AWARENESS OF BREAST CANCER RISK FACTORS AND EARLY DETECTION MEASURES AND ASSOCIATED FACTORS AMONG NURSES AND MIDWIVES AT MULAGO HOSPITAL

BY

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DECLARATION

I **Olemukan Robert Ekong** do declare that the work presented in this dissertation is my original work and has not been submitted for the award of a degree in any University/Institution.

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DEDICATION

This work is dedicated to my loving Mother Faith Tino for her unconditional support, love, care and commitment to my life, teaching me to love, being kind, and respect.

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LIST OF ABBREVIATION

ASR	– Age Specific Rate
BC	– Breast Cancer
BSE	- Breast Self Examination
CBE	- Clinical (Physician) Breast Examination
CDC	- Centre for Disease Control
CI	– Confidence Interval
FDGs	- Focused Group Discussion
HSSP II	-Health Sector Strategic Plan II
IRB	- Institutional Review Board
KII	– Key Informants Interviews
LR	 Logistic Regression
MAK	– Makerere University Kampala
MDG	- Millennium Development Goals
МоН	- Ministry of Health, Uganda
MUCHS	- Makerere University College of Health Sciences
OR	– Odds Ratio
WHO	- World Health Organisation

Abstract

Background: Breast cancer is the most common malignancy affecting women, and second cause of cancer death in the world, with more than one million cases occurring worldwide annually. The chance of a woman having invasive breast cancer some time during her life is about 1 in 8. The chance of dying from breast cancer is about 1 in 35. In Uganda, breast cancer is second most common cancer (23.4%), after Cervix uteri (45.8%). The five year breast cancer survival is 39% for advanced disease and 74% for early disease, with overall survival of 56%. This poor prognosis in Ugandans is most probably due to patients seeking medical attention, and presenting at late stage IV of the cancer; factors responsible for this late stage presentation are not systematically spelt out. **Objective:** To determine the awareness of breast cancer risk factor and early detection methods, and associated factors among nurses and midwives working in Mulago hospital Methodology: A cross-sectional study, which was carried out in Mulago National Referral Hospital from January to March 2009. A total of 405 nurses where interviewed using simple random sampling with proportional allocation to size of departments. The awareness of breast cancer risk factors and early detection awareness were categorized into good or poor on the basis of twelve key items.

Results: The awareness of breast cancer risk factors among nurses and midwives working in Mulago national referral and teaching hospital was low (09%). Awareness was increasingly associated with working experience, having cared for a breast cancer patient and continued education (OR= 2.20, 95% CI = 1.02-4.71), (OR= 5.49, 95% CI = 2.08-14.48), and (OR= 1.99, 95% CI = 0.79-5.02) respectively.

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The awareness of breast cancer early detection measures among nurses and midwives working in Mulago national referral and teaching hospital was low (25.4%). Awareness was increasingly associated with age, gender, marital status, experience, occupation, educational level, having cared for a breast cancer patient (OR=1.91, 95% CI = 1.12-3.26) and continued education.

Conclusion: The awareness of breast cancer risk factors and early detection measures was generally low among nurses and midwives working in Mulago national referral and teaching hospital were low. The age, gender, marital status, working experience, occupation, having cared for a breast cancer patient and continued education had a positive influence on the awareness of breast cancer risk factors.

These results provide important baseline information and may be used to develop tailored breast cancer education programs, increase primary and secondary prevention efforts, and evaluate the effectiveness of prevention programs.

CHAPTER ONE: INTRODUCTION

1.0 Background

Breast cancer is the most common malignancy affecting women, and second cause of cancer death; the sixth cause of death from disease in women of all ages, with more than one million cases occurring worldwide annually. Affluent societies carry the greatest risk, with incidence rates of greater than 80 per 100,000 populations per year [1]. The chance of a woman having invasive breast cancer some time during her life is about 1 in 8, and the chance of dying from breast cancer is about 1 in 35 [2,3].

In North America, Western Europe and Australia, breast cancer mortality rates have declined, mainly due to improvements in early detection and treatment, and high breast cancer awareness levels in the population, surveys and national screening programs. Five year breast cancer survival rates are higher than 70% in most developed countries and less than 40% for most developing countries; mainly due to low awareness levels, lack of access to early diagnosis and treatment options [1].

In Nigeria breast cancer trends were declining and frequency of hospital attendance has risen, reduced late presentation and this was attributed to several factors; increased awareness about breast cancer , improved early detection methods and usefulness of breast self examination [3,4,5].

The most pragmatic solution to early detection and prevention lies in breast cancer education of women to be able to judge their risk and take relevant measures. The important resources of dissemination of breast cancer knowledge to women are the health-care professionals, educational institutions and media. Among the healthcare professionals, female nurses/midwifes comprise the group most suited for this purpose because of their numbers, frequent contact with patients and values [6]. In Uganda, the largest numbers of clinical/medical staffs are nurses/midwifes, constituting 75.85% of the total staff, of which, a substantial number of nurses are female and according to the local government staffing levels for district health services, the nurses/midwifes are distributed up to least health center II [7] and it is also known that culturally, women patients are reluctant to go to male health care providers for problems such as breast diseases [8].

In Uganda, there are no studies which have been carried out to assess the awareness of breast cancer risk factors, and early detection measures among nurses and midwives. In an environment where there is no established national screening program for breast cancer, it is pertinent to assess the knowledge of breast cancer risk factors, and its early detection measures. National campaigns on cancer prevention and treatment is going on, but to effect these, and in view of the expanded roles nurses and midwives are expected to play in breast care, and embarking on improved breast cancer services and national prevention programs, it is important to assess nurses and midwifes' knowledge of breast cancer and early detection awareness. This study will be conducted among nurses working in Mulago National referral hospital, Uganda, to determine their awareness of breast cancer and early detection and associated factors.

1.2 Problem Statement

Breast cancer is second most common cancers in Uganda (ASR 23.4 per 100,000), after Cervix uteri (ASR 45.8 per 100,000) [3.9]., and the prognosis for most Ugandans patients is poor, most seeking medical attention and presenting late at stage IV of the cancer (58% poorly differentiated, 33% moderately differentiated and 9% well differentiated [10] and this could explain the poor 5-year survival of 56% [11].

Nurses and midwifes constitute 75.85% of the medical care professionals (HSSP II, 2007), the level of breast cancer risk factors and early detection awareness is not known and in view of the expanded roles nurses and midwives are expected to play in for National campaigns on breast cancer prevention and treatment, breast care, and embarking on improved breast cancer services and national prevention programs, and the helping role of nurses in promoting healthy behaviors in communities [6]. It's thus important to assess nurses and midwives' awareness of breast cancer risk factors, and early detection.

1.3 Conceptual Framework

The conceptual framework below shows the various factors that will be conceptualized to independently affect breast cancer risk factors and early detection awareness among the nurses and midwifes of Mulago national referral, research and teaching hospital. The factors were categorized into socio-demographic, individual, occupational, hospital/service factors.





1.4 Research Question

- I. What is the awareness level for breast cancer risk factors among nurses and midwives working in Mulago national referral hospital?
- II. What factors are associated with the breast cancer risk factors awareness?
- III. What is the awareness level for breast cancer early detection measures among nurses and midwives working in Mulago national referral hospital?
- IV. What factors are associated with the awareness of breast cancer early detection measures?

1.5 Study Objectives

General objective

The aim of this study is to determine awareness of breast cancer risk factor and early detection measures among nurses and midwives working in Mulago hospital.

Specific objectives

- I. To determine the awareness level for breast cancer risk factors among nurses and midwives working in Mulago national referral hospital?
- II. To determine what factors are associated with the breast cancer risk factors awareness?
- III. To determine what is the awareness level for breast cancer early detection measures among nurses and midwives working in Mulago national referral hospital?
- IV. To determine what factors are associated with the awareness of breast cancer early detection measures?

1.6 Study Justification

Uganda has reaffirmed its commitment to achieving the MDGs, through the national health policy, universal delivery of national minimum health care package; cluster 4: prevention and control of non-communicable diseases/conditions with targets of increasing community awareness on non-communicable diseases/conditions to 80%, and integration of prevention and management in the functions of 100% of health centers 4 [7.11.12]. The national health policy has not stated clearly national guidelines for breast cancer awareness, screening, and community intervention, including the role that can be played by health workers in community awareness and early detection. There is an urgent need for awareness of breast cancer and its early detection measures. Similarly, baseline reports on current level of knowledge would be vital to an effective awareness program, hence the need for these studies assessing level of awareness of breast cancer risk factors and early detection measures in the nurses and population.

Nurses and midwifes constitute 75.85% of the medical staff, and have an important role in the education of women in our country because they are more frequently in contact with patients (are distributed all over, up to the last level health centre II). It's also known that the natural helping role of nurses in promoting healthy behaviors in communities, women feel those more closely to ask something about the symptoms and screening of sex specific cancers such as breast cancer and gynecological cancers and thus, they can constitute a model of health promotion for women, despite of the absence of a role on a regular education program [6,7,11].

This study will include midwives, because they are in continuous contact with mothers, who are in risk group of getting breast cancer, and hence will be an important source of information for the mothers and expectant mothers during pre and post antenatal visits.

1.7 Study Significance

This study will be a baseline for Mulago hospital management and nursing/midwives schools, to help develop curriculum, continued training programs for nurses in relation to breast cancer. This study will also act as a baseline for policy makers as Uganda reaffirms its commitment to achieving MDG, through universal delivery of national minimum health care package; cluster 4: prevention and control of non-communicable diseases/conditions with targets of increasing community awareness on non-communicable diseases/conditions to 80%, and integration of prevention and management in the functions of 100% of health centers 4, hence develop national training program for nurses and midwives, as a tool to disseminate information to the general population for awareness, early detection and management at early stages of the cancer.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Breast cancer generally refers to a malignancy in women that arises from the terminal ductal-lobular units of epithelial tissue, which in the mature breast represent 10% of the total volume [1]. Worldwide breast cancer has many etiological factors, including family history of breast cancer, benign breast diseases, age, sex, hormones and reproductive history factors (early menarche, late or no pregnancy), western lifestyle (high caloric diet, lack of physical activity and related factors), ionizing radiation, drugs, agro-chemicals, gene mutations, alcohol, and smoking [1].

In Uganda, a study of cancer of breast, the 5-year survival showed that 23% had early disease (Stage 0-IIb) and 26% had metastatic disease. From breast cancer diagnosis, poorly differentiated was the most common pathological grade (58%) followed by moderately differentiated (33%) and well differentiated (9%) tumors and this is explained by poor levels of awareness in the population, lack of resources, lack of access to early diagnosis and treatment options in the country and lack of national breast cancer screening policy. The 5-year survival for early disease were 74% and 39% for advanced disease (p=0.001) [10].

Statistics from Kampala cancer registry, (a population-based registry catering for Kyadondo county), indicate that median age of a person diagnosed with breast cancer is 45 (annual incidence rate of 46.8 per 100,000), the trend increases with age, reaching highest at age group of 50 (77.6 per 100,000) [3]. At last count, in 1998, Uganda had

only two radiation units and one chemotherapy unit, and only about 5 percent of cancer patients had access to these facilities [11].

A study of cancer survival in Kampala, Uganda showed that, the differences in survival between Ugandan and black American patient populations was particularly dramatic for those cancer types for which early diagnosis and effective treatment is possible. The very poor prognosis of Ugandan patients is most likely explained by the lack of access to early diagnosis and treatment options in the country [11]. On policy level, the results underscore the importance of the consistent application of the national cancer control program guidelines as outlined by the WHO [11].

To prevent new cancers from starting, scientists look at risk factors and protective factors. Anything that increases your chance of developing cancer is called a cancer risk factor; anything that decreases chance of developing cancer is called a cancer protective factor. There are established known breast cancer risk factors and early detection/screening measures which include; family history of breast cancer, hormones and reproductive factors; ionizing radiation, diet and diet related factors, benign breast diseases; increasing with age (age at menarche), Gender (mainly female), lack of exercise. There are also four known methods for early detection; breast self examination (BSE), clinical breast examination (CBE), mammography (MMG), and Ultra sound [24]. Avoiding risk factors and increasing protective factors may lower risk but it does not mean that you will not get cancer [2].

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2.2 Awareness of Breast Cancer Risk Factors, and Early Detection

A study done among nurses in rural region of Turkey, found that the risk factors and symptoms of breast cancer were generally well known, except for early menarche (23.2%) and late menopause (28.8%). Most of the nurses (65.6%) considered that mammography decreases the mortality in breast cancer [14].

A study of breast cancer knowledge, attitudes and practice among nurses in Lagos Nigeria showed that the knowledge about symptoms, methods of diagnosis and BSE was generally very good. However, only 30% had had a CBE and 8% a mammogram within the past three years. 28% did not know how to estimate the risk of cancer and 61% believed they were not at risk [15]. In another related study, the leading score of information about breast cancer was elders, neighbors and friends and 63 (15.4%) acknowledged this source, while only 18 (4.4%) respondents acknowledged health workers as source. Only 54 (13.3) claimed to have heard about BSE however, and the leading source of information about BSE were health workers [16].

A study of cancer awareness in Nigeria population showed that only 32% knew that a breast lump was a warning sign of cancer, 58.5% were not aware of most warning signs, 9.8% knew of methods of detecting cancer and 50% did not know that cancer was curable when detected early. This low level of knowledge of warning signs and detection may be responsible for late presentation, with as many as 64% of patients presenting 6 months after the onset of symptoms [5,17].

A study done in the UK to asses women's knowledge about breast cancer risk and their views of the purpose and implications of breast screening found out that 45% of the women believed that screening prevents breast cancer. Women were of the opinion that

screening helps early detection, could result in less invasive treatment. 63% had no concerns about breast screening. 36% of women knew the lifetime risk of developing breast cancer, and the interpretation of numeric risks varied among women [8].

In Singapore, a study of knowledge and practice of breast cancer screening among public health nurses showed that median knowledge score was 9 and 58.3% of nurses scored \geq 9. 76.6% of nursing officer/higher nursing officers and 74.5% of midwives had knowledge scores \geq 9 compared with 57.3% of staff nurses and 40.8% of assistant nurses (p \leq 0.01). 60.1% of the nurses who were taught BSE scored \geq 9 (p \leq 0.01). For practice, 93.7% of nurses did BSE, 54.1% had CBE in the past one year and 50.2% had mammogram [<u>18</u>].

In Karachi, Pakistan, a cross-sectional survey of breast cancer risk factors knowledge among nurses in teaching hospitals revealed that 35% of nurses had good knowledge of risk factors while 40% had fair knowledge and 25% had had poor knowledge [19].

A study done in Amman, Jordan to asses breast cancer risk factors and screening awareness among women nurses and teachers found that the adjusted mean general awareness score for nurses was not significantly different from that of teachers (P =0.8470). Nurses were more aware than teachers of the importance of breast cancer screening and its techniques. The adjusted mean screening awareness score for nurses was 88.3%, compared with 73.1% for teachers (P < .0001) [20]. In Tehran, Iran, a study of BSE: knowledge, attitudes, and practices among female health care workers showed that 75% of the women knew about breast cancer prevalence, but only 27% knew that breast pain is not a symptom of breast cancer. Although 73% of the women did know that contact with a relative with breast cancer could not lead to development of breast cancer, the respondent's knowledge of risk factors was not satisfactory. With regard to women's attitudes toward BSE, the majority believed that it is not difficult and time consuming or troublesome (63% and 72%, respectively). 63% of the respondents claimed that they know how to examine their breasts, but only 6% performed BSE monthly [21].

2.3 Factors associated with awareness of breast cancer risk factors, and early detection

In Singapore, a study of knowledge and practice of breast cancer screening among public health nurses showed that statistically significant factors influencing knowledge scores were related to the nursing profession, namely; nursing qualification, current nursing post and current work place. On multivariate analysis, significant factors affecting practice of CBE were marital status (prevalence rate ratio 1.94, 95% CI 1.27-3.15), doctors gender (PRR 1.35, CI 1.04-1.75) and those affecting mammogram were age group (PRR 1.78, CI 1.27-2.48), marital status (PRR 1.63, CI 1.03-2.59), history of breast disease (PRR 1.51, CI 1.06-2.16) [6].

A study carried out in Pakistan to assess breast cancer risk factor knowledge among nurses in a teaching hospital found out that knowledge is associated with nursing school status, professional breast cancer exposure and self history of CBE. Graduates from private nursing schools (a OR = 4.23, 95% CI: 2.93, 6.10), nurses who had cared for breast cancer patients (a OR =1.41, 95% CI: 1.00, 1.99), those having received a breast self examination themselves (a OR = 1.56, 95% CI: 1.08, 2,26) or those who ever examined a patients breast (a OR = 1.87, 95% CI: 1.34, 2.61) were more likely to have good knowledge [19].

A study done in Lagos, Nigeria to assess breast cancer knowledge, attitudes and practice among nurses showed that the use of breast cancer screening methods was significantly associated with knowledge of the subject (p=0.03) and previous care of breast cancer patients [<u>15</u>].

A study in the UK on women's knowledge about breast cancer risk and their views of the purpose and implications of breast screening showed that there was an association between inaccurate knowledge and lower formal education (p=0.05) [8].

A study done in Amman, Jordan to asses breast cancer risk factors and screening awareness among women nurses and teachers; Analysis of covariance indicated that family history was associated with general breast cancer awareness. Profession, age, and family history significantly influenced breast cancer screening awareness. The average percentage of correct responses to general breast cancer awareness was adjusted for select covariates (adjusted means) [20].

In Tehran, Iran, a study of BSE: knowledge, attitudes, and practices among female health care workers showed that the practice of BSE was significantly associated with age (p=0.01), the level of education (p<0.0001), and knowledge of how to examine the breasts (p<0.0001) [21].

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter represents the methods that were used to carry out this study. It outlines the study design, study setting, sampling procedures, sample size estimation, measurements, data collection, data management and analysis as well as quality control measures and ethical consideration.

3.1 Study Design

This was a cross-sectional study, which used quantitative and qualitative methods of data collection conducted between January and March 2009.

3.2 Study Setting

The study was conducted in Mulago Hospital, Uganda's National Referral and Teaching hospital. It has a total bed capacity of 1500 beds. It is the teaching hospital for Makerere University Faculty of Medicine, and home for the school of Nursing and Midwifery. It works in collaboration with other universities worldwide, and is staffed by over 1,261 nurses and midwifes (1,114 nurses and 147 midwives). It offers treatment and quality medical services to Uganda at large. It's located in Kampala which is the capital city of Uganda with the estimated population of over 1,189,142 persons composed of all ethnic groups in Uganda [8].

3.3.0 Population

3.3.1 Target Population

All Nurses and midwifes working in Regional Referral hospitals in Uganda

3.3.2 Accessible Population

Nurses and midwifes who worked with Mulago hospital from January to March 2009

3.3.3 Study Population

Nurses and midwifes working in Mulago hospital who met the eligibility criteria

3.4.0 Eligibility Criteria

3.4.1 Inclusion

Nurses and midwifes working in Mulago Hospital in different departments, who gave informed consent to participate in the study, from January to March 2009

3.4.2 Exclusion

Nurses or midwives who were not in position to give information due sickness or in leave at the time of interviews

3.5 Sample Size Estimation

The sample size was calculated using the formula by Kish Leslie (1965) for descriptive studies (Binary outcome).

$$\mathbf{n} = \mathbf{z}^2 \mathbf{p} \mathbf{q} / l^2.$$

Where; $\mathbf{n} =$ sample size

z = the z-score (1.96) on normal standard variable curve corresponding to 95% confidence level.

 \mathbf{p} = estimated average breast cancer risk factors and early detection awareness (at $\mathbf{p} = 0.5$ for no estimate in the region, which is a very conservative estimate, to get maximum sample size).

l = allowable error (in this case 5%).

$$\mathbf{q} = 1 - \mathbf{p} = 1 - 0.5 = 0.5$$

Hence; $\mathbf{n} = 1.96^2 \ge 0.5 \ge 0.5 \times 0.5 / 0.05^2$, therefore, $\mathbf{n} = 384.16$.

Hence, a total of 385 nurses and midwifes were interviewed.

For determining factors associated with awareness of breast cancer risk factors, the formula below was used to compute sample size for one group.

$$n = \left[\frac{z_{\alpha/2}\sqrt{p_0q_0} + z_\beta\sqrt{p_aq_a}}{\Delta}\right]^2$$

Where;

n = sample size

 $\mathbf{z}_{\alpha/2}$ = the z-score (1.96) on normal standard variable curve corresponding to 95% confidence level.

 $\mathbf{z}_{\beta} = 0.84$ (is the one-tailed z- score on standard normal curve)

 P_o = estimated average for good awareness of breast cancer risk factors and early detection (at p = 0.35) [22].

 P_a = estimated average for poor awareness of breast cancer risk factors and early detection (at p = 0.65) [22].

$$\mathbf{q}_0 = 1 - \mathbf{p}_0 = 1.0 - 0.35 = 0.65; \ \mathbf{q}_a = 1 - \mathbf{p}_a = 1.0 - 0.65 = 0.35$$

 $\Delta = \mathbf{p}_{\mathbf{a}} - \mathbf{p}_{\mathbf{o}} = 0.65 - 0.35 = 0.3$, for one sample

Hence **n** = $[(1.96 \times \sqrt{(0.35 \times 0.65)} + 0.84 \times \sqrt{(0.65 \times 0.35)})/(0.3)^2 = 19.9 \approx 20$

Since this sample size was less than that for descriptive study, thus we considered the sample size for the descriptive part of 385 nurses and midwives, to also cater for the analytical part of the study.

3.6 Sampling Procedure

Simple Random with Probability proportional to size sampling technique was used. The list of the nurses was obtained from the hospital. The sampling was according to departments

Purposive sampling method was used to select participants for both Focus group discussion and key informants interviews. Special interest was focused to training tutors, in charge nurses, assistant commissioner nursing and other relevant persons

3.7 Measurements

• Dependent variable:

awareness of Breast cancer risk factors, and early detection; eight key items comprised breast cancer risk factors awareness: knowledge regarding; family history of breast cancer; hormones and reproductive factors; ionizing radiation; diet and diet related factors; benign breast diseases; increasing with age (age at menarche); Gender; lack of exercise, and four items for early detection awareness; knowledge on BSE, CBE, MMG, and Ultra sound. These are established risk factors and early detection/screening measures each was given a score of 1 [24]. The total score range from 0 to 8, and 0 to 4 respectively, which were categorized into poor and good awareness level on the basis of twelve key items as follows:

Nurses or midwifes who got score of less or equal to 4 (BC risk factors), and less or equal to 2 (BC early detection) were graded **poor awareness** Nurses or midwifes who got score greater than 4 or 2 respectively were graded **good awareness**

- Independent variables:
- Social-demographic: age, sex, marital status, religion, educational level
- Individual factors: training institution, family history of BC, source of information
- Occupational factors: experience, training/continued education, previous care of breast cancer patients
- Hospital/service factors: department, availability of training centers, lack of information dissemination programs

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3.8 Data Collection, Management and Analysis

3.8.1 Data Collection

Quantitative data: interview using interview-administered semi structured questionnaire for data collect. The research team comprised of the principal investigator (PI) and four trained research assistants [RA] (three nurses and one midwife). The PI together with the RA conducted the interview.

Qualitative data: 5 focus group discussions (FDGs) each comprising of 6 nurses who were not interviewed and this was per department; and key informants interview (KII) was used, mainly considering; nursing training tutors, department, in-charge nurses, assistant commissioner of nursing (ACN), head of department nursing at Makerere university faculty of medicine; to collect qualitative data.

3.8.2 Data Management

Data from semi-structured questionnaire interviews were cleaned and entered in the computer using EPI-Data software. Password was required to access the data. Hard copy data and filled questionnaires were stored under lock and key. The data was exported to SPSS v11 statistical program for analysis. Double entry/checks to ensure quality of data entered

Data from FDGs and KIIs was coded manually, transcribed to get themes, and these results were then triangulated with the quantitative data to get deeper understanding.

3.8.3 Data Analysis

3.8.3.1 Quantitative Data

Univariate analysis

This was used to describe the background characteristic profile of the respondents. Continuous variables like age were summarized using descriptive statistics like means, median, standard deviation and range. Categorical variables were summarized into frequencies, percentages and bar graphs. The breast cancer risk factors and early detection awareness, (poor, and good) were determined as percentages.

Bivariate analysis

In order to determine the factors associated with awareness of breast cancer risk factors and early detection methods, bivariate analysis was performed to asses for the association between dependent and independent variables. The odds ratio (OR) was the effect measure, and Chi square test was used as test of significance to determine association between dependent variable/outcome and the independent variables. A p-value of 0.05 or less and a 95% confidence interval limits was used to test for statistical significance

Multivariate analysis

Logistic regression was used, and variables with p-values ≤ 0.2 at bivariate level were considered for multivariate analysis to test for confounding and interaction (p ≤ 0.2 was less stringent to cater for negatively confounding variables whose effect reduces with association). The backward LR method was used to get the most significant variables in the multivariate model. To test for interaction, product terms were formed for these variables which remained in the model and other basic variables, and using the chunk test to compare the negative two log likelihood (-2LL) of the full model with product terms and the reduced model containing only basic variables. The difference was equivalent to a chi square at degrees of freedom equal to difference in number of parameters of full and reduced model. Interactions between variables was considered present when the difference between -2LL was significant (at $p \le 0.05$). Variables which had gone out of the multivariate model using the backward LR method were then assessed for confounding (i.e. for factors that are not interacting). Hence, Confounding was assessed for factors that were not interacting. The odds ratios of model with each of these variables (adjusted OR) were compared to model without the variables (crude OR), and Confounding was considered present when the difference between crude and adjusted odds ratios was greater than or equal to 10%.

3.8.3.2 Qualitative Data

To obtain in-depth information and deeper understanding about the responses given in the quantitative interview, 2 FDGs and 6 KIIs were conducted. Data from FGDs and KIs were transcribed, coded manually, and themes identified upon which this data was analyzed. Results were triangulated with quantitative data to get deeper understanding of the information collected.

3.9 Quality Control

To increase the accuracy of data collection, Research assistants were recruited and trained on the basics of data collection and guidelines for the flow of interview, the questionnaire was pre-tested prior to data collection to make sure it was exhaustive. There were periodic study meetings to review collection process, and evaluate the study. Questionnaires were examined at end of each day to ensure that they are correct and complete, and stored safely under lock and key. Skilled moderator for FDG and KII, note taker as interview/discussion secretary and camera was used to ensure quality control of qualitative data.

3.10 Ethical Considerations

Permission to carry out the study was obtained from the CEU, Makerere University College of Health Science Research and Ethics committee (MUCHS-IRB), Mulago Hospital Research Council and National Council of Science and Technology. Informed consent was sought and respondents assured of the confidentiality of the information.

CHAPTER FOUR: RESULTS

4.0 INTRODUCTION

This study was conducted between January and March 2009 at Mulago National Referral hospital. A total of 405 nurses and midwives were recruited into the study in order to answer the objectives of the study, to determine the awareness of breast cancer risk factors and early detection measures and associated factors. To cater for non response, incomplete questionnaires, and lost questionnaires we added 10% to the total sample to get the finals 405 respondents. Five focus group discussions each comprising of 6 nurses and midwives, and three key informant interviews were held with Assistant Commissioner Nursing, Principle Senior Nursing Officer and ward managers

4.1 CHARACTERISTICS OF THE STUDY RESPONDENTS

Figure 2: Age distribution of 405 nurses and midwives



The respondents age distribution was normally distributed, with mean of 35.7 years (SD=9.89)

Demogra	phic characteristics		
Variable		Frequency	Percent
Gender			
	Male	44	11.0
	Female	357	89.0
Marital st	atus		
	Single	187	46.6
	Married	191	47.6
	Divorced	15	3.7
	Widowed	8	2.0
Religion			
	Catholic	118	29.1
	Protestant/Anglican	126	31.1
	Muslim	51	12.6
	Born again/Saved	102	25.2
	7th day adventist	8	2.0
Highest Education level			
	Certificate	196	48.4
	Diploma	182	44.9
	Degree	19	4.7

Table 1 Characteristics of the respondents

The highest number of the respondents (89%) were female, and 47.6% were married; the educational level with the highest percentage was certificate in nursing(48.4%). Details on the characteristic profile of the respondents are shown in table 1 above.

Table 1 Continued

Health service characteristics				
Variable		Frequency	Percent	
Occupatti	ion			
	Midwife	107	26.4	
	Nurse	276	68.1	
	Both	22	5.4	
Department				
	Surgery	167	43.4	
	0bs/gyn	79	20.5	
	Medicine	87	22.6	
	Peadiatrics	44	11.4	
	Radiology	4	1.0	
	Cancer Institute	4	1.0	
Ever suffered from breast cancer				
	YES	3	0.7	
	NO	402	99.3	
Ever cared for breast cancer patient				
	YES	184	45.9	
	NO	217	54.1	
Ever attended training course on BC and prevention				
	YES	30	7.4	
	NO	375	92.6	
Believe fo	or professions important in BC	prevention		
	YES	385	96.0	
	NO	16	4.0	

Out of a total of 405 respondents, 68.1% were nurses, 43.4% were from the department of surgery. Of the 405 respondents, 0.7% had ever suffered from breast cancer,45.9% had ever cared for breast cancer patient, and 7.4% of the respondents had attended a training cource on breast cancer prevention. Details on the characteristic profile of the respondents are shown in table 1 above.

Table 1: Continued

Variable	Frequency	Percentage		
Institutions attended to				
Mulago School of Nursing and Midwifery	236	54.3		
Nsambya nursing school	31	7.1		
Mengo nursing school	24	5.5		
Makerere university	4	0.9		
Agakhan University	23	5.3		
Rubaga Nursing School	20	4.6		
Butabika Psychiatric Nursing School	39	9.0		
Jinja Nursing School	15	3.4		
other training institutions*	43	9.9		
Source of BC risk factors and early detection 1	Information			
Training institution	259	27.0		
From relative/friend	78	8.1		
During training course	263	27.4		
From work/medical personnel	191	19.9		
From mass media	129	13.4		
From organized workshop/ training	40	4.2		

* Mbarara University, & Nkozi university; Kiwoko, Masaka, Arua, & Lira nursing schools

The biggest percentage of the respondents (54.3%) had attended Mulago School of Nursing and Midwifery, and the most common source of information for awareness of breast cancer risk factors and early detection measures was during the training course (27.4%). Details on the characteristic profile of the respondents are shown in table 1 above.

Variable	Fequency	Percent			
Breast Cancer prevention methods					
Exercise/diet	118	13.7			
Screening	288	33.4			
Genetic testing	77	8.9			
Chemoprophylaxis	81	9.4			
Preventive surgery	57	6.6			
Population awareness	240	27.9			
Early symptoms of BC					
Breast lump	397	30.9			
Axillary mass	241	18.8			
Deformation of the breast shape	234	18.2			
Ulceration and/or oedema over breas	t 198	15.4			
Bloody nipple discharge or erythema	213	16.6			
Early detection methods to be promoted					
Promotion of BSE in the mass media	322	36.1			
Mammography	266	29.9			
Clinical breast examination (CBE)	303	34.0			

 Table 2: Awareness of breast cancer among nurses and midwives in Mulago

 Hospital

The most known ways of breast cancer prevention was early screening (33.4%), followed by population awareness (27.9%) of breast cancer, and Exercise/diet check (13.7%). The best known early symptom of breast cancer was Breast lump (30.9%), and the early detection method which should be promoted in the community was Breast Self Examination (BSE) (36.1%). The details of all the descriptive profile is shown in table 2 above.

Variable	Freque	ncy Percent
What Respondents knew about BSE		
Necessary for detecting lumps	365	49.2
should be done monthly	218	29.4
should be done 10 days after menses	159	21.4
What Respondents knew about CBE		
Done by health professional	334	75.2
Done annually	110	24.8
What Respondents knew about Mamography		
should be done yearly	155	30.3
Not painful procedure	30	5.9
Detects cancer with/without palpable mass	327	63.9

Table 3: Descriptive profile of awareness of early detection methods

Table 4: Descriptive profile for reasons for not performing early detection methods

Variable	Freque	ncy Percent
Reasons for not Performing BSE		
Not enough time to perform BSE	31	20.8
Forgot perform BSE	54	36.2
Do not know how to perform BSE	60	40.3
BSE is unnecessary	4	2.7
Reasons for not performing CBE		
Not enough time	42	10.6
Few specialists	130	32.8
No service offered	156	39.4
Forgot it	44	11.1
CBE is embarrassing to me	16	4.0
CBE is unnecessary	8	2.0
Reasons for not having mammography		
Not enough time	35	7.2
Few Service Centres	220	45.0
Forgot it	39	8.0
Mammography is costly	183	37.4
CBE is unnecessary	12	2.5

The most common reasons given by the respondents was mainly lack of specialist, lack of service centers and the costs of performing the breast cancer detection methods as shown in the table 4 above

4.2 Awareness of Breast cancer risk factors





Awareness of Breast Cancer Risk Factors

From the study 369 (91.11%) of the nurses and midwives had poor awareness as compared to 36 (8.89%) who had good awareness

During focused group discussions (FDGs), most of the participants acknowledged that the nurses have clear job descriptions and assigned roles and responsibilities. Furthermore there are few specialists and limited continued education programs to increase the knowledge of the nurses on breast cancer and its risk factors. The nurses and midwives in department of peadiatrics and obstetrics and gynecology had never had any departmental training program in relation to breast cancer. Nurses and midwives in department of surgery, especially the nurses in the breast clinic have organized training in breast cancer, and have specialized personnel. Breast cancer, its risk factors and prevention measures is not comprehensive in the school curriculum for nurses and midwives.

From the key informants interviews (KII), most said that there was lack of capacity building, training programs and sensitization workshops for the health care professionals in the hospital. Further lack of adequate human resources meant that most nurses and midwives were located to the areas requiring more attention and staff, to more pressing problems, conditions and diseases dominating the hospital.

Table	5:	Individual	factors	used	for	assessing	awareness	of	breast	cancer	risk
factor	5										

Varia	able	Frequency	Percent
Risk	factors of BC		
	Family history of breast cancer	300	20.0
	Diet and diet related factors	116	7.7
	Hormones and reproductive factors	246	16.4
	Ionizing radiations	159	10.6
	Benign breast diseases	248	16.6
	Age at menarch	148	9.9
	Gender	227	15.2
	Lack of exercise	54	3.6

The commonly known breast cancer risk factors was family history of breast cancer (20%), and the least known risk factor was lack of exercise (3.6%), followed by diet and diet related factors (7.7%), and then increasing with age (9.9%), as shown in table 5 above.

4.3 Factors associated with awareness of breast cancer risk factors

Bivariate analysis was performed to determine the factors associated with the awareness of breast cancer risk factors. Awareness was considered at two levels, poor or good awareness level as explained in the methodology chapter, under measurements.

Variable		OR	95% C.I.	for OR	p-value
			Lower	Upper	
Age group	0				
	20-29	1.00			
	30-35	0.98	0.36	2.64	0.96
	36-43	0.89	0.32	2.46	0.82
	44+	1.30	0.50	3.38	0.59
Gender					
	Male	1.02	0.34	3.02	0.98
	Female	1.00			
Marital St	tatus				
	Single	1.00			
	Married	437.12	0.00	673248.00	0.78
	Divorced	333.71	0.00	514265.00	0.79
	Widowed	1.00	0.00	3.31	1.00
Religion					
	Catholic	1.00			
	Protestant/Anglican	47.08	0.00	5164.22	0.77
	Muslim	268.35	0.00	289937.80	0.67
	Born again/Saved	114.19	0.00	125390.30	0.71
	7th day adventist	98.86	0.00	10759.50	0.72
Departme	ent				
	Surgery	1.00			
	0bs/gyn	1051.57	0.00	266227.43	0.89
	Medicine	1777.48	0.00	450261.82	0.88
	Peadiatrics	868.37	0.00	220218.88	0.89
	Radiology	1.00	0.00	1.94	1.00
	Cancer Institute	1.00	0.00	9.26	1.00

 Table 6: Bivariate analysis of awareness of breast cancer risk factors and independent variables

Breast Cancer risk factors awareness

Age group was categorized using quartile ranges which showed uniform distribution of participants. We got large odds rations because same cells in the subgroup categories had few numbers in them

Variable		OR	95% C.I.	95% C.I.for OR	
			Lower	Upper	
Years wo	rked (Experien	ice)			
	0-3	1.00			
	4-7	0.51	0.16	1.61	0.25
	8-14	1.85	0.75	4.54	0.18
	15+	0.90	0.31	2.58	0.84
Occupatio	on				
	Midwife	1.00			
	Nurse	2.65	0.33	21.43	0.36
	Both	1.90	0.25	14.77	0.54
Highest E	ducational Lev	vel			
	Certificate	1.00			
	Diploma	135.18	0.00	863778.90	0.72
	Degree	691.82	0.00	438717.00	0.64
Ever care	d for BC patier	nt			
	YES	1.73	0.87	3.47	0.12
	NO	1.00			
Continue	d education or	n BC			
	YES	4.51	1.84	11.04	0.00
	NO	1.00			

Table 6: Continued

We got large odds rations because same cells in the subgroup categories had few numbers in them

The nurses and midwives who had ever cared for a breast cancer patients were more likely to have good awareness (OR=1.73, 95% CI=0.87-3.47), those with experience of 8-14 years were more likely to have good awareness (OR=1.85, 95%CI=0.75-4.54), and those with record to continued training on breast cancer (OR=4.51, 95% CI=1.84-11.04). By occupation, nurses had a high risk of good awareness (OR=2.65 CI=0.33-21.43). Higher educational level, especially a university degree was associated with good awareness of breast cancer risk factors (OR=691.82 CI=438717).

Results for association between awareness of breast cancer risk factors and independent variables are shown in table 6 above.

RESULTS FROM THE MULTIVARIATE ANALYIS

Variables with p-values ≤ 0.2 at bivariate level were considered for multivariate analysis and these included; years worked (Experience), ever cared for breast cancer patient and continued breast cancer education/training

Variables		OR	95% CI	for OR	p-value
			Lower	Upper	
Ever cared	l for BC pt				
	Yes	2.20	1.02	4.71	0.04
	No	1.00			
Continue	d educati	on on BC			
	Yes	5.49	2.08	14.48	0.00
	No	1.00			
Yearks Wo	orked (Exp	erience)			
	0-3	0.57	0.17	1.85	0.35
	4-7	1.99	0.79	5.02	0.15
	8-14	1.01	0.34	2.99	0.98
	15+	1.00			

 Table 7: Logistic regression for awareness of breast cancer risk factors

Caring for breast cancer patients, continued education on breast cancer and years worked (working experience) were significantly associated to good awareness of breast cancer risk factors (OR= 2.20, 95% CI = 1.02-4.71), (OR= 5.49, 95% CI = 2.08-14.48), and (OR= 1.99, 95% CI = 0.79-5.02) respectively

The details of association between awareness of breast cancer risk factors and

independent variables are shown in table 7 above.

4.4 Awareness of Breast cancer Early detection Measures

Figure 4: Percentage awareness level of breast cancer early detection measures



Awareness of early detection methods

From the study 302 (74.57%) of the nurses and midwives had poor awareness as compared to 103 (25.43%) who had good awareness.

From the key informants interview, and focused group discussions (FDGs), lack of sensitization, early detection equipments, and cost of screening have indirectly affected the awareness of breast cancer early detection methods (in Mulago there is only one ultrasound, mammography and x-ray machine servicing the entire population visiting the radiology department (Respondent, FDG Radiology Dept). Breast cancer early detection methods are not comprehensive in the school curriculum for nurses (Respondent KII Nursing School).

Early detection methods

Variable	Frequency Percent
Methods for detection of BC	
BSE	281 38.8
CBE	114 15.7
Mammography (MMG)	253 34.9
Ultra sound	77 10.6

 Table 8: Individual factors used for assessing awareness of breast cancer early detection measures

Breast Self Examination (BSE) Clinical Breast Examination (CBE)

The commonly known breast cancer early detection method was Breast Self Examination (38.8%), and least known method was Ultrasound (10.6%), followed by Clinical breast examination (CBE) (15.7%), and then Mammography (34.9%), as shown in table 8 above.

4.5 Factors associated to awareness of breast cancer early detection measures

Bivariate analysis was performed to determine the factors associated with the awareness of breast cancer early detection measures. Awareness was considered as poor or good.

Variable		OR	95% C.I.f	or OR	p-value
			Lower	Upper	
Age group)				
	20-29	1.00			
	30-35	0.35	0.18	0.70	0.00
	36-43	0.42	0.22	0.82	0.01
	44+	1.21	0.67	2.18	0.53
Gender					
	Male	1.77	0.92	3.43	0.09
	Female	1.00			
Marital St	atus				
	Single	1.00			
	Married	0.45	0.11	1.86	0.27
	Divorced	0.25	0.06	1.04	0.06
	Widowed	0.25	0.04	1.63	0.15
Religion					
	Catholic	1.00			
	Protestant/	543.08	0.00	586077.40	0.63
	Muslim	253.16	0.00	273573.30	0.67
	Born again,	559.05	0.00	605743.50	0.63
	Seventh da	670.87	0.00	724131.70	0.62
Departme	ent				
	Surgery	1.00			
	0bs/gyn	541.20	0.00	216404.00	0.73
	Medicine	71.56	0.00	289737.00	0.82
	Peadiatrics	1090.16	0.00	436309.00	0.70
	Radiology	503.15	0.00	202108.00	0.73
	Cancer Inst	1.00	0.00	1.16	1.00

 Table 9: Bivariate analysis of awareness of breast cancer early detection measures and independent variables

We got large odds rations because same cells in the subgroup categories had few numbers in them

Variable		OR	95% C.I.fo	r OR	p-value
			Lower	Upper	
Years wo	rked (Experier	ice)			
	0-3	1.00			
	4-7	0.31	0.16	0.58	0.00
	8-14	0.36	0.19	0.66	0.00
	15+	0.45	0.24	0.85	0.01
Occupatio	on				
	Midwife	1.00			
	Nurse	0.28	0.10	0.73	0.01
	Both	0.43	0.18	1.04	0.06
Highest E	ducational Lev	/el			
	Certificate	1.00			
	Diploma	0.22	0.08	0.58	0.00
	Degree	0.15	0.06	0.42	0.00
Eversuffe	ered of BC				
	YES	0.01	0.00	50.83	0.69
	NO	1.00			
Ever care	d for BC patie	nt			
	YES	2.43	1.54	3.86	0.00
	NO	1.00			
Ever atte	nded BC traini	ng Works	shop		
	YES	0.43	0.15	1.26	0.12
	NO	1.00			

Table 9: Continued

The nurses and midwives who had ever cared for breast cancer patients were more likely to have good awareness (OR 2.43, 95% CI = 1.54-3.86). Good awareness decreased with experience (OR=0.36, 95%CI=0.19-0.66). Results for association between awareness of breast cancer early detection measures and independent variables are shown in table 9 above.

RESULTS FROM THE MULTIVARIATE ANALYIS

Variables with p-values ≤ 0.2 at bivariate level were considered for multivariate analysis and these included; age group, gender, marital status, highest educational level, years worked (Experience), occupation, ever cared for breast cancer patient and continued breast cancer education/training

 Table10:
 Logistic regression for awareness of breast cancer early detection

 measures

Variables		OR	95% CI	95% CI for OR		
			Lower	Upper		
Ever cared	l for Breast Can	cer Patient				
	YES	1.91	1.12	3.26	0.02	
	NO	1.00				
Age group						
	20-29	1.00				
	30-35	0.21	0.09	0.49	0.00	
	36-43	0.38	0.17	0.85	0.02	
	44+	1.56	0.79	3.06	0.20	
Marital St	atus					
	Single	1.00				
	Married	0.98	0.21	4.59	0.98	
	Divorced	0.29	0.06	1.35	0.12	
	Widowed	0.26	0.03	1.93	0.19	
Highest ec	lucational level					
	Certificate	1.00				
	Diploma	0.08	0.02	0.32	0.00	
	Degree	0.07	0.02	0.27	0.00	

Caring for breast cancer patients, was significantly associated to good awareness of breast cancer early detection measures (OR=1.91, 95% CI = 1.12-3.26)

The details of association between awareness of breast cancer early detection measures and independent variables are shown in table 10 above.

CHAPTER FIVE: DISCUSSION

5.1 AWARENESS OF BREAST CANCER RISK FACTORS

The findings in this study have shown that the nurses and midwives in Mulago National Referral hospital had poor awareness of breast cancer risk factors. Overall, the awareness of breast cancer risk factors was poor (9%), i.e. 9 in every 100 nurses and midwives were aware of breast cancer risk factors. The awareness of breast cancer risk factors among the nurses and midwives of Mulago is low and is similar to that seen in other developing countries like Nigeria, Pakistan, and Jordan [15,19,20]. This could be explained by lack of capacity building, training programs and sensitization workshops for the health care professionals in the hospital. Further lack of enough human resource meant that most nurses and midwives were located to the most pressing conditions and diseases dominating the hospital

The few studies on breast cancer in Uganda have focused on prevalence, clinical presentation by patients and cancer of the breast 5-year survival [11]. Though a few more recent newspaper articles have tried to address issues of knowledge among healthy populations, we have not found any association with awareness among the nurses and midwives. The study results have shown that over three quarters (96%), of all the nurses interviewed, believed that their profession is an important source of information to the public, early detection through screening and population awareness. Nevertheless, studies from developed countries show that attitudes and orientation of healthcare providers are important determinants of use of breast cancer screening programs [24,25].

The nurses and midwives in our study were very knowledgeable in several aspects of breast cancer. As expected, they were able to recognize most symptoms, 30.9% recognized breast lump as a symptom of breast cancer.

It is conceivable that risk factor awareness is mostly acquired during classroom teaching compared to exposure at the workplace, mass media information and training workshops. The nurses and midwives work with patients so they are mainly exposed to symptoms and signs of disease and to treatment outcomes rather than to the development process of early detection of the disease especially for non-communicable diseases such as cancer.

The low level of risk factor awareness among nurses and midwives in the developing countries is suggestive of insufficient emphasis on the importance of primary prevention in the nursing curricula. In spite of rigorous efforts towards improving medical education in the developed countries, it has been realized that healthcare professionals including nurses are not adequately educated about cancer risk factors, risk assessment and cancer prevention [26].

Awareness of Breast cancer risk factor among nurses and midwives is important so that they can provide appropriate screening recommendations to women with a high risk profile, especially in the Ugandan context where breast cancer screening is not a national phenomenon.

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5.2 Factors associated with awareness of breast cancer risk factors

The nurses and midwives who had ever cared for a breast cancer patient had a high risk of good awareness which was statistically significant (OR = 2.2, 95% CI=1.02-4.71). Continued education of nurses and midwives, was strongly associated with good awareness of breast cancer risk factors (OR = 5.49, 95% CI=2.08-14.48). Considering the working experience, the nurses with experience of 4-7 years were found more to have good awareness (OR = 1.99, 95% CIV=0.79-5.02), and it tended to decrease as the number of years worked increased. These results suggest that nurses and midwives who had ever cared for breast cancer patient, ever had training on breast cancer and those who had worked for 4-7 years by virtue of exposure, specialized training and years worked, had more awareness of breast cancer risk factors

5.3 Awareness of breast cancer early detection methods

The overall awareness of breast cancer early detection measures was low (25%) that is, 25 of every 100 nurses and midwives were aware. The awareness of breast cancer early detection methods among the nurses and midwives of Mulago is low and is similar to that seen in other developing countries like Nigeria, Pakistan, and Jordan [15,21]. Given the lower incidence of breast cancer in the Uganda, [3], lack of national policy on screening, sensitization, coupled with the lack of specialist, service/care centers, this low awareness could be expected.

From the findings, the least known method of early detection was ultrasound followed by clinical breast examination and this is expected since ultrasound, CBE, mammography is not readily available to this population, few specialist and expensive methods as given by

the respondents. This could be because most of the respondents who knew the early detection methods, said that they were expensive, few specialists to refer to, and few screening centers and lack of national awareness and screening campaign program Other studies have also shown that generally awareness of breast cancer early detection methods was low, and the most common known method was BSE. Mammography, Ultrasound and CBE were not commonly known and was attributed to lack or absence of such services in the respective countries and also lack of specialized consultants on breast cancer [15,16,19,20].

5.4 Factors associated with awareness of breast cancer early detection methods

The nurses and midwives who had ever cared for a breast cancer patient were found to have good awareness which was statistically significant (OR = 1.91, 95% CI=1.12-3.26). Results show that good awareness level of breast cancer early detection measures tend to increase with age of the respondents. From the findings, awareness of breast cancer early detection measures showed a weak association with educational levels, and the age of the respondents.

Other studies have shown that, the factors influencing awareness scores were related to the nursing profession, namely; nursing qualification, current nursing post and current work place, age group, marital status, history of breast disease, nursing school status (private and government), professional breast cancer exposure and self history of CBE, lower formal education [6.8.15.19].

Further, other related studied of awareness have indicated that family history was associated with general breast cancer awareness. Profession, age, and family history significantly influenced breast cancer screening awareness. The findings also show that there was significant associated with age, the level of education, and knowledge of how to examine the breasts [20,21].

Implications of the findings

These results provide important baseline information about breast cancer awareness. Such information may be used to develop tailored breast cancer education programs, increase primary and secondary prevention efforts, and evaluate the effectiveness of prevention programs. In Uganda, nurses and midwives compose over 75% of medical personnel and are in continuous touch with patients up to health center II according to national health care delivery system and hence can mainly be involved with secondary prevention efforts. For breast cancer, primary prevention includes educating women on breast cancer risk factors and influencing behavior change, whereas secondary prevention includes screening for and early detection of the disease.

5.5 Limitations of the study

Different scholars have used different measurement or categorization scale of awareness level and hence our scale of measurement could be varying since there was no standard scale of measure.

There was also limitation of small numbers in each cell of sub categories during bivariate and multivariate analysis, resulting into high value OR. This is because some variables where removed on the way, during the analysis, coupled with categorization of the remaining variables into subgroups

Since the study was carried out in the national referral hospital, there is possibility of selection bias, as this does not represent what happens in other health centers. No record of number and characteristics of people that refused to participate in the study.

CHAPTER SIX: CONCLUSION AND RECOMENDATIONS

6.1 Conclusion

The awareness of breast cancer risk factors among nurses and midwives working in Mulago national referral and teaching hospital was low (09%). The awareness was found influenced by working experience (especially those with experience of 4-7years), among those who cared for a breast cancer patient and those who had continued education related to breast cancer.

The awareness of breast cancer early detection measures among nurses and midwives working in Mulago national referral and teaching hospital was found low (25.4%), and this was found to be influenced by the age, gender, marital status, experience, occupation, educational level, those who cared for a breast cancer patient and continued education.

6.2 Recommendations

Based on the low awareness of breast cancer risk factors and early detection measures among the nurses and midwives surveyed in this study, the promotion of future health policies, such as mandatory continuing education, which involves breast cancer screening guidelines and general breast cancer awareness, may be justified. There is need for the Ministry of Health, hospital management, training institutions and others to;

Improve breast cancer content in the nursing curriculum. As the implementation of the revised curriculum may take some time, workplace training courses for the nurses can be introduced relatively earlier and avail breast cancer screening methods in most health centers and subsidies in the cost of the services

Encourage the nurses to disseminate this knowledge effectively and appropriately within the general population and in addition, emphasis should also be placed on the relation between breast cancer awareness and screening practices

There is need for similar studies among health professionals in other parts of Uganda, and population studies could provide evidence that will facilitate a better understanding of the level of awareness of breast cancer within the Uganda health community for any successful implementation of programs.

Future studies to assess awareness in other lower hospitals serving the community and public sector, in order to support successful implementation of national campaign programs

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APPENDIX: ONE

Participants informed consent form

Study title:

Across-sectional study of awareness of breast cancer risk factors, and early detection among nurses and midwives at Mulago National Referral hospital

Principle investigator

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Informed Consent

This form is to explain to me important details of the study, before I decide whether to or not to participate. I need to understand its purpose, how it may help me, any risks to me and any member of the household, and what is expected of me if I decide to participate.

My Rights as a Research Volunteer

This consent form gives me information about the study, which will also be discussed with me. Once I understand the study, and if I agree to participate, I will be asked to sign this consent form. I will be given a copy of the form to keep. I understand that my participation or withdraw in this research study is entirely voluntary. I may decide to withdraw from the research any time; such a decision will not affect my carrier or medical care or possible participation in future research studies in any way.

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Purpose of the Study

The purposes of this study is to asses' awareness of breast cancer risk factors and early detection and collect information that will be used to understand the delivery of health services better so as to make improvements in breast care, awareness and prevention of breast cancer. The study is expected to last for three months and will include interviews with participants and group discussions.

Study Procedures

I understand that if I decide to participate in the study, I will be interviewed. I understand that this study lasts for three months although my participation will only be less than 30 minutes.

Risks

I understand there are no risks to me except some temporary anxiety, discomfort, or some inconvenience while I am being interviewed

Potential Benefits to Me

There are no immediate benefits to me from this study. However, I understand that the results of the study will be used to improve on the delivery of health services and professional training program of which I may be a beneficiary.

Costs/Compensations

I want to thank you very much indeed, for the time. There will be no cost or compensation for the study

Confidentiality

A study number, which will be known to authorized study personnel and I, to be used instead of my name. The code will be stored in a safe place. Personal and medical

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information about me will not be released to any other than the following without my permission; authorized study personnel, Makerere University, ministry of health, and WHO. I will not be personally identified in any publication or presentation about this study

Problems or Questions

If I have any questions at any time about this research study, I may contact Olemukan Ekong Robert/principle investigator (<u>tel:+256-392-548717</u>) at Makerere university medical school, dept of medicine, CEU. If I have any questions about any rights as a research volunteer, I may contact chairperson of Faculty of Medicine Research and Ethics Committee (IRB) (<u>tel:256-0414-533551</u>), or national council of science and technology (NCST) (tel:0414250499/0414250431).

Participants Consent

I the undersigned have read and have been helped to understand what is going to be done, the risks, hazards, my rights as a volunteer and the benefits involved in this research. I understand that by signing this consent form, I do not waive any of my legal rights nor does it relieve investigators of liability; but merely indicates that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Volunteer

Name	
Age	
Signature	e/date
Study nu	mber (as for exit interview)

Appendix: two

Guide for key informant interview

Introduction

I am Olemukan Robert Ekong (Principle Investigator) from Makerere University,

Faculty of Medicine, Dept of medicine, CEU: we are carrying out a cross-sectional study of awareness of breast cancer risk factors/breast health awareness among Mulago hospital nurses and midwives; as a partial requirement for fulfillment for award of MSc. CEB, and with intent to build intervention for Ugandan women.

The information obtained from you will be useful in formulating strategies for awareness among health care professionals, prevention and public awareness of breast cancer, its risk factors, screening and prevention.

- 1. What is your profession/department/area of specialty/working experience
- 2. Do you deal with breast cancer patients/breast clinic
- 3. If so what is your role/have you ever organized breast screening campaign/awareness/training for the nurses and midwifes
- 4. Do you encounter problems when you are executing your roles? What problems in relation to breast cancer
- 5. What do you do when you are faced with challenges
- 6. What factors affect breast cancer risk factors and early detection awareness among nurses/midwives
- 7. What factors affect dissemination of breast health information
- 8. What suggestions do you have about improving services/knowledge/practice and awareness to those who need them?

Appendix: three	
Guide for Focus group discussions	
Date	
Moderator	
Recorder/note taker	
Time: start	end
Good morning/afternoon	

In order to discuss freely and easily, let's start by getting to know each other, one name is enough.

We are grateful you have accepted to be here with us in the discussion of awareness of breast cancer risk factors and early detection and associated factors; as we try to building intervention for Ugandan women.

Please feel free to give your opinions. We are all different for the same purpose and we ought to respect that. We shall be recording and taking notes where necessary to be able to keep track of all that is being discussed. Your name will not appear anywhere in the publications; all information in this discussion will be kept confidential.

- 1. Have you had of breast cancer or its risk factors , screening methods, and prevention methods
- 2. Please feel free to tell us what you know and what is available in your institution
- 3. What are the benefits of early screening
- 4. Are there any problems associated with screening
- 5. What are the factors that encourage or discourage people from seeking early screening/treatment
- 6. What is the best way of disseminating or promoting awareness of breast cancer, its risk factors, prevention/screening methods and generally breast health?

Qn. No. _____

Respondent's Questionnaire.

Awareness of Breast cancer risk factors and early detection measures among nurses and midwives in Mulago hospital

Date ----/----- (dd/mmm/yyyy)

Interviewer initials -----

Participants ID No.

Tick and answer were applicable.

Socio-demographic factors

- 1. Age of respondent?.....
- 2. Sex of respondent
 - a. Male
 - b. Female
- 3. Marital status?
 - a. Single
 - b. Married
 - c. Divorced
 - d. Widowed
 - e. Others (specify).....
- 4. Religion?
 - a. Catholic
 - b. Protestant
 - c. Muslim
 - d. Born again/Saved
 - e. Others (specify)------
- 5. Department?
 - a. Surgery
 - b. Obs/gyn
 - c. Medicine
 - d. Peadiatrics
 - e. Radiology
 - f. Cancer Institute
 - g. Others (specify)------
- 6. How many years have you been employed here -----
- 7. Occupation
 - a. Midwife b. Nurse

- 8. Your highest Education level?
 - a. nursing/midwifery certificate
 - b. nursing/midwifery diploma
 - c. degree certificate
 - d. Others (specify).....
- 9. Training institution attended?
 - a. Mulago School of Nursing and Midwifery
 - b. Nsambya nursing school
 - c. Mengo nursing school
 - d. Makerere university
 - e. Others (specify).....

Breast cancer risk factors and early detection awareness

10. Have you ever heard of breast cancer, its risk factors and its prevention?

- a. yes b. No
- (if no go to No.11)
- 11. If yes from which source?
 - Training institution (yes/no)------
 - I heard about it from relative/friend (yes/no)------
 - During my training course (yes/no)------
 - From work/medical personnel (yes/no)------
 - From mass media (yes no)-----
 - From organized workshop/continued training (yes/no)------
 - Others (specify).....

12. Do you know whether breast cancer can be prevented?

- a. yes b. No
 - (if no, go to No. 15)

13. If yes what ways are there to prevent breast cancer?

- Lowering your risk e.g. exercise/diet (yes/no)------
- Finding breast cancer early (yes/no)------
- Genetic testing (yes/no)------
- Breast cancer chemoprevention (yes/no)------
- Preventive surgery for women with very high breast cancer risk (yes no)---
- Population awareness (yes/no)-----
- Others (specify).....
- 14. Do you know the risk factors of breast cancer?
 - a. yes b. No

(if no, go to No. 18)

- 15. If yes, do you think that your knowledge about breast cancer and its risk factors is adequate?
 - a. yes _____ b. No

- 16. What are the risk factors of breast cancer?
 - Family history of breast cancer (true/false)
 - Diet and diet related factors [over weight] (true/false)
 - Hormones and reproductive factors (true/false)
 - Ionizing radiations (true/false)
 - Benign breast diseases (true/false)
 - Increasing with age [age at menarche] (true/false)
 - Gender [being female] (true/false)
 - Luck of exercise (true/false)

17. Do you think that you have higher breast cancer risks in that circumstance?

a. yes b. No

18. Do you know whether breast cancer can be detected early?

a. b.	yes No		(if no, go to No. 21)

- 19. What are the early symptoms that guide early detection of breast cancer?
 - Breast lump (yes/no)
 - Axillary mass (yes/no)
 - Deformation of the breast shape (yes/no)
 - Ulceration and/or oedema over breast (yes/no)
 - Bloody nipple discharge or erythema (yes/no)
- 20. Which methods can be used for early detection?
 - a. BSE
 - b. CBE
 - c. Mammography (MMG)
 - d. Ultra sound
 - e. Others (Specify).....
- 21. Have you ever practiced, shared or recommended patients on any of these detection methods?
 - a. yes (if yes go to question 23)
 - b. No
- 22. If not, why do not practice?
 - a. I have no enough time to perform BSE (yes/no)
 - b. I forgot about performing (yes/no)
 - c. It's not in my job description (yes/no)
 - d. I think that it is an unnecessary practice (yes/no)
 - e. Others (specify).....
- 23. Have you ever suffered from breast cancer?
 - c. yes
 - d. No
- 24. Have you ever cared for breast cancer patient?
 - a. yes
 - b. No

- 25. Do you talk about breast cancer and cancer prevention with your patients, family or friend?
 - a. yes _____ b. No
- 26. Do you believe that your occupation is important for breast cancer prevention?
 - a. yes
 - b. No
- 27. Have you heard of BSE?
 - a. yes
 - b. No (if no go to question 30)
- 28. What do you know about breast self examination (BSE)
 - It is necessary for detecting lumps (true/false)
 - It should be done monthly (true/false)
 - It should be done at 10 days after menstruation (true/false)
 - Others (specify).....
- 29. How often do you perform <u>BSE</u>?
 - a. once every month
 - b. Never
 - c. Others (specify).....
- 30. If not, why do not perform BSE monthly?
 - f. I have no enough time to perform BSE (yes/no)
 - g. I forgot performing BSE (yes/no)
 - h. I don't know how to perform BSE (yes/no)
 - i. I think that BSE is an unnecessary examination (yes/no)
 - j. Others (specify).....
- 31. Have you ever taught somebody how to do BSE?
 - a. yes b. No
- _____
- 32. What do you know about clinical breast examination (CBE)?
 - a. It should be done by health professional(true/false)
 - b. It should be done annually (true/false)
 - c. Others (specify).....
- 33. Have you ever had CBE performed on you?
 - a. yes (if yes, go to No, 35)
 - b. No
- 34. If not, why has this not been performed?
 - a. I have no enough time (yes/no)
 - b. Few specialist (yes/no)
 - c. No service offered (yes/no)
 - d. I forgot it (yes/no)
 - e. CBE is embarrassing to me (yes/no)
 - f. I think that CBE is an unnecessary examination (yes/no)
 - g. Others (specify).....

55. What do you know about manningraphy:	35.	What c	lo you	know	about	mammo	graphy?
--	-----	--------	--------	------	-------	-------	---------

- It should be done yearly (true/false)
- It is a painful procedure (true/false)
- It can detect cancer with or without palpable mass (true/false)
- Others (specify).....
- 36. Do you believe that mammography decreases the mortality of breast cancer?
- a. yes b. No 37. Have you ever had a check up using mammography? (if yes, go to 39) a. ves b. No 38. If not, why do not have a mammography? a. I have no enough time (yes/no) b. Few facilities (yes/no) c. I forgot it (yes/no) d. Mammography is costly/not cheap (yes/no) e. I think that CBE is an unnecessary examination (yes/no) f. Others (specify)..... 39. Should breast cancer screening be started? a. yes (if no, go to No. 41) b. No
- 40. If yes which methods should be promoted?
 - Promotion of BSE in the mass media (yes/no)
 - Mammography (yes/no)
 - Clinical breast examination –CBE (yes/no)
 - Others (specify)
- 41. Have you ever attended a training course on breast cancer issues and prevention?
 - a. yes
 - b. No
- 42. Would you suggest for national sensitization exercise to help women understand the BSE?
 - a. yes
 - b. No
- 43. Did you have BSE skills and other Breast cancer risk factors and prevention training while at nursing training institution?
 - a. yes
 - b. No
- 44. Have you ever attended any BSE- skills training/workshop?
 - a. yes
 - b. No
- 45. If yes would you like BSE skills training and sensitization be a national issue?
 - a. yes
 - b. No

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS STUDY