



**KNOWLEDGE AND PRACTICE TOWARDS BREAST CANCER  
SCREENING AMONG ADULT WOMEN IN GICUMBI HEALTH  
DISTRICT, RWANDA**

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## **DECLARATION**

I, the undersigned, declare that this thesis is my original work, has not been presented in this or any other University and that all the source materials used for this thesis have been duly acknowledged.

Student Name and Number

Signed.....

Date.....

## **ACKNOWLEDGEMENTS**

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## **ABSTRACT**

**Background:** Breast cancer is the most common cancer among women worldwide. A very important factor in the timely treatment and prevention of progression is the knowledge and practice of BC screening. Public and individual awareness can play a vital role in the prevention, early diagnosis and treatment of breast cancer.

**Objective:** To assess the knowledge and practice towards breast cancer screening among women in Gicumbi health district, Rwanda.

**Methods:** A cross-sectional quantitative study was conducted in April 2017 on a total of 256 women who were between 20 and over years who came to selected health center in Gicumbi Health District Northern Rwanda. Health centers were selected by simple random sampling technique and the study participants were selected using Systematic Random Sampling Technique. Data were collected by using a structured and pretested questionnaire. SPSS Version 21 was used for data entry and analysis. Cross tabulation and logistic were used to identify factors associated with knowledge and practice of BC screening. Data were presented by running descriptive statistics, numerical summary measures, frequencies, proportions, distributions were used to check for normality and also diagrams for describing the study population in relation to relevant variables.

**Results:** The mean age of the respondents was 32 years. Overall 154(60.2%) of women had heard about breast cancer screening but only 31, 7% had good knowledge about BC screening and only 58(22.7%) had ever practiced BSE or CBE or had a mammogram. Knowledge on breast cancer were found associated with BC screening practice [OR=3.29; 95%CI (1.20-9.03)]

**Conclusion:** This study revealed a low level of knowledge and practice about BC screening. There is a need to design and implement awareness creation program on screening for breast cancer to promote early detection and diagnosis in the prevention of breast cancer in women.

## **KEY WORDS**

**Screening:** refers to tests and exams used to find Breast cancer in people who do not have any symptoms.

**Breast Self-Exam (BSE):** is an exam performed by a woman of her breast to check for lumps or other changes.

**Clinical Breast Examination (CBE):** is an exam of breast performed by a health care provider to check for lumps or other changes.

**Mammography:** The use of X-rays to create pictures of the breast.

**Good knowledge:** is defined as knowledge score of greater than or equal to the median knowledge score.

**Poor knowledge:** is defined as knowledge score of less than the median knowledge score.

**Practice:** is defined as use of any of the screening methods like that of SBE, CBE or Mammography

## **LIST OF SYMBOLS AND ACRONYMS**

<b>ACS</b>	American Cancer Society
<b>AOR</b>	Adjusted Odd Ratio
<b>BC</b>	Breast Cancer
<b>BCS</b>	Breast Cancer Screening
<b>BSE</b>	Breast Self-Examination
<b>CBE</b>	Clinical Breast Examination
<b>CI</b>	Confidence Interval
<b>COR</b>	Crude Odd Ratio
<b>GLOBOCAN</b>	Global Burden of Cancer
<b>HC</b>	Health Center
<b>HBM</b>	Health Belief Model
<b>KAP</b>	Knowledge, Attitude and Practice
<b>OCP</b>	Oral Contraceptive Pills
<b>SPSS</b>	Statistical Package for Social Science
<b>SRS</b>	Simple Random Sampling
<b>WHO</b>	World Health Organization

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## **CHAPTER 1. INTRODUCTION**

### **1.1. BACKGROUND**

Cancer is an excess proliferation of abnormal cell (American Cancer Society, 2008). Cancer starts when cells begin to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas of the body (American Cancer Society, 2015). Breast cancer is one type of cancer which is a proliferation of malignant cells that arises in the breast tissue and the term represents a range of disease, from non-invasive to invasive carcinoma (Simpson, 2004). A malignant tumor is a group of cancer cells that can invade surrounding tissues or spread (metastasize) to distant areas of the body. The disease occurs almost entirely in women, but men can get it, too (American Cancer Society, 2015).

Worldwide, Breast cancer is the most common cause of cancer death for females, and the fifth most common cancer among all other cancers, with around 522,000 deaths from breast cancer in 2012 (15% of female deaths and 6% of the total) annually (Jemal et al,2012). Increase in the incidence of this disease is being observed in both industrialized and low income countries (Porter, 2008).

In Africa, the breast cancer is the first cause of morbidity and mortality in women with the prevalence of 133890 cases which represent 27.6% of all cancer in female and 63160 deaths which is 20.2% of all cancer death in women in 2008 (Ferlay et al., 2014). In East Africa there account 33472 cases of breast cancer (19.6%) and 17028 deaths (14.7%) due to breast cancer and it is the second leading cause of mortality and morbidity. In Rwanda, breast cancer is the second most often occurring cancer next to cervical cancer among women with 576 cases (12.1%) and 286 deaths (8.7%) (Ferlay et al., 2014).

Even if the chance of developing breast cancer at earlier age is poorer; it is an apparent risk during every woman's lifetime. So that healthy behaviors practice should be encouraged throughout every woman's lifespan, especially breast self examinations and clinical breast examinations (Frankenfield, 2009). Behavior tend to be easier to begin and continue at younger age than late in life; engaging in breast cancer preventive behaviors among woman's in their young age may continue in the course of future life (Abatename, 2010). Diagnosis of breast cancer at pre clinical

stage, play vital in increasing survival year as well as for improving quality of life. Screening may identify cancers at asymptomatic stage and allow management before they develop into persistent (American Cancer Society, 2007). Breast cancer screening is a means of identifying the occurrence of breast cancers at early stages (before it progresses to the advanced stages). Three main tests are used to screen the breast for cancer. These are breast self-examination (BSE), clinical breast examination (CBE) and mammography (Ali and Baig, 2006).

Breast cancer is silently killing women mainly those who have no knowledge and continue to be ignorant about breast cancer and breast diagnostic screening methods for early detection (Shepherd & McInerney, 2006). Knowledge is a necessary component but it is insufficient unless the cultural relevance is assured by the health professional providing direct healthcare (Dow Meneses & Yarbrow, 2007). Omotara *et al.* (2012) also reported lack of information regarding breast cancer to the rural and urban population of Nigeria, saying that it is responsible for the negative perception of the curability of a cancer detected early and the efficacy of screening tests. In addition, silence and lack of understanding of the concept of risk factors associated with breast cancer discourage people from seeking early intervention or even admitting that the symptoms that they are experiencing are related to breast cancer.

Level of awareness regarding how to perform simple life-saving diagnostic breast checks such as BSE further compounds the problem of late detection. Empowerment of women with information on BSE is of paramount importance, especially in countries without modern technologies for breast cancer screening (Shepherd & McInerney, 2007). Gicumbi district rural communities have limited technological resources, but BSE can contribute greatly if women are informed about this technique and regular practice would reduce late presentation. Some women delay seeking treatment because of fear of stigma concerning their daughters as it is believed that they also might be affected by breast cancer and might not be considered for a good marriage. Furthermore, it is believed that cancer is a death sentence from God (Dow Meneses & Yarbrow, 2007)

Therefore, to prevent breast cancer, struggling for enhancement of health seeking behavior by making them responsive and knowledgeable is a fundamental step. Study indicates insufficient awareness of breast cancer among women in Rwanda (Murekatete, 2015). Rural women's awareness about breast cancer is significantly lower than urban women due to lower literacy levels, lack of BSE-related trainings and lack of medical facilities (Kratzke et al., 2013 p.58; Mena et al., 2014). Lower awareness about breast cancer in rural women reduces their chance of detecting breast cancer symptoms, causing the breast cancer be detected at an advanced stage (stage III and IV) (Mpunga et al., 2015).

Few studies have been conducted on Rwandan rural women, especially in the studied area which is far from the capital. Considering low education levels of these women and given the importance of raising awareness about warning symptoms and the risk factors affecting breast cancer and the preventability of breast cancer in the early stages, this study aimed at examining rural women's knowledge and practice about breast cancer screening in Northern Rwanda. As a result, it would be helping to investigate rural women's knowledge and practices regarding breast cancer screening that would facilitate to build up intervention program on breast cancer in Rwandan population.

## **1.2. PROBLEM STATEMENT**

Incidence of breast cancer has been increasing in most regions of the world and remains high in developed countries. However, mortality is higher in less developed countries since the majority of cases are diagnosed late and access to treatment facilities is lower (Ferlay & Ervik ,2012) and also a limited awareness of early signs and symptoms of cancer among the public and health care providers (WHO,2013 and American cancer society, 2008).

The researcher observed a pattern of women presenting with symptoms of late stage of the disease, such as a red, swollen, tender breast, but confusing it with an inflammatory condition and are diagnosed when they are in the advanced stages.

This late presentation of breast cancer patients at health facility maybe due to the lack of knowledge and practice toward the breast cancer screening

### **1.3. THE AIM OF THE STUDY**

The aim of this study is to assess the level of knowledge and practice about the breast screening among rural women in Northern Rwanda.

### **1.4. RESEARCH OBJECTIVES**

#### **1.4.1. Main Objective**

To assess the level of knowledge and practice about the breast screening among rural women in Northern Rwanda.

#### **1.4.2. Specific Objectives**

1. To assess the level of knowledge about the breast screening among rural women in Northern Rwanda.
2. To assess the practices of adult rural women on breast cancer screening methods
3. To identify factors associated with the knowledge and practices of breast cancer screening among adult women

### **1.5. RESEARCH QUESTION?**

1. What is the level of knowledge toward breast screening among rural women Northern Rwanda?
2. What is the level practice toward breast screening among rural women Northern Rwanda?
3. What are the factors associated with the knowledge and practices about breast cancer screening among respondents?

### **1.6. SIGNIFICANCE OF THE STUDY**

Identification of breast cancer at advanced stage can increase mortality further than worsens its prognosis. In this case, Prevention becomes crucial element for dropping morbidity and mortality and recovering patients' quality of life (Tonani & Carvalho, 2008).



The results of the study will be helpful to design appropriate intervention strategies, providing a convenient programmatic approach to address the low level of awareness, and practices of breast cancer screening. Currently Rwanda has launched national strategic action plan on non-communicable diseases control therefore, it is the right time to undertake such a study to give more emphasis to the disease condition and prevention services. It will also be helpful in providing information as baseline for future studies and for planning intervention programs like that of health education and promotion regarding breast cancer and breast cancer screening. Undergoing this study is also important for the principal investigator as it is needed as a requirement for the partial fulfillment to get the degree.

### **1.7. STRUCTURE/ORGANIZATION OF THE STUDY**

This dissertation is subdivided into the following main categories:

- Chapter 1: Introduction
- Chapter 2: Literature review
- Chapter 3: Methodology
- Chapter 4: Results
- Chapter 5: Discussion
- Chapter 6: Conclusions and Recommendations
- References
- Appendix

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.0. INTRODUCTION**

The objective of this review is to summarize knowledge and practice about breast cancer screening of rural women. Descriptions of breast cancer, risk factors, signs & symptoms, prevention and tools of early detection and related researches will also be discussed.

### **2.1. THEORETICAL LITERATURE**

#### **2.1.1. Breast cancer risk factors**

Researchers pointed out a number of factors that raise one's chance of getting breast cancer, even though this is the issue up to present time, no clear reason is underlined for the upper handed cause of breast cancer. These are called risk factors. Risk factors do not necessarily cause breast cancer, but can enhance the likelihood of developing the disease (Bekar, Guler & Yilmaz, 2010).

Every woman has possibility of getting breast cancer throughout her life time. Though some women may not develop breast cancer even if, they have many risk factors. But, some women with no particular risk factors other than their sexual category and age still develop the disease. From this we can conclude that being with one or more risk factors does not essentially indicate the development of breast cancer in the future. As breast cancer is a series disease with no particular cause and many different causal factors, it is difficult to describe any particular case of breast cancer (Ali, Day & Weir, 2007).

There are some risk factors that women have no control over, these are called established risk factors, this are being a female, age, prior cancer on one breast, hereditary factors (family history of breast cancer), early age at menarche, late age at menopause and late age at first full-term pregnancy (Khatib & Oussama , 2006). The speculated risk factors or factors that women have power over for breast cancer include never being pregnant , having only one pregnancy rather than many, not breast feeding after pregnancy, use of postmenopausal estrogens replacement

therapy or postmenopausal hormone replacement therapy, use of oral contraceptives, certain specific nutritional practices (high intake of fat and low intakes of fiber, fruits, and vegetables), alcohol use, tobacco use, and postmenopausal obesity (Factors influencing the risk of breast cancer, 2008).

Although women are at elevated risk for developing breast cancer, men can also but it is very unusual and estimated for less than one in two of one percent of all breast cancers. This is because women have much more breast tissue than men do and have exposure to estrogens and progesterone hormones, which promotes the development of breast cancer (Ali et al., 2007). This risk increases as a woman getting older, mostly after the age of 40, higher in middle-aged and old women than in adolescent women (American cancer society, 2010).

Having previous history of breast cancer in one breast can increase the possibility of developing cancer in other breast. The possibility become higher as there is history of breast cancer in the family member especially if occurred before menopause. In this case the risk is due to mainly to genetic inheritance of mutated BRCA1 and BRCA2 genes. According to the normal process, these genes help prevent cancer by producing proteins that maintain normal cells from growing extraordinarily. Individual may have 80% of risk for developing breast cancer during the lifetime if inherited abnormal copy of either gene from a family.

As the distribution of estrogens in a woman's body increase, the higher the risk of developing breast cancer. Because her body is exposed to more natural estrogens released from the ovaries during every menstrual cycle. In this case women who started menstruating at early age and those who reach menopause at a comparatively late age are more expected to develop breast cancer than other women (Yu & Wu, 2004).

Age at first pregnancy is another aspect of reproductive history for developing breast cancer. Early age at first full-term pregnancy have a lower risk of breast cancer than those who never have children or those who have their first child relatively late in life (Yu & Wu, 2004). Some studies have shown that women who breast-feed their babies may be less likely to develop breast cancer than those who have children but do not breast-feed. In addition to this the long-term (more than five years) use of postmenopausal estrogens therapy or combined estrogens/progestin hormone

replacement therapy is associated with an increase in breast cancer risk (Factors influencing the risk of breast cancer, 2008).

Among postmenopausal women obesity is highly associated with an increased risk of breast cancer. The risk is lower as the women are physically active, eats diet high in fruits, vegetables, and low in fat and calories. Because they are indirectly reduce the risk of breast cancer by helping to prevent obesity. And Women who were exposed to high doses of radiation, especially during adolescence, have an increased risk of breast cancer (Factors influencing the risk of breast cancer, 2008).

In both pre- and post-menopausal women, alcohol consumption has always been shown to enhance breast cancer risk despite the timing of alcohol exposure. Its impact expected to increase with increasing time since the exposure period (Osborne, 2004; Factors influencing the risk of breast cancer, 2008) It was shown that 8.8% of women who withdraw from alcohol develop breast cancer by the time they are 80 years old, but of those drinking between 2 units and 4 units/day 10.1% and 11.6% respectively will develop breast cancer by the time they are 80.

### **2.1.2 Signs and symptoms of breast cancer**

Even though warning sign of breast cancer is rare at the beginning stage, there are some symptoms as the cancer stage is advanced. New lump or mass is one of the most common warning sign of breast cancer ,it can be soft or solid mass frequently with irregular boundaries, but it can also be rounded and they can also be tender (American Cancer Society, 2007). However every inflammation is not cancerous; sometimes some swelling or irritation in the breast tissue may be due to hormonal changes which are not harmful in nature. As a result, it is very useful to become aware of and checked by a health care professional (Bekar et al., 2010). Beside these some others symptoms are important, like:

A lump (varying in size from a marble to a tennis-ball), may be seen in the mirror or palpated Orange peel appearance of the skin of the breast this is due to the cancer blocking the breast lymphatic channels, causing a lymph edema or fluid retention and swelling of the breast. Enlargement of one breast if the enlargement of one breast started newly there may be an underlying cancer, however if it is from the

time of teenage years or after breast-feeding, usually it is normal (American Cancer Society, 2010).

Dimpling of the skin of the breast is where a cancer invades the breast ligaments, causing a malignant fibrosis and contraction of the ligament; finely this also pulls the skin inwards. Discharge from the nipple according to the author “A clear or greenish discharge is almost always innocent; a red, black or brown discharge means it probably contains blood and it may be due to breast cancer (Mayet, 2005)

Inversion or retraction of the nipple – the cancer under the areola may be pull the nipple inwards however if the nipple inversion has been present since birth, it is called congenital inverted nipple and has no special consequence except for cosmetic appearance (Ali et al., 2007)

### **2.1.3. Tools for breast cancer screening**

During its asymptomatic stages breast cancer can be treated without difficulty and successfully. Identification of breast cancer during the early stages of disease has been positively linked to a decrease in the mortality and morbidity of the illness. (Khatib & Oussama, 2006). Survival units go down notably when women present with complex cases in spite of the background; as a result, to reduce breast cancer mortality, escalating the number of cases that are identified during the early stages of the disease is a primary strategy (Khatib & Oussama , 2006).

Even if curative management for breast cancer is ever more doing well, Early detection and treatment increase the possibility of a successful outcome behind reducing mortality rates (American Cancer Society, 2010) As to the American Cancer Society, the five-year survival rate for asymptomatic and to a small area of breast cancer is nearly 100%; however, if the cancer has distribute to other area, the survival rate drop to 60% (American Cancer Society, 2010).

#### **2.1.3.1. Breast self examination**

As to the American Cancer Society commendation, women should be conscious of the payback and restrictions of breast self-exam (BSE) at their young age at least

beginning of their twenty (American Cancer Society, 2007). Breast self-examination is a screening method used to detect early breast cancer which involving the woman herself looking at and feeling each breast for possible lumps or swelling. BSE is a simple, inexpensive procedure which helps a woman to detect changes in the breast; such as breast masses or lumps. Although BSE is a simple and cost-free procedure, many women either perform it incorrectly or not at all (Linda Akuamoah Sarfo et al., 2013)

BSE is usually the only means of identifying tumors at a point where management and medical treatment are successful for younger women. Comparing to other method of early screening it is one of unsophisticated, suitable, low threat and inexpensive suggested for women (Toomey, 2011).

However the risk of developing breast cancer under the age of 35 is low, women who do develop the disease in their 20s and 30s have a reduced survival rate due to their cancers being at advanced stages than women diagnosed at an older age .So that they should start this breast examination at their early age, to detect the cancer in its preclinical stage and it is important to promote regular BSE to have healthy breast (Toomey, 2011).

Breast self examination (BSE), can be done in standing position or lying and palpate her each breast scientifically (Mayet, 2005). The technique of BSE is that during the examination the woman needs to lie down on her back with a pillow placed under the right shoulder ,the right hand must be placed behind the head and palpate the breasts . The flat surfaces of the three middle fingers of the left hand must be used to palpate the right breast. All five regions of the breast must be palpated using small, circular motions and pressing firmly. The nipple should be squeezed gently to assess if there is any discharge, especially in non-lactating women, this entire process must be repeated using the right hand on the left breast (Khatib & Oussama, 2006).

Usually it is better to examine the breast in front of mirror so that can look over any sort of irregularity or dimpling, in so doing the shower is an ultimate place to examine one's breasts in standing position to palpate the breasts systematically” (Salaudeen, 2009). The right arm should be raised when examining the right breast, and vice versa. The complete process carried out when lying down, must be repeated in the shower. The whole procedure of breast self-examination must be showed and explained to all women by health care professionals who are capable in teaching and demonstrating it (American cancer society, 2010).

### **2.1.3.2 Clinical breast examination**

Clinical breast examination is an inspection of the breast and palpation of breast by health care providers, such as a physician, nurse, or physician's assistant. The inspection largely focuses at the whole breast area including the lymph nodes, above and below the collarbone, and under each arm. With the information provided through diagnostic mammography, Clinical breast examination is seen as successful measure in diagnosing the potential existence of the cancer. The ability to detect breast cancer is dependent upon the ability of the health worker, appropriate positioning of the patient, use of a vertical strip technique, proper positioning and movement of the fingers, and time taken for the inspection (Khatib & Oussama , 2006).

During the process examination, initially the examiner identifies the entire area of the breast visually in both the seated and standing positions: arms relaxed at the sides; hands pressed firmly on the waist and leaning forward; and arms over the head, and then detect any changes in the appearance of the breasts, (American cancer society, 2007). (Khatib & Oussama, 2006 p.33) report that "The application of three levels of pressure (superficial, medium and deep) at each palpation site is essential. Palpation is done with the finger pads of the three middle fingers, and pressure is applied with circular motions at each site. When an abnormality is detected, the corresponding area of the other breast is examined. If the finding is not bilateral, further investigation is required".

Women in 20s up to 30s should have a CBE as part of a routine health exam by a health professional preferably every 3 years. Starting at age 40, women should have a CBE by a health professional every year (Moss, 1999)

### **2.1.3.3. Mammography**

Mammography is another testing method for identifying early breast cancer. Testing by mammography is a standard two-view mammogram for woman with no obvious sign and symptoms with the intention of detecting early breast cancer and supervising women who are at high risk for breast cancer. Its indications are to illustrate the features of a breast inflammation, to illustrate if there is an impalpable lesion and to screen for breast cancer. Young women especially those at higher risk

for breast cancer development are recommended to go through routine mammograms before the age of 40(Khatib & Oussama, 2006).

Diagnostic mammograms are used to examine abnormalities or breast symptoms found on the first mammogram screening. Diagnostic mammogram is given to the women shortly after her screening mammogram. During this procedure, the mammography machine produces different black-and-white x-ray pictures of the breast on a large sheet of film which enables careful study of the breast. In most cases, special images magnify a small area of the breast, making it easier to read (Mammogram & Breast Health, 2006).

Compared to other screening methods, Mammograms can identify tumors at pre asymptomatic stages of progress. Mammograms can be used for screening and diagnosis. Screening mammography reduce breast cancer mortality up to 20% to 39% by detecting small cancers which have no signs or symptoms at the early-stage (Mayet, 2005). Most women reported getting a mammogram to be uncomfortable and painful, although the pain doesn't last long. However, the experience depends upon the size of the breasts, how much the breasts need to be pressed, the skill of the technologist, and monthly menstrual cycle time (Byanyima et al., 2010).

Even if having routine mammograms is the most successful method to distinguish changes in the breast, big criticism beside Mammography comes from identification of false positive results among women with no cancer presence which might result to diverse psychological and social problems (Chen et al., 2005). And other times a woman's mammogram will show signs of negative result, but additional assessment will confirm the presence of cancer. All cancers may not show on a mammogram, or they can be difficult to see. Women are likely to have dense breast tissue before menopause, which is harder to read on a mammogram; however as women's get older and go through menopause, breast tissue changes and signs of breast cancer are easier to detect (Mammogram & Breast Health, 2006).

Organizations like the National Cancer Institute (NCI), the American Cancer Society (ACS), recommend women aged 40 and older should have a mammographic examination every year and should continue to do so for life (Moss , 1999)



## **2.2. EMPIRICAL LITERATURE**

### **2.2.1. Socio demographic factors**

The research done in southern Turkey showed that the mean age in the group of women who claimed to have enough information was 35.8 years and 33.8 years in the other. There was also a statistical significance in the sufficiency of the knowledge of married teachers compared to singles and of the over 40 year old group when compared to <40 year old groups. The average age of those performing BSE was 36.4 years while it was 32.4 years in the none-performing group. The average age in those performing BCE was 38.3 years while it was 32.8 years in the other. Similarly, there was significance in performing BSE and having CBE in the married vs. single and over 40 year old vs. < 40 year old groups. (Muhyittin et al., 2005)

On a study done in Nigeria, the mean score of the knowledge of the participants was rather low ( $42.3\% \pm 12.3$ ). Only 229 participants (22.9%) scored 50% and above. Performance was found to be significantly related to level of education and occupation. Among 739 participants it was found that majority of the participants with primary school education (163 [84.9%]) scored below 50.0%. Two hundred and eighty-one participants (76.6%) with secondary education had scores below 50%. Of those with Polytechnic education, 47.3% scored below 50.0% while 43.8% of those with University education had scores below 50.0%. Participants engaged in self-employed small businesses such as trading and hair dressing and secretarial jobs had significantly poorer scores compared with those employed in professional jobs such as sales, teaching, and nursing. (Okobia et al.,2000)

According to a research done in Addis Ababa Ethiopia Marital status was the only variable statistically associated with study participants' practice of BSE. Age, marital status, educational level, type of profession and work experience had association with study participants' practice of CBE. Age, marital status, educational level, work experience and type of profession were statistically associated with study participants' practice of mammography. (Seife et al., 2012)

### **2.2.2. Knowledge regarding Breast cancer screening.**

A cross-sectional survey covering 122,058 females around five provinces of Rwanda on awareness about breast cancer risk factors revealed that only 18.6% of women were highly aware, whereas 81.4% were poorly aware. Among all participants, family history of breast cancer was the best accepted risk factor for breast cancer (awareness rate 31.5%), followed by menarche at age before 12 (11.2%), no parity or late childbirth (13.9%), menopause at a late age (13.7%), high-fat diets (19.1%), long time drinking (19.5%) and long-term use of estrogen drugs (20.7%).(Murekatete,2015)

Another study done in Tanzania by Morse et al. (2014) on breast cancer knowledge in 225 women attended district Hospitals in Dar es Salaam found that 98.2% knew of breast cancer; 22.2% knew someone affected by breast cancer and on average, 30% of risk factors and 51% of symptoms were identified.

The study conducted by Balouchi et al. (2016) with the aim to assess awareness level in rural women in Iran on 266 participants revealed that most participants (154, 57.9%) had an average overall awareness of breast cancer. In the general awareness dimension, most participants (130, 48.9%) had poor scores. Most (166, 62.4%) also had average awareness about risk factors and many (137, 51.5%) had good awareness about mammography. Most participants did not know that changes in breast shape (232, 88.2%), dimpling of breast skin (192, 72.3%) and nipple discharge (183, 69.6%) are the main symptoms of breast cancer.

A study done in Buraidah, Saudi Arabia among 376 female teachers showed that most of participants (58.2%) held pessimistic views about the curability of breast cancer and less than one third (29.0%) agreed to screening for early detection(Qassim et al,2007)

According to a study done in Nigeria, about 91.6% are aware of that breast cancer could be cured if detected early, however it was only about 28.8% that strongly agreed with the opinion. While about 89.6% favored the opinion that early detection

strategies are effective in detecting breast cancer, it was only about 3.4% that strongly agreed with it (Okwuoke, 2013)

A study done in Monastir region of Tunisia among 900 women, it was found 92% had poor knowledge of the specific risk factors for breast cancer and 63.2% had poor knowledge of the screening methods (Sana El Mhandi et al, 2011). A cross-sectional study done on women dwellers in Nigeria; knowledge of the study participants about risk factors for breast cancer was low and only 26.2% were aware that breast cancer could be inherited in some families. Participant's knowledge about symptoms of breast cancer was poor; only 21.4% knew that breast cancer presents commonly as a painless breast lump and only 43.2% of participants were able to correctly identify breast self-examination (BSE) as a method of detection and a very small proportion indicated mammography as a method. Two-fifths (41.4%) of them correctly noted that breast cancer is curable when detected early (Okobia, 2006).

Similarly on the study done in northern Ethiopia, overall 34.7% of the respondents had a knowledge score of greater than or equal to the mean knowledge score while 12.7% had a high knowledge level. The proportion of respondents who identified cigarette smoking and alcohol consumption as risk factors for breast cancer was 35% and 23.7% respectively. With regard to symptoms of BC, breast lump 67.4% and breast pain 40.7% are commonly mentioned. Majority 6 (90.2%) of breast cancer informed women knew that early diagnosis of breast cancer improves chances of survival; and 65% of them indicated clinical breast examination (CBE) as a method of breast cancer detection. Mammography was known by very few 4.6% of the respondents. About 56.7% of the breast cancer informed women said that breast cancer is a curable disease, 45% of the women who reported to have had breast cancer information have ever heard/ read about BSE. The major source of information on BSE for nearly 58.5% of the respondents was media and the contribution of health professionals as a source of breast cancer related information was found to be very minimal 10(1.5%). It is also shown 13.5% of the study participants know that BSE should be started at the age of 20 or less; while 67.1% believed it should be started after the age of 20 years. Nineteen percent of respondents don't know at what age BSE should be began (Befikadu Legesse, 2011)

### **2.2.3. Practice regarding Breast cancer screening.**

According to study done in Nigeria on women dwellers, it was found that only 8.2% indicated visiting alternative health practitioners for breast cancer care. In terms of practice, only 34.9% practice BSE; the source of information about BSE was from the doctors' offices in 21.1%, leaflets 27.1% and televisions in 31.0%. Only 9.1% had clinical breast examination (CBE) in the past year. The main reasons advanced for not having clinical breast examination (CBE) include not having a breast problem in majority of the participants 62.5% and being unaware of the need for CBE 32.2% (Okobia, 2006)

According to the Nigerian study the greatest reason given for non-practice of breast cancer screening was „the feeling that they cannot have cancer“, 22.5% followed by lack of awareness and forgetfulness 19.3%. It is also showing that the higher the knowledge level, the higher the tendency to practice any of the early preventive procedures (Okwuoke, 2013).

A study conducted in Tanzania by Morse et al. (2014) on breast cancer knowledge and prevention practices in 225 women attended district Hospitals in Dar es Salaam found that Among 126 who had heard about breast self examination, 25.4% practiced it regularly, 34.1% practiced it occasionally, and 40.5% never practiced it and only 0.9% underwent regular clinical breast examinations.

On the study done in Ethiopia, the 304 participants who had information on BSE, only 53.6% have ever done BSE and only 29.5% of them reported to practice it on a regular monthly basis. The mean age at which the study participants started BSE is  $24.92 \pm 7.2$ . Among 152 women who practiced BSE only 40.1% practiced it at the age of 20 years or less. The main reasons given for performing BSE were fear of breast cancer & other diseases 64.4% and unusual appearances of their breasts 23.3%. About 54.6% of the BSE performers claimed to have a regular BSE performance of varying frequencies. Absence of symptoms or disease, doubt about its effectiveness and forgetfulness were mentioned as main barriers to perform BSE by 52.3%, 27.5% and 13.4% of the respondents, respectively.

There were only 12.2% of the respondents who have ever had CBE, of whom 42% had it only once before the study. Absence of symptoms or disease and not knowing the need were the main reasons mentioned by 38.7% and 37.6%, respectively, of the respondents who never had CBE. Concerning mammography, only 2.7% have ever had it. The main reasons given by the women for not having mammographic examination were, doubt about its importance 33.8%, lack of knowledge about it 31.9% and unavailability of the service 14.0% (Befikadu Legesse, 2014)

### **2.3. CONCEPTUAL FRAMEWORK**

This study were guided by the health belief model (HBM) which is a psychological model commonly used by researchers as a theoretical framework to examine the reasons behind engaging in healthy behavior to avoid poor health, whereas others are unsuccessful to take protective actions, depending on the attitudes and beliefs of individuals (Glanz, Rimer & Viswanath, 2008). Initially, Hochbaum (1958) examined individual's perceived susceptibility to tuberculosis and their beliefs about the outcome of early screening. 82 percent had at least one voluntary chest X-ray among individuals who perceive themselves as susceptible to tuberculosis and perceive the general benefits from early detection, and of the group shows neither of these beliefs, only 21 percent had engaged in voluntary X-rays (as cited in Glanz et al., 2008).

The HBM contains four important concepts that predict the reason behind involving in preventive actions to avoid disease conditions and three influencing concepts that added recently these include susceptibility, seriousness, benefits and barriers to a behavior and influencing concepts which are modifying variables, cues to action, and self-efficacy (Glanz et al., 2008). According to the Model, women who consider the disease as severe and perceive themselves as vulnerable to breast cancer are expected to take on to protective action toward the health risk.

Furthermore, as the women believe that taking healthy actions has more advantage or benefits than perceived barriers, they are more likely to engage in frequently practicing preventive behavior. HBM also examine self-efficacy in relation to the behavior and exposure to more cues concerning the behavior will increase the chance that the performance will be practiced (Bastien, 2005).

Perceived susceptibility is one of the powerful perceptions to decrease the risk of health problem or in prompting people to implement healthier behaviors. As the perception of the perceived risk increases, the probability of engaging in healthier behaviors also increases (Dibrezzo et al., 2004). In the case of breast cancer, perceived susceptibility may include the fear of breast cancer identification in the long term or immediate future (Frankenfield, 2009). In this study, this is considered as knowledge of breast cancer risk factors.

According to Champion (2002), perceived severity is one's belief about the seriousness of breast cancer and personal perception related to the outcome of the problem after examination (as cited in Frankenfield). These outcomes may relate to serious medical event that may take place in the long term, or expectation of health problem at the present time (dibrezzo, et al., 2004). In this study this is linked with the knowledge of the warning signs and symptoms of breast cancer.

According to the HBM, perceived benefits refer to one's belief in the usefulness of the preventive action to reduce health risk or benefits of taking health action. The motivation of changing risky behavior is reliant up on one's attitude of performing a health action outweigh the consequence of the problem. Thus taking different preventive actions for early discovery of breast cancer is reliant on believing that it will have motivating outcome (Maguire, 2010). In this study, this is related to the knowledge of breast cancer screening by respondents.

HBM addresses perceived barriers as the most significant in influencing behavior change, because change is not that comes easily to most of people. It is the individual's own assessment of the hindrance to practice the recommended health action to change (dibrezzo et al., 2004). According to the HBM individual needs to believe the benefits of the new behavior outweigh the result of continuing the previous behavior; this may help to accept the new behavior. In trying to increase preventive practices in women it would look clear that the danger of breast cancer perception would motivate acceptance of this early prevention practice (Glanz et al., 2008). However barriers to performing preventive behaviors exert greater influence over the behavior than does the threat of cancer itself. These barriers may include

economical, fear of pain toward screening, distress of having examination, inconvenience, and time-consumption (Bastien, 2005).

The influencing concepts are:

**1. Modifying variables**

Modifying variables as age, level of education, occupation, economic status, family and personal history which are personal characteristic influencing individual perception.

**2. Cues to action**

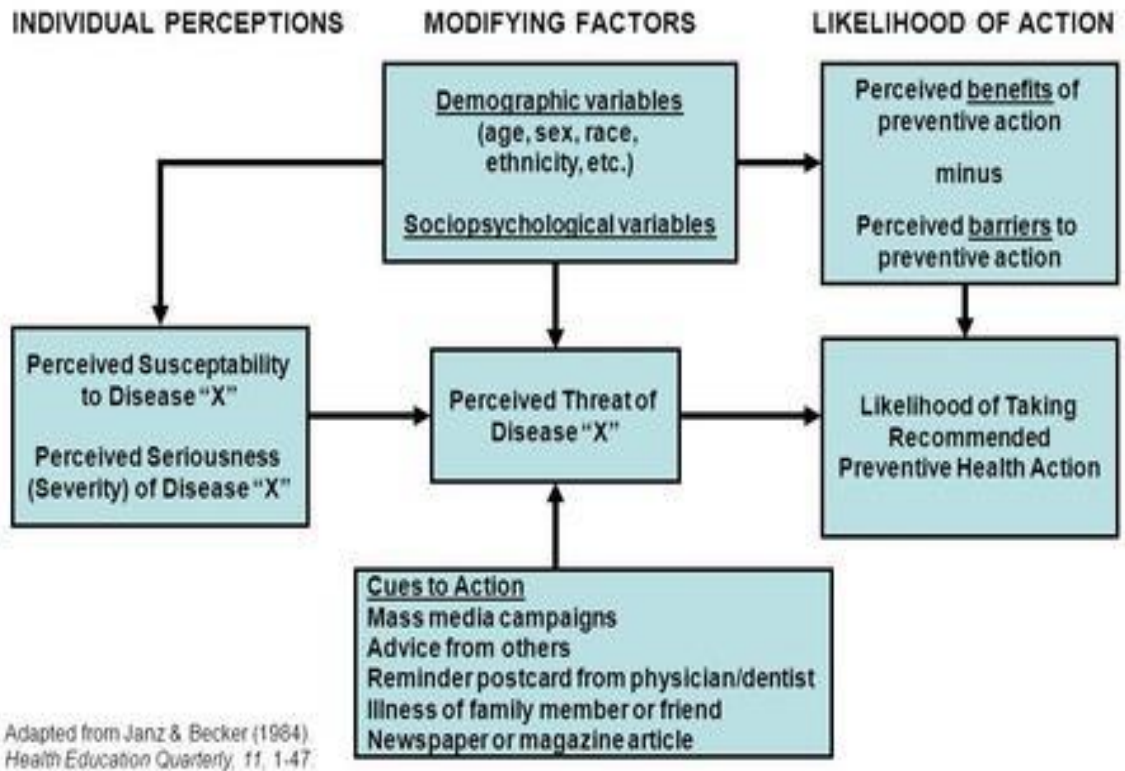
Cues to action are events, people, or things that activate one's willingness to take health action. A Stimulus that activates proper health behavior can be internal or external such as physical distress, or external such as disseminating information about the severity of a disease (Maguire, 2010). In this study this is considered as source of information about breast cancer.

**3. Self-efficacy**

According to Janz & Becker, (1984) self-efficacy is the self-reliance to carry out preventive health behavior effectively; this may happen when ones feel endanger by the current health situation through perceived threat and believes that a behavioral change will bring important result with little a cost. To overcome perceived obstacles individuals must also feel proficient in practicing health action (cited in Frankenfield , 2009).

# Health Belief Model

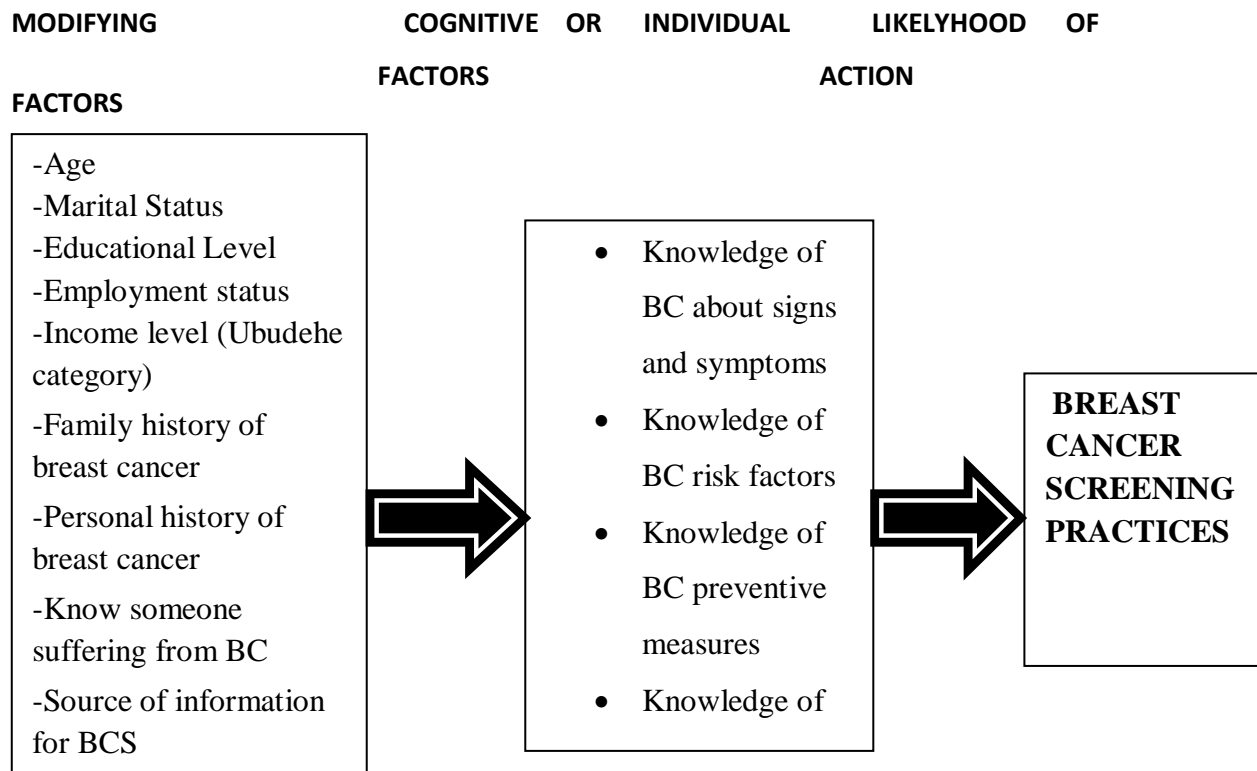
(Becker, 1974, 1988; Janz & Becker, 1984)



**Figure 2.1:** The health believe model from Glanz, Rimer and Viswanath, 2008

Therefore, according Huang (2016) the constructs of HBM has been extended by the scholars increase the model's application to various types of health examination. Health knowledge and social support variables were added to the Model. In this study, the research emphasize on this added variable of Knowledge about the breast cancer screening and how it can influence the breast cancer screening practice.





**Figure 2.2:** Conceptual framework for BC screening at Gicumbi District, 2017  
Adapted from Glanz, Rimer, and Viswanath, 2008)

Despite breast cancer being one of the few cancers that can be detected early before seeing symptoms using mammography, mammography is still only performed on a low proportion of the women population in Rwanda. Despite the wealth of literature available globally documenting knowledge, attitudes and practices of women about breast cancer screening, there is still little of literature on the African experience in this area. This mentioned gaps form the basis of the present study. This study guided by the Health Belief Model (HBM) originally introduced in the 1950s has been widely used in health behavior applications including breast cancer screening. The model stipulates that health-related behavior is influenced by a person’s perception of the threat posed by a health problem and by the value associated with his or her action to reduce that threat. According to this therefore, a woman who perceives that she is susceptible to breast cancer and that breast cancer is a serious disease would be more likely to perform regular breast examinations.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1. INTRODUCTION**

This is the plan that aims at conducting research using specific steps to draw a conclusion (Burns & Grove, 2005). This chapter looked at the main points study design, study setting, study population, sampling criteria, sampling method, sample size, data collection instruments, reliability and validity of data collection instruments, data analysis, and ethical considerations.

### **3.2. RESEARCH DESIGN**

According to (Leedy, 2005), research design is the strategy, the plan and the structure of conducting a research project. A research design guides the investigator in planning and implementing the study in a way that would achieve the intended goals. Each investigator needs to choose the research design that is most useful for her/his particular research purpose, whether to observe in order to know, in order to predict or to predict in order to control or prescribe (Seaman, 2001).

As a result different designs are appropriate for different kinds of studies. This study were descriptive cross-sectional. Cross-sectional is the type of non-experimental research design that collects data at once which mean at the present time (LoBiondo-Wood and Haber, 2014).

The purpose of this study was to assess the knowledge and practice about the breast cancer screening among rural adult women in Gicumbi health district, Rwanda.

### **3.3. RESEARCH APPROACH**

This is the plan of a researcher that helps to acquire knowledge or confirm the existing one to get accurate and meaningful data (Rebar *et al.*, 2011). The study used quantitative design which encompasses the study of research questions that describe phenomena, test relationships, assess differences, seek to explain cause and effect relationships between variables, and test for intervention effectiveness”

(LoBiondo-Wood and Haber, 2014). This study assesses the knowledge and practice about the breast cancer screening among rural adult women in Northern Rwanda.

### **3.4. RESEARCH SETTING**

The study was conducted in public health centers in Gicumbi health district, Northern Province, Rwanda. It had an estimated total population of 478 203 consisting of 428 203 of Gicumbi administrative district and 50000 from Burera and Rulindo administrative district. Gicumbi health district have one district Hospital, 23 Health Centers and 24 Health posts. Those health centers are under supervision of the district hospital.

### **3.5. POPULATION**

The study population is the set of individuals with the same characteristics that interest the researcher for his study (Polit and Cheryl, 2012). This study used the adult women selected from five health center of Gicumbi health district, Northern Province Rwanda. Target population is the group of people that have common characteristics that the researcher can identify and make a study on (Creswell, 2012). Thus, the target population was women aged from 20 yrs and over attended the selected health centers at the time of data collection.

### **3.6. SAMPLING**

A sampling plan is a layout of the steps to be followed to obtain a sample for the study (Agyepong, et. al., 2001).

#### **3.6.1. Sampling Criteria**

##### **Inclusion criteria**

-Those women who were between 20 and over years of age and who were attending public health centers during the time of the data collection and who volunteered to participate in the study were included.

##### **Exclusion criteria**

-Those women who were seriously ill or had problems of communication (who had problems of hearing or speaking).

### 3.6.2. Sample size:

The actual sample size for the study was determined using the formula for single population proportion by assuming 5% marginal error and 95% confidence interval ( $\hat{c}$  (alpha) =0.05) and the prevalence was taken from a research conducted on awareness of lifestyle factors as an important part of a person's risk of breast cancer conducted around five provinces of Rwanda and 18.6% of women were aware (Murekatete, 2015).

By using this formula:

$$n = Z_{\alpha/2}^2 \times P(1-P)/d^2 = (1.96)^2 \times 0.186 \times (1 - 0.186) / (0.05 \times 0.05) \\ = 232.6 \approx 233$$

Considering 10% non-response rate of 23, the total sample size was =**256**

Where: P= the sample proportion of the knowledge of breast cancer among women attended selected health center of Gicumbi health district.

d =margin of error considered to be 5% (0.05)

$Z_{\alpha/2}$  = Z-value for 95% confidence level which is 1.96.

n = the required sample size

### 3.6.3. Sampling strategy.

For this study, the researcher utilized the probability sampling. Probability sampling is a sampling procedure in which random selection of participants is done to select participants (Polit & Hungler, 1999). This gave every participant a chance of being selected. Probability sampling has a greater confidence in the representation of the sample selected. Health centers were selected by simple random sampling technique by using the lottery method. During the study period, there were a total of 23 health centers in Gicumbi health district. Each health center was assigned a unique number and each number is placed in a bowl and mixed thoroughly. The research picked five numbered tags from the bowl blindly and the health centers bearing the number picked were used in the study. Among those health centers, 5(21.7% taken from the total HC) because according to John Curry for known population size for a cross

sectional study the sample should represent at least 20% of the population (as cited in Rick, 2006). After health center selection is completed the next step was sampling the participants.

The sample size in each health center was proportional to population size. The study participants were recruited proportionally from each of the health center using the patient flow one month prior to the data collection (March 2017). The selected Participants were 20 years of old or older, to meet American Cancer Society guidelines for breast cancer screening especially BSE is recommended after age 20 (American cancer society, 2007). The study participants were selected using Systematic Random Sampling Technique.

To calculate the sampling interval (K), the average number of women who visited selected health centers per day was divided by number of women required in each HC, in this study the k was 3. Then every k<sup>th</sup> women visiting the health center were selected from the waiting room after getting the health education. Using the lottery method, the starting point was chosen and the next participant was determined by sampling interval. Whenever the chosen woman didn't fulfill the inclusion criteria, immediate next woman was chosen without changing the interval.

**Table 3.1:** Sampling of the study participants in Gicumbi Health district, 2017

SR	SELECTED HC	No of women attended HC in March 2017	Average women daily seen in each HC last month	No of women required from each HC	No of women required in each selected HC per day.	The sampling interval (K)
1	BYUMBA HC	1279	56	68	17	3
2	RUHENDA HC	715	31	38	10	3
3	RUTARE HC	940	41	50	13	3
4	RUBAYA HC	978	42	52	13	3
5	MUHONDO	902	39	48	12	3
5	Total	4814		256		

### **3.7. DATA COLLECTION**

#### **3.7.1. Data Collection instruments**

Data were collected by a self administered questionnaire by considering all possible variables. Most questions were adapted from the one used to assess the awareness about breast cancer risk factors and warning signs in rural women of Iran (Balouchi,2016) , others from peer reviewed published studies that were previously conducted. The questionnaire was initially prepared by reviewed different literature in English and then translated to Kinyarwanda language, and then was translated back by another person to English to check any in consistency. There was a pre-test on 5% of the total sample size at Kigogo health centers which is different from the selected health centers to see for the accuracy of responses, language clarity, and appropriateness of the tools and based on the result necessary modification was done.

The study use quantitative data gathering methods. The questionnaire contained three sections divided seven parts, comprising of socio demographic, Family history of breast cancer, knowledge about breast cancer risk factors, knowledge about breast cancer warning signs ,knowledge about the preventive measures, knowledge about breast cancer screening methods and practices of BC screening methods of the participants. On demographic characteristics of the participants, there were 5 questions that included age, level of education, marital status, occupation and economic status as Ubudehe categories, family and personal breast cancer.

The age were grouped according to the small scale of five as recommended by ACS(2015) for better know the number in each group in order to find out those who are not adhering to the screening methods according to their age. And then the age group formed fall into three categories of Petry (2002) of Young adult(18-35),Middle aged adult(36-55) and older adult(over 55yo), level of education, marital status, occupation and economic status as Ubudehe categories, according to the ministry of Local Government(2014), created Ubudehe categories as follows: Category 1 including families who do not own a house and can hardly afford basic needs, Category 2 are those who have a dwelling of their own or are able to rent one

but rarely get full time jobs, Category 3 are who have a job and farmers who go beyond subsistence farming to produce a surplus which can be sold. The latter also includes those with small and medium enterprises that can provide employment to dozens of people and the last Category 4 include those who own large-scale business, individuals working with international organizations and industries as well as public servants.

About educational status four categories including (No formal education, primary education 1-6, secondary education 6-12 and university), personal breast problems history (Yes/No), first relatives' family history and marital status (Married/Single/widowed/separated and cohabitated); Occupation (student, daily laborer: housewife, monthly paid, self employed and no job).

Second section contained questions about 17 well established breast cancer's risk factors including: age at menarche, age at menopause, breastfeeding, family history of breast cancer, obesity, smoking, alcohol consumption, diet, low parity, fatty food, nulliparity, induced abortion, radiation exposure, delayed 1<sup>st</sup> pregnancy and menstrual irregularity; about early warning signs including: lump in breast, nipple retraction, breast or nipple pain, discharge other than breast milk in nipple, breast asymmetry, lump or swelling under the armpit, redness, ulceration of the breast; about breast cancer preventive measures there were: no smoking, no drinking alcohol, regular screening, exercising, avoid obesity avoid OCP and breastfeeding; questions about breast cancer screening methods including: mammography, monthly self-examination, and clinical breast examination by a physician; and it was questions about the source of information. All questions in above four study's instrument sections were recorded as "yes" and "no" options.

For practice of screening methods 13 questions in which three questions answer either as YES or NOT for the practices of BC screening and 10 questions asking the reasons for practicing or not. The total number of correct questions provides the general knowledge score for this instrument, with possible scores ranging from 0 to 32 including 0 to 17 on knowledge of risk factors, 0 to 7 for preventive measures, 0 to 9 for knowledge to warning symptoms and 0 to 3 for screening methods. The

questions regarding their preventive practice, there were 0 to 3 for either practiced or not and other 10 questions about the reasons which were not scored.

#### **3.7.1.1. Validity of the instrument**

According to Polit and Beck (2010) Validity is the way the instrument measures the concept that is invented to appraise. Face validity refers to the extent to which the questionnaire appears in measuring the concept, therefore, the researcher used Yes or No questions mostly and requested peer review to examine if the questions look very well if they are not boring or invisible. Content validity “concerns the degree to which an instrument has an appropriate sample of items for the construct being measured and adequately covers the construct domain. Thus, the questionnaire was verified for relevance by peers in the field of oncology nursing. Construct validity “involves inferences from the particulars of the study to the higher-order constructs they are intended to represent”(Polit and Beck, 2010). This means that the concepts in the title were the same as in research questions, objectives, conceptual framework and tool for data collection. This is summarized in the table 3.2 below.



**Table 3.1:** The construct validity of the questionnaire assessing BC screening in women of Gicumbi Health district, 2017

<b>Research questions</b>	<b>Conceptual framework</b>	<b>Tool questions</b>
What is the level of knowledge toward breast screening among rural women Northern Rwanda?	<b>Individual factors</b>  Knowledge about BC risk factors, symptoms, preventive measures and screening methods	<b>Questions on section II</b>  Risk factor: Q 301-Q 317  Symptoms: Q 501-Q 509  Preventive: Q 401-Q 407  Screening: Q 601-Q 604
What is the level practice toward breast screening among rural women Northern Rwanda?	<b>Likelihood of action</b>  Breast cancer screening practices	<b>Questions on section III</b>  <b>Part seven</b>  Q 701-Q 713
What are the factors associated with the knowledge and practices about breast cancer screening among respondents?	<b>Modifying factors compared to knowledge and practices</b>  Sociodemographic  BC history  Source of information	<b>Questions on section I part one and two.</b>  Sociodemographic:101-Q105  BC history: Q201-Q204  Source information:  Q 605-Q 608

### 3.7.1.2. Reliability of the instrument

Reliability of the research instrument evaluated by use of a pre-test. Twenty five questionnaires were distributed to women who were not part of the study in order to

test the stability of the instrument, including clarity of the questions. And it was confirmed by Cronbach's alpha of 0.86 computed using SPSS version 21. The questionnaire addressed the respondents in their own language so as to improve understanding.

### **3.7.2. Data collection procedure**

For this study ten data collectors who were finalist nursing students were selected and trained on the study area, questionnaire, challenges, confidentiality, informed consent and returning back all the given questionnaires. At first, the researcher took official letter from UR-CMHS IRB, which requests cooperation of different concerned bodies to give all necessary information for the study especially the Byumba hospital which is in charge of supervising the activities of the health centers. Before the participant started filling the instrument the aim of the study was informed with information about the study benefits, and confidentiality, and then informed consent was obtained.

Finally women concerned were invited to participate and to complete the questionnaire and those who were not able to read and write were interviewed. Data were collected on every Monday of April 2017 because on Monday, these health center receive many clients this increased the chance of having many population. Principal investigator assisted and coordinated the data collectors during data collection. Filled questionnaires were checked daily for its completeness and errors were corrected and final reviewed questionnaire was returned to the principal investigator.

### **3.8. DATA ANALYSIS**

The data collection instruments were coded and data were manually checked and entered, cleaned and edited accordingly using SPSS version 21.0 and data was rechecked for missing values before analysis.

To assess knowledge of participants towards breast cancer risk factors and warning symptoms, preventive measures and screening methods, multiple questions were

asked with 17 questions for assessing the knowledge of breast cancer risk factors, 9 questions for assessing knowledge of breast cancer warning symptoms, 7 questions for assessing the knowledge about preventive measures and 3 questions for screening methods. For each correct or positive answer a score of ‘‘1’’ was given while ‘‘0’’ was given for every wrong or negative answer.

Then a median score was calculated for knowledge. Any score greater or equal to the median score was defined as high score and hence labeled as having ‘‘good knowledge’’ and divided into two groups of those who were less than 80% were in moderate level of knowledge and more than 80% as high level of knowledge. Any score which is less than the mean score was defined as low score and hence labeled as ‘‘poor knowledge’’. To assess practices of participants towards breast cancer 3 questions were asked for each positive answer a score of ‘‘1’’ was given while ‘‘0’’ was given for every negative answer and other 10 questions about the reasons which were not scored. Those who had at least one score were considered as those who had practice breast cancer screening and labeled as good practice and those who have the score zero means that they didn’t practice any screening method labeled as poor practice. (Balouchi, 2016)

Descriptive statistics, numerical summary measures, frequencies, proportions, distributions were used to check for normality and also diagrams for describing the study population in relation to relevant variables. Then cross tabulation of each independent variable and dependent variable with 95% confidence interval was calculated to see existence of an association between dependent and independent variables. Statistical significance was declared at p-value of 0.05 and the predictors of outcome variable were identified accordingly. Those variables associated at binary logistic regression with significance level ( $p=0.20$ ) were entered into multivariate logistic regression to identify important determinants by controlling possible confounding effect.

### **3.9. DATA MANAGEMENT**

After data collection the research assistants handled all given tools to the researcher. Then data were recorded into the software and kept by the researcher in a secured

way locked by password known by the researcher. After that Data that recorded electronically were kept in a password protected folder to prevent further access. The questionnaires were kept in the locked container for five year then being thrown out.

### **3.10. STRENGTH AND LIMITATION OF THE STUDY**

#### **3.10.1. Problems**

1. This study were not funded
2. Transport problems during data collection to reach the research sites
3. To get the remunerations of the research assistants.
4. Language problem to those who speak the local language(Igikiga)

#### **3.10.2. Limitation**

1. The cross-sectional design used has limited the degree of cause and effect associations among variables of interest.
2. The self-reported information is subjected to bias since the study raised personal issue.
3. There was no international standardized questionnaire found on breast screening knowledge and practice that may limit comparing the findings of this study with other studies.

### **3.11. ETHICAL CONSIDERATION**

Ethical clearance was obtained from Institutional Review Committee (IRB) of College of Medicine and Health Sciences of University of Rwanda (CMHS/IRB/078/2017). After the ethical approval written letter was submitted to Byumba hospital which is charge of direct supervision of the health center with a copy to the respective health centers. A written consent was also requested to all the participants during data collection. Each participating woman were informed about the purpose of the study and her right to decline from study at any time and any information filled will be kept anonymous. To ensure their confidentiality, No personal identification of the participants was recorded so that no individual respondent's to be tied to their responses.

## **CHAPTER FOUR: RESULTS**

This chapter presents the results of this study. A total of 256 female students were participated in this study, their demographic characteristics, Knowledge and practices toward breast cancer screening. The purpose of the study was to assess the level of knowledge and practice toward breast screening among rural women in Gicumbi health district, Rwanda.

### **4.1. SOCIO DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION**

The socio demographic characteristics of participants are age, marital status, level of education, occupation, and socioeconomic status as Ubudehe categories. A total of 256 women aged 20 years and above participated in the study. The participants were between the age group of 20 - 81 years with a mean age of 32 years and standard deviation of 11.9 years. By age group, seventy-seven of the study participants (54.7%) were aged between 20 to 24 years. Regarding marital status of participants of the participants 138 (53.9%) respondents were married, 63 (24.6%) respondents were single and the rest 55(21.5%) included separated, widowed and divorced group. According to this study, 69 (27.9%) participants did not have formal education, 108(42.2%) received primary education, 63 (24.6%) have secondary education and 16 (6.3%) have university education.. Employment status of the respondents, 144(56.3%) house wife with daily labor, 36 (14.1%) monthly paid employee, and 28(10.9%) self-employed. About the socioeconomic status of the respondents 116(45.3) were in Ubudehe category 3 of moderate economic status and only 2(0.8%) were in category 4 (Table 4.1).

**Table 4.1: Socio-demographic characteristics of respondents (N=256)**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<b>Age (N=256)</b>		
20-24	77	30.1
25-29	63	24.6
30-34	34	13.3
35-39	31	12.1
40-44	17	6.6
45-49	11	4.3
>=50	23	9
<b>Marital status(N=256)</b>		
Single	63	24.6
Married	138	53.9
Divorced	2	0.8
Widowed	25	9.8
Separated	10	3.9
Cohabited	18	7
<b>Educational level (N=256)</b>		
No formal education	69	27
Primary education(1-6)	108	42.2
Secondary education(7-12)	63	24.6
University	16	6.3
<b>Occupation (N=256)</b>		
Student	19	7.4
Housewife/day laborer	144	56.3
Monthly paid employee	36	14.1
Self employed	28	10.9
No job	29	11.3
<b>Ubudehe socioeconomic category (N=256)</b>		
Category 1	49	19.1
Category 2	89	34.8
Category 3	116	45.3
Category 4	2	0.8

## 4.2. HISTORY OF THE RESPONDENTS ABOUT BREAST CANCER

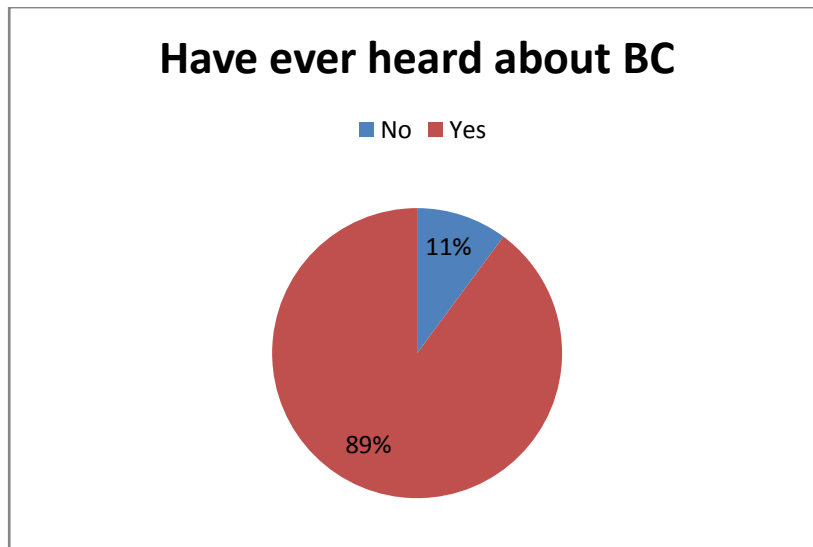
Majority of respondents 241(93.8%) have reported they didn't have family history of breast cancer. Among respondents who had family history of breast cancer, (56.2%) of them their aunt. Only 2(0.8%) of respondents had personal history of breast cancer and 61(23.8%) knew someone suffered from breast cancer (Table 4. 2)

**Table 4.2: History of breast cancer among women at Gicumbi health district, 2017 (N=256)**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Family history of BC (N=256)</b>		
Yes	16	6.2
No	240	93.8
<b>Family member affected (N=256)</b>		
Mother/Father	2	0.8
Sister/Brother	4	1.6
Grand Mother/Father	1	0.4
Aunt	9	3.5
No	240	93.8
<b>Personal history of BC (N=256)</b>		
Yes	2	0.8
No	254	99.2
<b>Know someone with BC(N=256)</b>		
Yes	61	23.8
No	195	76.2

## 4.3. KNOWLEDGE OF STUDY PARTICIPANTS ABOUT BREAST CANCER

Among 256 respondents, 228(89%) of respondents had heard about BC against 28(11%) who had no idea about it (Figure 4.1.)



**Figure 4.1:** Women who have heard about breast cancer

#### **4.3.1. Knowledge of study participants about Breast cancer risk factors**

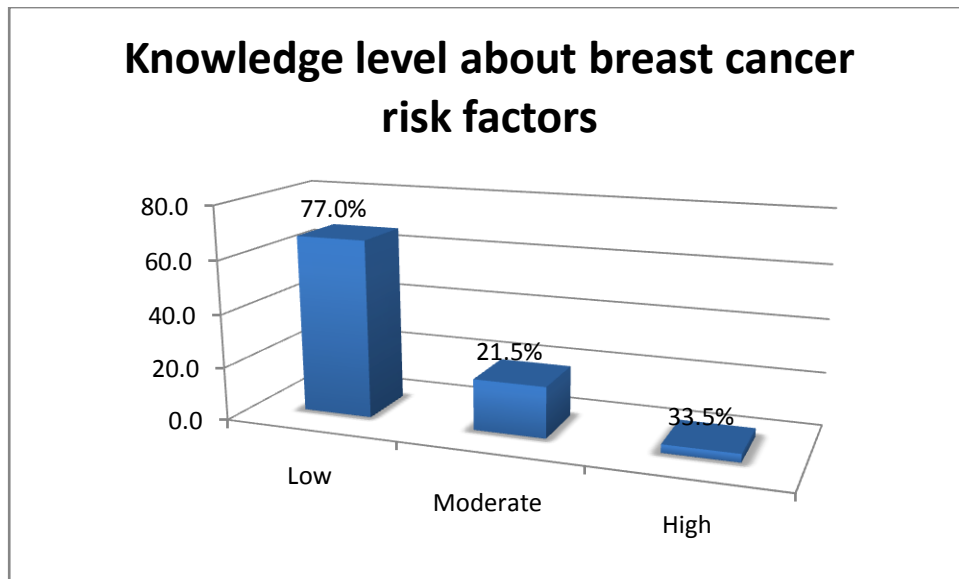
The table 4.3 shows that higher proportion of respondents identified cigarette smoking 103 (45.2%) as risk factors of breast cancer. On the contrary, lesser proportion of woman recognized low parity 29(12.7%) and early onset of menses 38(16.7%) and delayed menopause 44(19.3%). Only 44(17.2%) have good knowledge and most of participants 212(82.8%) have poor knowledge about breast cancer risk factors need improvement. The table below shows the commonly mentioned breast cancer risk factors.



**Table 4.3:** Knowledge on breast cancer risk factors among respondents (N=228)

<b>Variable</b>		<b>Frequency</b>	<b>Percentage</b>
Null parity	No	168	73.7
	Yes	60	26.3
USE of estrogen drugs, oral contraceptives	No	153	67.1
	Yes	75	32.9
Old age	No	178	78.1
	Yes	50	21.9
Obesity	No	153	67.1
	Yes	75	32.9
Cigarette smoking	No	103	45.2
	Yes	125	54.8
Delayed menopause above 55yrs	No	184	80.7
	Yes	44	19.3
NO breastfeeding	No	142	62.3
	Yes	86	37.7
Early onset of menses before 12yrs	No	190	83.3
	Yes	38	16.7
Alcohol consumption	No	146	64.0
	Yes	82	36.0
Induced abortion	No	161	70.6
	Yes	67	29.4
Consumption of fatty food	No	156	68.4
	Yes	72	31.6
Low parity	No	199	87.3
	Yes	29	12.7
Delayed first pregnancy above 30yrs	No	173	75.9
	Yes	55	24.1
Radiation exposure	No	150	65.8
	Yes	78	34.2
Menstrual irregularity	No	184	80.7
	Yes	44	19.3
Family history of BC	No	146	64.0
	Yes	82	36.0

The figure 4.2 represents the knowledge level of the respondents about breast cancer risk factors considering the mean score of answered questions. The low 171(75.0%) level represents poor knowledge, moderate level 49(21.5%) and high level 8(3.5%) represent good knowledge about breast cancer risk factors.



**Figure 4.2:** Knowledge level on breast cancer risk factors among adult rural women in Gicumbi health district Rwanda (N=228)

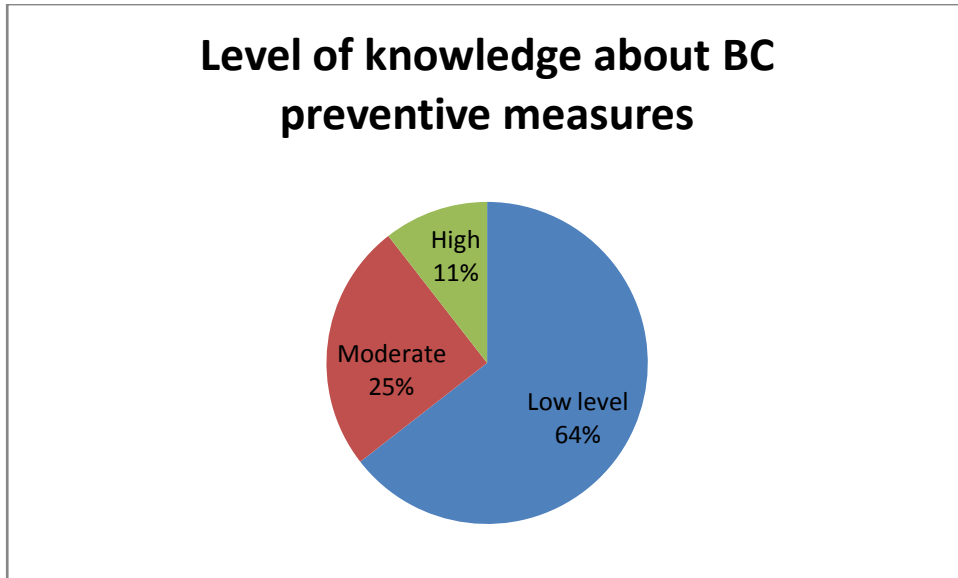
**4.3.2. Knowledge of study participants about Breast cancer preventive measures**

Among the respondents who knew about the breast cancer, the most mentioned as breast cancer preventive measures are no smoking 125(54.8%) and not drinking alcohol 122(53.5%) and others are mentioned in the table 4.4 below.

**Table 4.4:** Knowledge on breast preventive measures among adult rural women in Gicumbi health district Rwanda (N=228)

Variable		Frequency	Percentage
Breastfeeding	No	142	62.3
	Yes	86	37.7
Not drinking alcohol	No	122	53.5
	Yes	106	46.5
Regular screening	No	146	64.0
	Yes	82	36.0
Exercising	No	146	64.0
	Yes	82	36.0
Avoid obesity	No	153	67.1
	Yes	75	32.9
Avoid OCP	No	153	67.1
	Yes	75	32.9
No smoking	No	103	45.2
	Yes	125	54.8

The figure 4.3 represents the knowledge level of the respondents about breast cancer preventive measures considering the mean of answered questions. The low 147(64.5%) level represents poor knowledge, moderate level 57(25%) and high level 24(10.5%) represent good knowledge about preventive measures.



**Figure 4.2:** Knowledge level on breast preventive measures among adult rural women in Gicumbi health district Rwanda (N=228)

#### 4.3.3. Knowledge of study participants about Breast cancer signs and symptoms

The most mentioned as breast cancer symptoms are changes in breast shape 141(61.8%), blood discharge from the nipple 140(61.4%) and pain in the breast by 139(61%) (Table 4.5.)

**Table 4.5:** Knowledge on breast cancer signs and symptoms among adult rural women in Gicumbi health district Rwanda (N=228)

<b>Variable</b>		<b>Frequency</b>	<b>Percentage</b>
Discoloration of breast	No	117	51.3
	Yes	111	48.7
Change in breast shape	No	87	38.2
	Yes	141	61.8
Pain in breast	No	89	39
	Yes	139	61
Dimpling of breast skin	No	110	48.2
	Yes	118	51.8
Painless breast lump	No	109	47.8
	Yes	119	52.2
Lump under armpit	No	130	57
	Yes	98	43
Ulceration of the breast	No	120	52.6
	Yes	108	47.4
Nipple retraction	No	126	55.3
	Yes	102	44.7
Blood discharge from nipple	No	88	38.6
	Yes	140	61.4

Considering the mean score of answered questions, 94(41.7%) had low level of knowledge representing poor knowledge, moderate and high level represent good knowledge, 62 (24.2%), 71(27.7%) respectively. Figure 4.3.

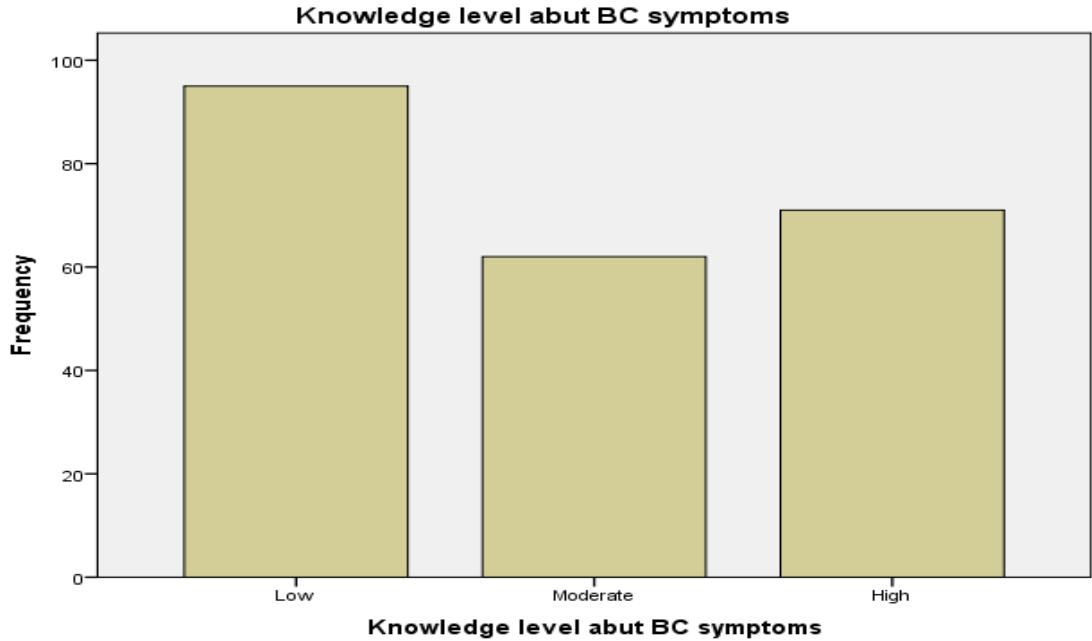


Figure 4.3: Knowledge level on BC symptoms among respondents (N=228)

#### 4.3.4. Knowledge on screening methods

Among all the respondents 102 (39.8%) have never heard of breast cancer screening; 154(60.2%) of women knew at least one kind of breast cancer screening methods. Among those who knew about breast cancer screening methods 115(74.7%) knew BSE as a screening method, 80(51.9%) knew CBE, 38(24.7%) Mammography (Figure 4.4)

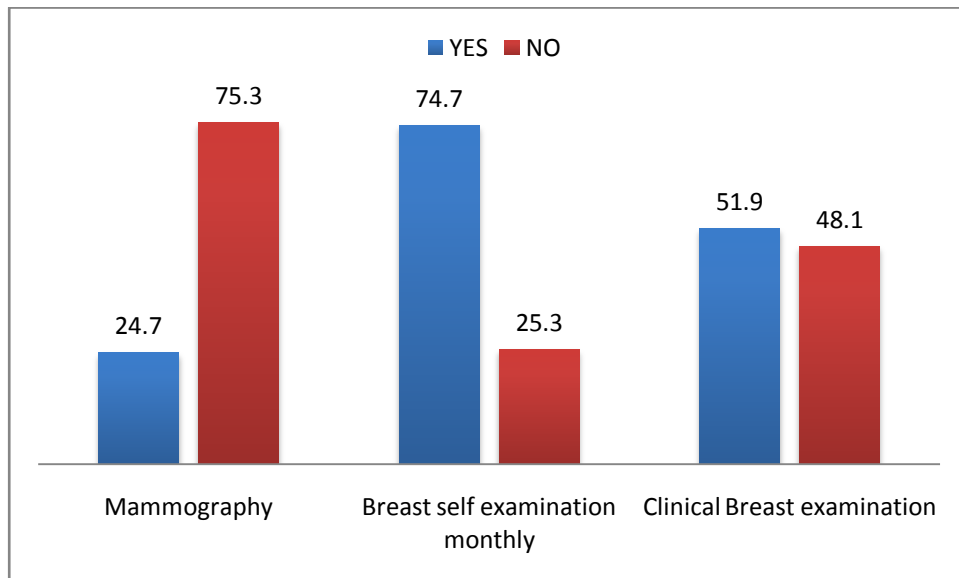


Figure 4.4: Knowledge on BC screening methods among respondents (N=154).

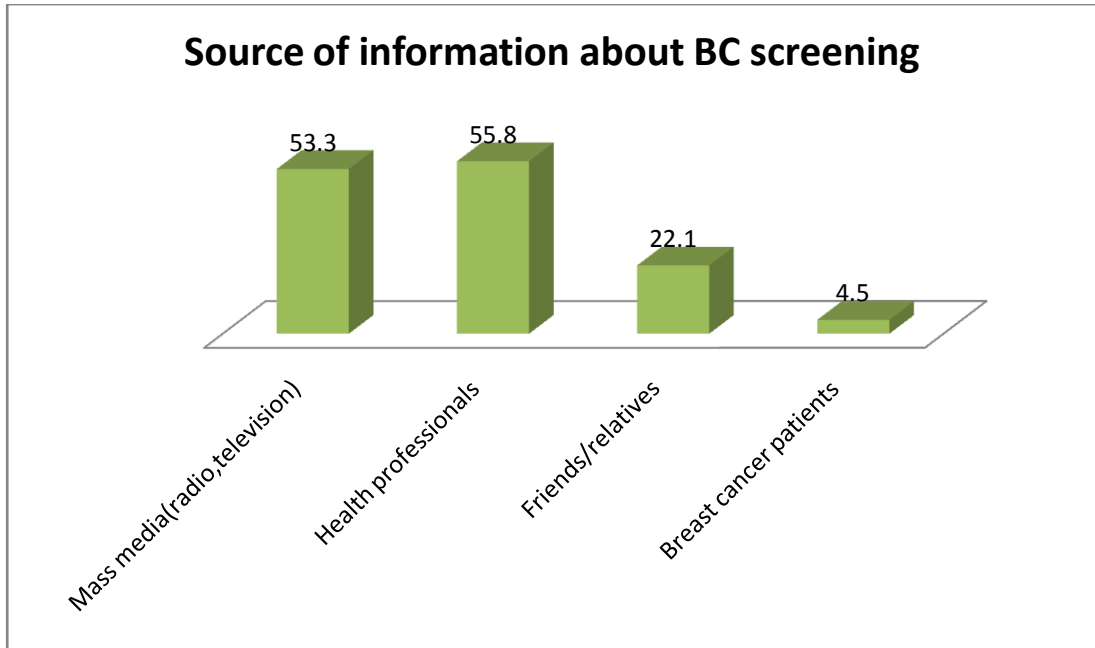
The table 4.5 provide the overall knowledge for the study (N=256) according to the score gained for the questions answered. Those with less than mean score had low level of knowledge representing poor knowledge and above the mean score to 79.9% had moderate level, 80-100% have high level both representing good knowledge. And those who had never heard are considered as having poor knowledge

**Table 4.5:** Knowledge score on breast cancer among respondents (N=256)

Variable	Level	Frequency(no.)	Percent (%)	Mean $\pm$ SD
Knowledge on BC Risk factors	Low	171	66.8	1.3 $\pm$ 0.5
	Moderate	49	19.1	
	High	8	3.1	
	Never heard	28	10.9	
Knowledge BC symptoms	Low	95	37.1	1.9 $\pm$ 0.8
	Moderate	62	24.2	
	High	71	27.7	
	Never heard	28	10.9	
Knowledge about BC Preventive measures	Low	147	57.4	1.5 $\pm$ 0.7
	Moderate	57	22.3	
	High	24	9.4	
	Never heard	28	10.9	
Overall general knowledge about BC	Low	144	56.3	1.4 $\pm$ 0.6
	Moderate	69	27	
	High	15	5.9	
	Never heard	28	10.9	
Knowledge about BC screening methods	Low	73	28.5	1.6 $\pm$ 0.6
	Moderate	67	26.2	
	High	14	5.5	
	Never heard	102	39.8	

#### 4.3.5. Source of information about breast cancer screening methods

Among those who knew about breast cancer screening methods their most common source of information were media, health facility, and friend/relatives by 82 (53.2%), 86 (55.8%),34(22.1% ), respectively. Breast cancer patients were the least source of information 7(4.5%) as shown in the Figure 4.5.

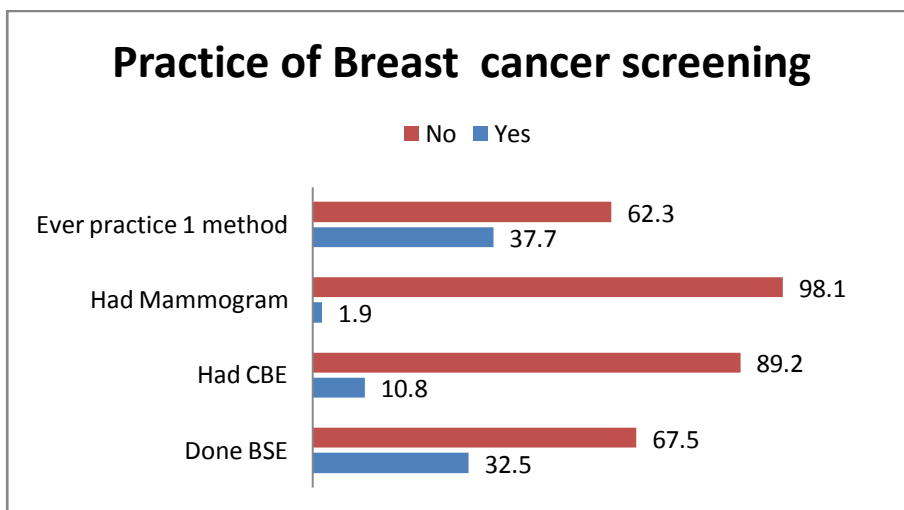


**Figure 4.5:** Source of information about BC screening among respondents. (N=154)

**NB:** percent do not add up to 100 % (multiple responses)

#### 4.4. PRACTICES OF BREAST CANCER SCREENING METHODS

The figure 4.6 has two part, the first demonstrate that among those who knew about breast cancer screening methods 96(62.3%) have never practice any screening method and only 58(37.7%) have ever practice one. The second shows the practices of BC screening methods, among those who knew about breast cancer screening methods BSE, CBE and mammographic examination was practiced by 50 (32.5%), 17(10.8%) and 3 (1.9%), respectively.



**Figure 4 .6:** Practices of breast BC methods of women in Gicumbi district (N=154).



The table 4.6 demonstrates the practice of the breast cancer screening among rural women in Gicumbi district. Among all respondents, BSE, CBE and mammography were practiced by 50(19.5%), 17(6.6%) and 3(1.2%) respectively. On the total practice, 58(22.7%) had ever practiced any screening method meaning that they have a good practice.

**Table 4.6:** The women practice of the breast cancer screening in Gicumbi District

<b>Variable</b>	<b>Level</b>	<b>Frequency</b>	<b>Percent %</b>	<b>Mean ±SD</b>
Had ever done BSE	yes	50	19.5	0.3±0.4
	No	104	40.6	
	Never heard	102	39.8	
Had CBE	Yes	17	6.6	0.1±0.3
	No	137	53.5	
	Never heard	102	39.8	
Had mammography	Yes	3	1.2	0.02±0.13
	No	151	59	
	Never heard	102	39.8	
BC screening practice	Poor practice	96	37.5	0.37±0.48
	Good practice	58	22.7	
	Never heard	102	39.8	

Among those who practiced BSE, 17 (34 %) of them reported that they did BSE more than twelve times, 19 (38 %) 6-12 and 5 (10%) conducted 3-5 times a year and 7(14%) don't remember. The majority of them 29(59.1%) mentioned they started BSE when they were 20 years or above.

Among those who were aware of breast cancer screening(BCS) the commonest reason for not undergoing BSE was not having confidence on their examination and being afraid of getting lump 41(39.4%) and 38(36.5%) respectively.

Among those who have undergone the CBE, the commonest reason mentioned for undergoing CBE was having symptoms on breasts 9(52.9%) and 4(23.5%) wanted to get breast examined regularly. Most 11(64.7%) of respondents have undergone CBE once a year.

Among those who were aware of BCS the commonest reason for not undergoing CBE was not having symptoms and thinking that it is expensive 113 (78.5%) and 17(11.8%) respectively.

All of those women who have undergone mammography 3(100%) mentioned reason for undergoing it was that they were having breast problems and has undergone only once.

Among those who were aware of BCS the commonest reason for not undergoing mammographic examination the commonly mentioned reason was not having symptom and unavailability of service 86(54.1%) and 50(31.4%) respectively.

**Table 4.6:** Women practice of breast cancer screening in Gicumbi district, Rwanda.

<b>Variables</b>	<b>Frequency</b>	<b>Percent (%)</b>
Having seen BSE performed by others(N=154)	NO YES	59.7 40.3
Frequency of practicing BSE per year (N=50)	More than 12 times 6-12 times 3-5 times 0-2 times I don't remember	34 38 10 4 14
Age started practicing BSE (N=50)	at age less than 20 at age above 20	42 58
Reason for not practicing BSE (N=104)	I had not thought the proper technique I am afraid of getting lump I did not have confidence on my examination I do not like touching my body like that	23.1 36.5 39.4 1
Reason for practicing CBE (N=17)	to get my breast examined regularly Breast cancer is in my family I had symptoms Others	23.5 5.9 52.9 11.8
How often do you practice CBE (N=17)	Twice a year or more Once whenever I visit clinic	13.3 73.3 26.7
Reason for not practicing CBE(N=139)	I do not have any symptom I think it is expensive It is embarrassing I am afraid I know I can never have cancer	70.8 11 2.6 3.9 2.6
Reason for doing mammography(N=3)	I had breast problem	100
Reason for not doing mammography(N=151)	I do not have any symptom I think it is expensive unavailability of service	49.7 15.2 31.8

## **4.5. FACTORS ASSOCIATED WITH KNOWLEDGE AND PRACTICE OF BREAST CANCER SCREENING**

Cross tabulation and logistic regression analysis was carried out to determine the association between independent variables with the knowledge and practice toward breast cancer screening among the study participants. In this study, binary logistic regression and multivariate logistic regression analysis had been used to identify the effect of independent variables on dependent variable (knowledge and practice of breast cancer screening).

### **4.5.1. Factors associated with knowledge toward breast cancer screening**

Educational status, occupational status, marital status and socioeconomic Ubudehe category were significantly associated with knowledge level of study participants toward breast cancer screening methods on binary logistic regression and no variable remained significant in multivariate logistic regression.

In a binary logistic regression analysis, it was found that women who attended secondary education were about four times more likely to know at least one breast cancer screening method compared to those who have no formal education [**COR=3.71; 95%CI (1.43-9.60)**]. And women who attended University were about nineteen times more likely to know at least one breast cancer screening method compared to those who do not have formal education [**COR=18.85; 95%CI (2.19-161.98)**]. About occupation, women who are house wife doing daily labor were 71% less likely to know about breast cancer screening compared to those who were students [**COR=0.29; 95%CI (0.08-0.99)**]. The married women were 42% less likely to know about breast cancer screening than single women [**COR=0.58; 95%CI (0.26-1.28)**]. Women who were in the category of moderate income (Ubudehe category 3) were two times more likely to know about breast cancer screening than those poor women of category one [**COR=2.51; 95%CI (1.03-6.11)**].

**Table 4.7:** Association between socio-demographic factors and knowledge of breast cancer screening of adult rural women in Gicumbi District.

Variables	Mean Knowledge Of Screening N		Crude Odd Ratio (COR)	Adjusted Odd Ratio (AOR)
	Poor knowledge	Good knowledge		
<b>EDUCATIONAL LEVEL</b>				
No formal education	24	14	1.0	1.0
Primary education	36	30	1.43(0.63-3.24)	1.19(0.42-3.36)
Secondary education	12	26	3.71(1.44-9.60)**	2.04(0.48-8.76)
University	1	11	18.86(2.20-161.99)**	5.86(0.44-77.94)
<b>Occupation/employment</b>				
Student	3	9	1.0	1.0
Housewife/day laborer	51	33	0.22(0.05-0.86)**	0.30(0.04-2.19)
Monthly paid employee	3	21	2.33(0.39-13.85)	1.70(0.17-16.77)
Self employed	9	11	0.41(0.08-1.97)	0.38(0.05-2.68)
No job	7	7	0.33(0.06-1.78)*	0.20(0.03-1.45)
<b>Marital status</b>				
Single	14	23	1.0	1.0
Married	43	41	0.58(0.26-1.28)*	0.56(0.15-2.03)
Widowed	7	7	0.61(0.18-2.10)*	1.82(0.34-9.89)
Separated	1	2	1.22(0.10-14.60)	3.40(0.19-59.74)
Cohabited	7	8	0.70(0.21-2.34)	1.23(0.26-5.85)
<b>Ubudehe socioeconomic categories</b>				
Category 1	18	11	1.0	1.0
Category 2	27	25	1.52(0.60-3.83)	1.36(0.43-4.28)
Category 3	28	43	2.51(1.03-6.11)**	0.83(0.22-3.20)

**NB:** \* for p-value < 0.2 and \*\* for p-value < 0.05

#### 4.5.2. Factors associated practice of breast cancer screening

Educational status, occupational status, Ubudehe socioeconomic category, knowledge on breast cancer risk factors, knowledge on BC signs and symptoms ,

knowledge on preventives measures and knowledge on screening methods were significantly associated with practice of breast cancer screening methods on binary logistic regression while only knowledge on breast cancer signs and symptoms were found significantly associated with the practice of breast cancer screening methods on multivariate logistic regression analysis.

In a binary logistic regression analysis, it was found that women who attended secondary education were 2 times more likely to practice breast cancer screening methods compared to those who have no formal education [**COR=2.21; 95%CI (0.86-5.70)**]. And women who attended University were seven times more likely to practice breast cancer screening methods compared to those who do not have formal education [**COR=7.36; 95%CI (1.67-32.44)**]. About occupation, women who are house wife doing daily labor were 71% less likely to practice breast cancer screening methods compared to those who were students [**COR=0.29; 95%CI (0.08-0.99)**]. Women who were in the category of moderate income (Ubuhehe category 3) were 3 times more likely to practice breast cancer screening methods compared to those who were in the category one of low income [**COR=3.33; 95%CI (1.21-9.16)**]. And those who were in the category 4 of high income were about four times likely to practice breast cancer screening methods compared to those who were in the category one of low income [**COR=3.83; 95%CI (0.21-70.64)**].

It was found that those who were having good knowledge about BC risk factor on moderate level(it mean those who scored between 50-79%) were about 3 times more likely to practice breast cancer screening methods compared to those who were having poor knowledge in BC risk factors[**COR=2.74; 95%CI (1.24-6.06)**] . And women who had good knowledge high level (mean scored more than 80%) on BC risk factors were 11 times more likely to practice breast cancer screening methods compared to those who were having poor knowledge in BC risk factors[**COR=11.43; 95%CI (1.29-101.45)**] . Women who were having good knowledge about BC symptoms on moderate level(scored 50-79%) were about 2 times more likely to practice breast cancer screening methods compared to those who had poor knowledge [**COR=2.94; 95%CI (1.35-6.38)**]and those who had good knowledge on high level (meaning those scored more than 80%) were about five

times more likely to more likely to practice breast cancer screening methods compared to those who had poor knowledge [**COR=4.7; 95%CI (2.05-10.77)**]. Women who were having good knowledge about BC preventive measures were about 3 times more likely to practice breast cancer screening methods compared to those who had poor knowledge [**COR=3.29; 95%CI (1.54-7.00)**]. Women who were having good knowledge screening methods on moderate level(it mean those who scored between 50-79%) were about 2 times more likely to practice breast cancer screening methods compared to those who were having poor knowledge on BC screening methods[**COR=2.48; 95%CI (1.21-5.08)**] . And women who had good knowledge high level (mean scored more than 80%) on screening methods were about 8 times more likely to practice breast cancer screening methods compared to those who were having poor knowledge on BC screening methods[**COR=7.64; 95%CI (2.13-27.36)**]

In a multi variable logistic regression analysis, women who were having good knowledge about BC symptoms on high level (meaning those scored more than 80%) were 3 times more likely to practice breast cancer screening methods compared to those who had poor knowledge [**AOR=3.29; 95%CI (1.20-9.03)**] .

**Table 4.8:** Association between socio-demographic factors and practice of breast cancer screening methods of adult rural women in Gicumbi District.

Variables	Practice		Crude Odd Ratio (95%CI)	Adjusted Odd Ratio (95%CI)
	Poor	Good		
<b>EDUCATIONAL LEVEL</b>				
No formal education	27	11	1.0	1.0
Primary education(1-6)	46	20	1.07(0.44-2.56)	0.95(0.34-2.66)
Secondary education(7-12)	20	18	2.21(0.86-5.70)*	1.52(0.38-6.12)
University	3	9	7.36(1.67-32.44)**	5.77(0.76-43.69)
<b>Occupation/employment</b>				
Student	5	7	1.0	1.0
Housewife/day laborer	60	24	0.29(0.08-0.99)**	0.52(0.11-2.46)
Monthly paid employee	9	15	1.19(0.29-4.90)	0.50(0.09-2.73)
Self employed	13	7	0.38(0.09-1.67)*	0.31(0.06-1.64)
No job	9	5	0.40(0.08-1.94)*	0.37(0.06-2.27)
<b>Knowledge of Screening Methods</b>				
Poor knowledge	55	18	1.0	1.0
Good knowledge(on moderate level)	37	30	2.48(1.21-5.08)**	1.65(0.70-3.88)
Good knowledge(on high level)	4	10	7.64(2.13-27.36)**	3.87(0.74-20.42)
<b>Knowledge on BC Risk factors</b>				
Poor knowledge	8	35	1.0	1.0
Good knowledge(on moderate level)	1	18	2.74(1.24-6.06)**	0.97(0.32-2.97)
Good knowledge(on high level)	1	5	11.43(1.29-101.45)**	7.10(0.49-103.42)
<b>Knowledge BC symptoms</b>				
Poor knowledge	48	61	1.0	1.0
Good knowledge(on moderate level)	26	43	2.41(1.02-5.74)**	1.56(0.56-4.39)
Good knowledge(on high level)	22	50	4.70(2.05-10.77)**	3.29(1.20-9.03)**
<b>Knowledge on BC preventive measures</b>				
Poor knowledge	72	28	1.0	1.0
Good knowledge(on moderate level)	18	23	3.29(1.54-7.00)**	1.43(0.53-3.89)
Good knowledge(on high level)	6	7	3.00(0.93-9.71)*	0.67(0.12-3.69)
<b>Ubudehe socioeconomic categories</b>				
Category 1	23	6	1.0	1.0
Category 2	34	18	2.03(0.70-5.89)*	2.44(0.71-8.42)
Category 3	38	33	3.33(1.21-9.16)**	2.02(0.53-7.73)
Category 4	1	1	3.83(0.21-70.64)*	1.93(0.06-67.82)

**NB:** \* for p-value < 0.2 and \*\* for p-value < 0.05



## **CHAPTER 5: DISCUSSION**

The purpose of the present study was to assess knowledge and practice regarding breast cancer screening with emphasis on adult rural women Gicumbi health district Northern Rwanda. Based on Health Belief Model as a theoretical framework, this study focused knowledge about breast cancer as new concepts added on HBM and associated modifying factors including socio-demographic characteristics, breast cancer history and the source of information in relation to breast cancer screening methods and the study also examined practice of breast cancer screening methods

This chapter presents a summary discussion on knowledge and practice of breast screening and discusses the study's main finding by comparing to prior researches. It is structured into four parts that are aimed at addressing the specific research questions: including of sections that discusses the knowledge of the participants on breast cancer screening, the practice of breast cancer screening and finally the factors associated with knowledge and practice of breast cancer screening.

### **5.1. KNOWLEDGE ON BREAST CANCER SCREENING METHODS**

Among all the respondents 61% of women have known at least one kind of breast cancer screening methods. The study revealed that among all of the respondents only 44.9% of participants were able to correctly identify breast self-examination (BSE) and are almost similar to the result from Nigeria but considering the time passed this finding should be more good than that and this could be due to the socio-demographic difference between the two study areas. In this study, only 14.8% of women identified mammography as a method of detection for breast cancer screening which is very little. This could be explained by the limited mammography services in Rwanda in only few hospitals in city Kigali. This finding was higher than the study done in northern Ethiopia and Nigeria, (Okobia, 2006; Befikadu Legesse, 2014) and this could be due to the time of the study thus there was better awareness at the current study period compared to the previous years. Among those women who have heard of screening methods, the major source of information was media 53.3% and health facility 55.8% of respondents which is very higher than study(Befikadu Legesse,2014) and the reason could be the

professionals were more available and difference in population cultural between Rwanda and Ethiopia.

Breast cancer was known by 89% of the women. Accordingly the study has revealed that overall 31.7% of the study participants had a knowledge score of greater than or equal to the mean knowledge score and in this study those who have heard about the breast cancer, the commonly mentioned risk factors were smoking 54.8% followed by no breast feeding and drinking alcohol 37.7%, and 36%, respectively which is different from previous study done in Rwanda found family history of breast cancer was the best accepted risk factor for breast cancer (awareness rate 31.5%) followed by no parity or late childbirth (13.9%), menopause at a late age (13.7%), high-fat diets (19.1%), long time drinking (19.5%) and long-term use of estrogen drugs (20.7%)(Murekatete,2015). This finding were higher compared to the study than in Tanzanian women surveyed, only 16.4, 14.2, 26.2%, respectively, acknowledged these risk factors (Morse, 2014). Balouchi (2015) in the study done in rural Iran found that the most acknowledged as risk factors were low-fat diet (89.7%), menarche at the age of fewer than 12, and lactation (68.1%) and this difference may be associated to the geographical and cultural differences. Despite the fairly good report of the risk factors, it is still worrisome that only 22.2% of all respondents had the mean score about breast cancer risk factor knowledge. The reason for this is again due to lack of exposure to knowledge and facts about breast cancer. The low levels of education in majority of the women who participated in this study is another reason, in that the women may not know how to access accurate information about breast cancer. with regard to symptoms of BC, the commonly mentioned symptoms of breast cancer were in breast shape 141(61.8%), blood discharge from the nipple 140(61.4%) and pain in the breast by 139(61%) contrary to Montazeri et al. reported that the most important symptoms of breast cancer from women's perspective were axillaries mass (44%), painful axillaries mass (16%) and changes in breast shape (13%) (Montazeri et al., 2008). and they could be said to be fairly good compared the study done in Nigeria have indicated lower knowledge with only 21.4% and 1.9% respectively being able to identify painless lump as a sign( Okobia,2006)And the difference could be attributed improvement of communication and health literacy in this time difference.

## **5.2. PRACTICE TOWARD BREAST CANCER SCREENING METHODS**

Majority of the women frequently practiced BSE and occasionally sought for CBE, but did not go for mammography. It is thought that BSE makes women more aware of their breasts which in turn may lead to an earlier diagnosis of breast cancer (Siahpush & Singh, 2002). The rationale behind extending BSE practice as a screening test is the fact that breast cancer is frequently detected by women themselves without any other symptoms. It has been shown that regular of BSE practice increases the probability of detecting breast cancer at an early stage (Linda Akuamoah et al., 2013). American cancer society (2003) no longer recommends BSE. However, in developing societies like Rwanda, BSE should still be encouraged because access to CBE and most importantly mammography is extremely limited. Some health facilities are not easily accessible and mammography is very expensive for the majority, yet BSE can still help to some extent.

In this study, among those who knew about breast cancer screening methods BSE, CBE, and mammographic examination, they were practiced by 50 (32.5%), 17(10.8%) and 3 (1.9%) of respondents respectively. The study done in Nigeria has reported low practice levels, for BSE (34.9%) and CBE (9.1%), and no history of practice for Mammography (Okobia, 2006).

Majority of the participants who knew about breast cancer screening (78.5%) mentioned absence of symptoms as the main reason for not undergoing CBE and this is similar to the study Ethiopia (Befikadu Legesse,2014). The similarity could be due to the health seeking behavior of the two study areas and this showed woman does not practice unless they have symptoms. This study showed only (1.9%) had mammographic examination which is slightly higher than the study done in Uganda where all the women interviewed had not undergone any single mammogram (Kiguli-Malwadde, 2010). While the main reasons for non-practice of mammographic examination not having symptom and unavailability of service 86(54.1%) and 50(31.4%) respectively. While in the study of Uganda the lack of information about mammography and the high costs were reported. (Kiguli-Malwadde, 2010).

And the main reason mentioned for not having clinical breast examination (CBE) was not having symptoms 86.4% which was similar to the study done in Nigeria (Okwuoke, 2013).

This study reveals the very poor breast cancer screening practice with only 37.7% had practiced at least one screening method. These findings are similar to the study done in Nigeria where more than half had poor practice, having not been practicing any of the three screening methods (Okwuoke, 2013).

### **5.3. FACTORS ASSOCIATED WITH KNOWLEDGE AND PRACTICE OF BREAST CANCER SCREENING.**

Educational status, occupational status, socioeconomic was found to be significantly associated with the knowledge score of breast cancer screening on binary regression. While knowledge of breast cancer women were found significantly associated with the practice of breast cancer screening methods on logistic regression.

Even though not all who knew about the preventive strategies practiced it, there is a very strong indication that as level of knowledge increases practice increases. Another very strong association between the knowledge of breast cancer risk factors and signs and symptoms with practice of screening method was observed. Knowledge of the risk factors seems to be motivational to practice, probably because it helps people to estimate to what extent they are vulnerable. And this was similar to the study of done in Nigeria (Okwuoke, 2013).

Limited knowledge about basic facts about breast cancer, its risk factors, signs and symptoms inhibits breast cancer screening and this need to be improved through dissemination of information to the community. Focused educational programs are urgently needed to address this issue. Programs for women, especially those who have low education levels, do not work and spend most of their time at home, should be encouraged. For this purpose, the media (local written and oral, radio, television, soap operas, newspapers etc.) could be used. Through such programs, awareness of breast cancer, the importance of its early diagnosis, and prompt treatment can significantly increase. This study results show a huge gap in knowledge that must be overcome in order to promote ideal breast health practices and better prognosis.

## **CHAPTER 6. CONCLUSION AND RECOMMENDATIONS**

### **6.1. CONCLUSION**

This study has revealed that the prevalence of knowledge and practices of breast cancer screening is low. Specifically, the knowledge of women on risk factors, preventive measures, signs and symptoms and knowledge of breast cancer screening methods was poor. Considerable proportions of women have no information about breast cancer and its screening methods. Among those who have information about breast cancer screening only small proportions are actually practicing.

The participants' practices of breast cancer screening methods were relatively low. Educational level, socioeconomic status and occupation were found to be significant factors for the knowledge of breast cancer screening methods.

Knowledge of breast cancer was found significantly associated with the practice breast cancer screening methods.

### **6.2. RECOMMENDATIONS**

Based on the findings of this study, the following recommendations were formulated:

#### **Government level:**

- Government should be focused on increasing women's educational level.
- A standard screening guide line needs to be prepared and needs to be implemented in all health facilities.
- The media should let a wide range of time to provide comprehensive information about breast cancer and BCS as it can reach many individuals at a time.
- There should be regular monitoring and evaluation program in order to keep the health awareness and promotion program.

**Community level:**

- The community should be encouraged to practice early screening methods so as to prevent late diagnosis and other complications.
- Breast cancer survivors should be encouraged and empowered to teach and give real life experience to the large community using different press and mass Medias.
- The community health workers should also get training regarding breast cancer preventive measures, risk factors, treatment options and early detection methods to be able to give health education to the Rwandan women in their villages.

**Researchers:**

- Researchers should conduct further study by using strong study designs at the community level in different parts of the country to identify different socio demographic factors as well as in private institutions, NGOs and manager's views should be assessed.
- Generally it needs collaboration between researchers, community leaders, health care professionals, non-governmental organizations, policy makers and other concerned bodies. It is important to ensure the improvement of breast cancer screening awareness, perception, and practices of the women so as to reduce morbidity and mortality related to breast cancer among women of Rwanda.

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