanimfo[a w[w[Tamale ne ne mp[tam ho.
S] wob]tumi as]e wo ber] kakra ayiyi ns]mmisa yi ano a, anka nhwehw]muni no ani b]gye yie. Mer] wo s] 'di nokor]' w[mmuae] biara a wode]yi as]mmisa no ano]firi s] [kwan a wofa so yiyi ns]m no ano no b]tumi anya nsunsoanso[w[saa nhwehw]mu yi so. Mer] wo s], fa mmuae] a]fata na fa yi ns]mmisa no mu biara ano.
Ns]m biara a]w[saa krataa yi so[no y] kokoam as]m. Mer] wo bio s] wahokeka a wode no adie no b]boa nhwehw]muni no ama waduru ne boatae] ho.
Meda wo ase.
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{FA I
NS}MMISA A }FA NNIPAKUO NHYEHY}E}
1. Awares]m: Osugyani ( ) woaware ( ) Ntamtete]( ) woare agyae( ) Okunafo[( )
2. Mfe]: 18-24( ) 25-29( ) 30-34( ) 35-39( ) 40-44( ) 45-49( ) 50 rekor[( )
3. Nwomasua: [nk[[sikuu da( ) mfiase] sukuu( ) ntam sukuu J.S.S( ) ntoaso[sukuu suap[n( )afofor[(b[din)……
4. Nyamesom: Kristoni( ) kramoni( ) afofor[(b[din)……
5. Nnipakuo: Dagonba ( ) Mamprussini( ) Asanteni( ) Fanteni ( ) Eweni( ) Nkrani( ) Afofor[(b[din)……
6. Mp[tam……
7. Beae]……
8. Mansini……
9. Beae] a wo ne wabusuafo[te……
10. Adwumay]: Wony] adwuma( ) Aban adwuma( ) wo ankasa w'adwuma( ) sukuuni()
11. Wow[ap[mden siakyuirebaa kaade no bi? Aane( ) Daabi ( )
12. Ayaresabia w[wo mp[tam h[? Aane ( ) Daabi ( )
13. Miniti s3n na wo di nante firi fie edi duro ayaresabea a 3b3en wo?
1 – 30 minutes' ( ) 31-60 minutes' ( ) 61 – 90 minutes' ( ) 91 – 120 minutes' ( ) 121 minutes' and above ( )
14. So woay] nufo[mu kokoram yare] nhwehw]mu ama wo bosuani bi anaa? Aane( ) Daabi( )
15. S] mmuae] a wode maa as]mmisa (13) no y] 'aane' a, na [y] wo de]n?
16. Wo maame ( ) wo sewaa ( ) wo nuabaa ( ) wo papa w[faase ( )
{FA IINUFO{ MU KOKORAM YADE} HO DAWUB{
17. Woate nufo[mu kokoram yade] no nka? Aane( ) Daabi ( )
18. So wogye di s] yade] no w[h[? Aane( ) Daabi( )

19. }he na wotee nufo[mu kokoram yade] np mka?
Dawub[nkrataa mu ( ) Ap[muden adwumay]ni h[() Nnamfo[h[( )
20. So wogye di s] de]n na]de nufo[mu kokoram yade] yi ba?
Y]nnui]( ) Mmoawa ( ) Nnomee/duab[( ) bayie ( )
Afofor[(b[din)……
21. Wogye di s],]de]n na woy] a]b]tumi ana woanya mu kokoram yade] yi bi?

Farebae	Aane	Daabi	Mennye nni
Wotwa bra			
Abusua/mmoagya mu			
Sigar]]tenom			
Mfe] aduasa akyi			
Bra a edi kan (Ansaa na mfe] dummienu(12)			
Wotwa bra nt]m a			
Afofor[			

22. De}]didi so[yi mu de] he na]de nufo[mu kokoram yade] ns]nkyer]ni no ba?

Ns]nkyer]nne	Aane	Daabi	Mennye nni
Nufo[honhono			
Mm[toam honhono			
Nufo[ano twa nsuo			
Nufo[sesa ne k]se] ne n'ahosuo			
Nufo[mu y] ya			

{FA III
NIMDE} A }S} S} WONYA FA NUFO{ MU KOKORAM YADE} MU NHWEHW}MU HO
23. So woate nufo[mu nhwehw]mu a]dii so[yi bi nka anaa?

Nufo[mu nhwehw]mu	Aane	Daabi	Mennye nni
'Breast self' nhwehw]mu			
'Clinical" nhwehw]mu			
" Mammogram" nhwehw]mu			

24. Nufo[mu nhwehw]mu a]didi so[yi mu de]]w[he na woay] p]m?
BSE () CBE () Mammogram ()
25. Mp]n dodo[s]n na woy] saa nufo[mu mhwehw]mu yi?
BSE……
CBE……
Mammogarm……
26. Mfe] s]n na obi di ansa na wahwehw] ne nufo mu?
}firi ber] a w[woo no ( ) }firi ber] a way] bra ( ) }firi mfe] 20 ( ) }firi mfe] 30 ()
Watwa bra ( ) Mennim ( )
27. Nufo[nhwehw]mu a y]fr] no 'breast self' no, mp]n dodo[s]n na]s] s] woy]?
Da biara ( ) Nnaw[twe biara ( ) bosome biara( ) Afe biara ( ) Mnnim( )
28. Ber] b]n na]fata s] y]y] 'breast self' nhwehw]mu no?
Ber] a obi ay] bra( ) Bra akyi nnaw[twe ( ) Ber] a wanyins]n ( ) Ber] a wanyins]n ( )
Ber] a worema nufo[( ) Mennim ( )
29. 'Breast self' nhwehw]mu no, hwan na]s] s] [y]?
D[tonani( ) N]]seni a wagye ntete]( ) ankorankor]( ) afofor[(b[din)……

{FA IV
ADWENE A AFOFOR{ W{ FA NUFO{ MU KOKORAM YADE} HO NE NHWEHW}MU

30. S] woy] [baa panin yi, wob]tumi anya yade] no bi anaa? Aane( ) Daabi( )

31. Wogye di s], nufo[mu nhwehw]mu b]tumi ama yahunu yade] no nt]m anaa? Aane( ) Daabi( )

32. S] woanyi as]mmisa (29) no a, kyer] de] nti a woanyi ano……

33. So wo ankasa wob]k[ak[hwehw] wo nufo anaa? Aane( ) Daabi( )

34. S] worey] nufo[mu nhwehw]mu a y]fr] no,'breast self' na s] wohuhnu yade] bi w[mu a, de]n na wob]y]?
Wob]b[mpae]( ) wob]k[ak[hwehwmu( ) wob]k[asopiti( ) wonny] hwee( ) afofor[(b[din)……

35. S] worey] 'clinical' nhwehw]mu na wohunu yare] bi a wob] de]n
B[mpae]( ) k[asopiti ( ) k[dunsini h[( ) ny] hwee
afofor[(b[din)……

36. S] y]hunu kokran yade] no nt]m a, y]b]tumi asa anaa? Aane Daabi ( ) Menni ho adwene ( )

37. So wogye di s] mfaso[b]n na]w[nufo[mu nhwnhwehw]mu ho?
.....

38. Woy] [baa panin yi,]de]n na worey] asi nufo[mu kokoram yade] ano s] de] worenya
bie?.....
Meda wo ase!!!

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VITA

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Marital Status: Single

Educational Profile

Institution	Qualification	Date
Adventist University of Africa	Master of Public Health Candidate	2016 – 2018
Valley View University	Post Graduate Diploma in Education	2014 - 2016
Valley View University	Bachelor of Science, Nursing	2007- 2011
Seven Great Princes Academy	Senior Secondary Certificate	2003- 2006

Working Experience

Organization	Position	Date
Tamale Teaching Hospital	Northern Region Referral Coordinator	March 2017 – to Date
Tamale Teaching Hospital	Nurse Manager Out Patient Department	February 2017 – to Date
Ghana College of Nurses and Midwives	Clinical Nurse Instructor / Preceptor	November 2016 to November 2017
Tamale Teaching Hospital	Senior Nursing Officer	1st July 2016 – to Date
University for Development Studies (School of Allied Health Sciences, Department of Nursing)	Principal Research Assistant	20th October 2015 – to Date
Tamale Teaching Hospital	Assistant Coordinator Nursing Secretariat	5th June 2015 – to Date
Tamale Teaching Hospital	Infection Prevention and Control Committee Secretary	10th March 2014 – to Date
Tamale Teaching Hospital	Nursing Officer	1st July 2013 – 1st July 2016