TURKISH REPUBLIC OF NORTHERN CYPRUS

NEAR EAST UNIVERSITY

INSTITUTE OF HEALTH SCIENCES, DEPARTMENT OF MEDICAL BIOLOGY AND GENETICS

Knowledge, Awareness and Attitudes to Breast Cancer among School Teachers in Kaduna Metropolis, Kaduna State, Nigeria

A THESIS SUBMITTED TO THE GRADUATE INSTITUTE OF HEALTH SCIENCES

NEAR EAST UNIVERSITY

BY

SOLOMON TABAT YAYA

In Partial Fulfillment of the Requirements for the Award of Master of Science Degree in Medical Biology and Genetics

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Supervisor

Prof. Dr. NedimeSerakinci

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The Director of Graduate School of Health Sciences,

This study has been accepted by the Thesis committee in Medical Biology and Genetic Program as Master Thesis.

Examining Committee in Charge:

Chair: Prof. Dr. NedimeSerakinci

Near East University

Member Doç. Dr. TufanÇankaya

DokuzEylùl University Hospital

Member: Yrd. Doç. Dr. NahitRizaner

Cyprus International University

Approval:

According to the relevant articles of Near East University Postgraduate Study Education and Examination Regulations, this thesis has been approved by the above mentioned members of the thesis committee and the decision of the Board of Directors of the Institute.

Prof. Dr. K. Hùsnù Can BAŞER

Director of Graduate School of Health Sciences

DECLARATION

I Solomon hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Solomon Tabat YAYA:

Signature:

Date:

ACKNOWLEDGEMENTS

First of all I want to thank God Almighty for making this thesis a success. Words alone cannot express my appreciation to my father Mr. Peter Tabat Yahaya and my mother Mrs. Yokbaliyat Peter who are and have always been indeed parents and I count myself lucky to be their son. You all are the best. May the good Lord bless and keep you. My siblings have all been wonderful and supportive. My heartfelt thanks also goes to the my Head of Department who is also my course advisor Prof. Dr. NedimeSerakinci for her invaluable effort since the time that I came to this school to the time of my completion. She has been patient with me and always gives me advice and support where needed. I pray that God Almighty bless you.

My special thanks go to the departmental lecturers in the persons of Assoc. Prof Pinar, Assoc. Prof. Kalkan, Merdiye, MrHuseyinCagsin and Ozlem.

I will not forget my friends and colleagues in persons of Zurki, Yahaya, Daniel, Asma, Abdullah and Mohammad who have contributed in one way or the other during class discussion or otherwise. I really appreciate.

Last but not the least; I want to thank the Kaduna State Government for providing me with the Scholarship to be able to accomplish this stage of my academic career.

For those I was not able to mention their names but have contributed immensely, I want to specially thank you and please keep on with the good work. May God Almighty bless you all, Amen.

SOLOMON Tabat Yaya (ysolomontabat@gmail.com)

DEDICATION

To my parents…

ABSTRACT

Objectives: To investigate the knowledge, awareness and attitudes of school teachers towards breast cancer in Kaduna metropolis.

Methods: A survey of school teachers aged 20 – 65 years was conducted in both public and private schools in Kaduna metropolis. Self-administered questionnaire was used to collect the data.

Results: Out of the 997 participants, mean age 40.69 (SD = 12.09) years. Of all the participants, 259 (26.0%) were males and 738 (74.0%) were females.

The role of a teacher in disseminating information or knowledge cannot be overemphasized. Because of that crucial role they play thus makes it necessary that they have the right information so that they can transfer such to their students or wards. The children today represents the young generation that is growing. It will be good if they have the right knowledge about breast cancer concerning breast cancer is, what causes it, knowledge of signs and symptoms, and what measures to take to prevent or treat it.

Conclusion: This study shows that there is breast cancer awareness but there is low in-depth knowledge about the disease. There is low knowledge of risk factors, signs and symptoms, low response to breast self-examination (BSE), clinical breast examination (CBE) and mammography. Educational health programs can be organized to help create more awareness and knowledge about breast cancer which has the potential to help the public in making informed decisions thereby reducing the incidence of this disease.

Keywords: knowledge; awareness; attitudes; breast cancer; risk factors

Özet

Amaç: Kaduna metropolis'tekiöğretmenlerin meme kanserihakkındakibilgilerini, farkındalıklarınıvetutumlarınıincelemek.

Yöntemler: Kaduna metropolis'tekidevletokullarıveözelokullardagörevyapan 20-65 yaşarasıöğretmenlerileanketyapıldı. Verilerkatılımcılarauygulanananketiletoplandı.

Sonuçlar: 997 katılımcınınyaşortalaması 40.69 (standartsapma = 12.09) olarakbelirlendi. Tümkatılıcıların 259 (26.0%)'u erkekve 738 (74.0%)'i kadındı.

Öğretmenlerinbilgiyiyaymarolüazımsanamaz.Oynadıklarıbuönemlirol, doğrubilgiyesahipolmalarınıgereklikılar, böyleceöğrencilerinevebulunduklarıbölgeyebubilgiyi transfer edebilirler.Bugününçocuklarıbüyüyengençnesilleritemsileder. Meme kanserihakkında, meme kanserininsebepleri, belirtivesemptomlarıve meme kanseriniengellemekvetedavietmekiçinatılmasıgerekenadımlarhakkındadoğrubilgiyesahipolma larıönemlidir.

Sonuç: Çalışmada meme kanserifarkındalığınınolduğufakathastalıkhakkındadetaylıbilgisahibiolmanındüşükseviyedeold uğugösterildi. Risk faktörleri, belirtilervesemptomlarhakkındadüşükseviyedebilgisahibiolunduğuvekendikendine meme muayenesinin, klinik meme muayenesininvemamografinindüşükseviyelerdeuygulandığıbelirlendi. Meme kanserihakkındadahafazlabilgivefarkındalıkyaratılmasınayardımcıolmakiçineğiticisağlıkprogra mları organize edilebilir, buprogramlarınhalkınbilgilendirilmişbirşekildekararvermesineyardımetmeveböylecehastalıkor anınınazalmasınasebepolmapotansiyellerivardır.

AnahtarKelimeler:bilgi; farkındalık; tutum; meme kanseri; risk faktörleri

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S/No.	Acronym	Name in Full
1	BSE	Breast Self-Examination
2	CBE	Clinical Breast Examination
3	CI	Confidence Interval
4	HRT	Hormone Replacement Therapy
5	OR	Odd Ratio
6	RCT	Random Control Trial
7	RR	Risk Ratio
8	USA	United State of America

CHAPTER 1

INTRODUCTION

According to the 2014 World Health Organization (WHO) report, among other causes of deathsworldwide, 14.6% of deaths are as a result of variety of cancer types. In many, breast cancer is one of the leading malignant neoplasms in women (WHO, 2013). Breast cancer compared with cervix cancer leads to more deaths, about three times more often, affecting women of ages 15 to 50 years (WHO, 2013).

In Nigeria, breast cancer among women is also the leading cause of cancer death with the highest age of occurrence between the ages of 30 to 40 years which develops 10 years earlier before estimated time compared to the Caucasians(Oluwatosin, 2012). The survival rate of a cancer patient within 5 years is below 10% when compared with above 70% in the Western European and North America(Oluwatosin, 2012).

To reduce the rate of death caused by cancer, it is very important to adopt preventive behaviors. An invaluable tool to achieve this change of behavior is knowledge. Women need to be educated with regards to signs that may serve as early diagnostic warnings and symptoms, which will cause them to habitually go for improved health seeking. This awareness creation is vital to basically reducing the high incidence and death rate for breast cancer disease (Asuquo and Olajide, 2015).

Breast cancer even though is rare in males; they also can be affected with breast cancer (McPherson et al., 2000; World Cancer Report, 2008). It is important to use education and considering the different cultural backgrounds with the aim of targeting such individuals in a population thereby achieving maximum gain and not neglecting the importance of educating men alongside women, being that men can contribute to early detection in their partner which will cause them to seek for medical care early. It is also vital to create awareness but more importantly spreading the knowledge with regards to the fact that breast cancer can be cured, if the nature and cause of it is considered early, patient will have a good chance of survival (WHO,

2007). The differences in people's belief systems and misconception including many factors as education, ethnicity and age also affect their attitudes (Haji-Mahmoodi et al., 2002).

Women need to be 'breast aware' and quite necessary to have the ability to identify signs and symptoms of mammary cancer by periodically carrying out checks which will enable them to seek medical help on time. Death due to mammary cancer among Nigerian women is as a result of late admittance of medical assistance basically until late onset of the disease (Iheanacho et al., 2010). Late diagnosis of mammary cancer patients is the cause of reduced survival rate (Dorshi et al., 2010).

There is serious need to create awareness since patients usually present late in hospitals or clinics for diagnosis for breast cancer. Measures that have been advised to prevent and reduce mammary cancer death and pains are; Breast Self-Examination (BSE), Mammography, and Clinical Breast Examination (CBE) (Gwarzo et al., 2009). To prevent and reduce problems and impairment, mammary cancer that is detected on time is promising toward diagnosis and treatment (Omotara et al., 2012).

In the world, an unlikely disease of men is the male mammary cancer which is diagnosed at a percentage less than one among all breast cancer (Jemal et al., 2009) this is less compared to the earlier estimate by Jemal et al., in 2008, and the yearly occurrence rate is predicted at 1 person in every 100,000 men in the world (Ly D et al., 2013). One person in 1000 men has a risk of developing breast cancer in his lifetime (Korde et al., 2010). 60 and 70 is the mean age of male cancer examination with frequency rate increasing in a straight line with age (Korde et al., 2010). Male breast cancer also is an issue pointing to genetics as a contributor after considering a male with a family history of breast cancer. This put such a male on a high risk ofdeveloping breast cancer in his lifetime (Bashem et al., 2002, Ottini et al., 2003).

There is the possibility of preventing more than 50 percent of cancer morbidity and mortality in the entire world due to the fact that most of the liable causes of cancer are jointly related which can be changed and averted (Stein and Colditz, 2004). These manageable risk factors include

vital nutrition deficiency, inactive lifestyle, obesity, smoking, alcohol consumption, and sexually transmitted infections such as the Human Papilloma Virus (HPV)(McCaffery et al., 2003).

If one has the knowledge and understanding of the risks or liable causes of cancer, this will immensely help in causing the person to make informed and conscious decisions to take part in prevention and screening actions. It has been advised that increased knowledge and awareness levels are linked with right attitudes towards cancer (McCaffery et al., 2003). Having this knowledge and awareness leads to demonstrate of a positive attitude when faced with the disease (Miller et al., 2000).

There are still more people who have poor attitudes and practices towards the prevention of this disease(Park et al., 2008). In addition, tackling the changeable risk factors, screening for cancer was listed as a secondary prevention measure(Park et al., 2008). Studies previously have proved the effectiveness of cancer screening in cancer death rate reduction (Park et al., 2008).

The increasing tendencies of breast cancer in developing areas is often treated generally by saying it is because of 'westernization' of lifestyle in such areas, an unclear proxy for factors such as dietary habits, childbearing,exposure to exogenic estrogen hormones, reaching a circulation closer in a sketch compared to women in industrialized countries (Bray et al., 20004).

No work has been done on the topic Knowledge, Awareness and Attitudes towards Breast Cancer among School Teachers in the metropolitan part of Kaduna state and therefore we can say that this research is timely seeing the fast rate at which breast cancer has and is becoming a global problem in developed and developing countries respectively.

It is true that teachers play a vital and effective part in communicating and motivating young generations. This researchundertaken to assess their knowledge, awareness, and attitudes is paramount to breast cancer reduction in our young generation. Notwithstanding, practicing any of the breast cancer screening methods depends on the awareness and knowledge level of an individual. If teachers have poorknowledge and awarenesslevel about breast cancer, challenges will be encountered in upholding these lifesaving techniques which include breast self-examination (BSE), clinical breast examination (CBE), and mammography. This is because they

will not practice the techniques. Male gender is often excluded in most studies but this research included both genders.

This study is devised to carryout evaluation on the knowledge, awareness and attitudes towards breast cancer among school teachers in Kaduna metropolis so that the result will be used to develop possible national education program for schools and communities.

1.1 Intended outcome of thesis/significance

The outcome of this study will help school teachers in recognizing the early signs and symptoms of breast cancer and their need for positive attitudes towards taking steps to curb breast cancer disease as well as teach the young generation.

It will also encourage the efforts put forward in the fight against Breast cancer and note the lapses in some of the measures put in place to fight breast cancer incidence in Kaduna State and Nigeria as a whole.

1.2 Hypothesis

We hypothesize that breast cancer incidence can be reduced by increasing the awareness and knowledge of signs and symptoms in Kaduna metropolis.

Teachers' level of knowledge and attitudes has a significant role in reducing breast cancer.

1.3 Aim

The aim of this study is to assess the level of knowledge, awareness and the attitudes of school teachers concerning breast cancer.

1.4 Objectives

(a) To assess the teachers' level of knowledge, awareness and their attitudes towards breast cancer that can help in developing national education program for school teachers and their wards.

(b) To find out if there is a significant difference between the ages of teachers and their level of breast cancer knowledge.

CHAPTER 2

LITERATURE REVIEW

Despite the fact that breast cancer is the prevalent carcinoma between women in developing countries, considering the African continent in general, after cervical cancer, breast cancer is the second ranking carcinoma (Ferlay et al., 2001).

There is still increase in the rate of male breast cancer, andthe reasons for this neoplasm not yet known. Often than usual, breast cancer is detected in African-American, African, and Ashkenazi Jewish population (Ravandi-Kashani and Hayes, 1998). Male breast cancer among Sub-African region is detected from 7% to 14% of all breast cancers (Ravandi-Kashani and Hayes, 1998). In the entire male population, male breast cancer cases are more than 1% of all breast cancers (Jemal et al., 2008) as it was formerly estimated. Considering the Ashkenazi Jewish population, high incidence of BRCA1 and BRCA2 gene mutations contribute to the increased risk of breast cancer (National Comprehensive Cancer Network, 2011).

BRCA mutations play a vital part in breast cancer, but relating mutations in breast cancer between countries there is differences in incidence rates. For example, Southern California has only 4% mutation of BRCA gene in male breast cancer but Iceland has 40% mutations (Thorlacius et al., 1997). Endogenic estrogens and testosterone relation between these hormones may pose increased risk of male cancer(Brinon et al., 2008). Imbalance between endogenic estrogens and testosterone hormones can be caused by obesity(Brinon et al., 2008). Men with body mass index greater than 30kg/m^2stand at increased risk of male breast cancer (Brinon et al., 2008). Although male breast cancer is often identified among men who are exposed to ionizing radiation, high environmental temperatures and chemicals (Mabuchi et al., 1985, Gray et al., 2009). Male breast cancer has a diagnostic median age of 68 years (Kiluk et al., 2011, Giordano et al., 2002). The rate at which the nipple is involved is identified in about 40 % to 50% patients and it is significantly at increased incidence than observed in female breast cancer (Kiluk et al., 2011, Giordano et al., 2002). Carrying out diagnostic mammography in men has proved good sensitivity of 92 % to 100% with 90% specificity (Gomez-Raposo et al., 2010, National Cancer

Institiute SEER, 2011). The ideal tool for male breast cancer and gynecomastia diagnoses is mammography (Gomez-Raposo et al., 2010)

2.1 Risk Factors for breast cancer

According to the American Heritage Dictionary of the English Language, 2011, a risk factor is "a characteristic, condition, or behavior, such as high blood pressure or smoking, which increases the possibility of disease or injury".

Although it is not certain that an individual with risk factor always leads to disease. There are two risk factors divisions; risk determinants and risk modulators. Risk determinants cannot be influenced but risk modulators can influence.

2.1.1 Risk Determinant Factors:

2.1.1.1 Gender: For being a woman generally is already a determinant risk factor for breast cancer disease. Compared to women, men have very low rate of breast cancer incidence accounting for approximately less than 1% of all cases of breast cancer (Mia, 2007).

2.1.1.2 Growing age: Below the age of 40, there is low rate of breast cancer incidence but with advancing age comes the greatest risk of developing breast cancer. Approximately 17% invasive breast cancer diagnosed is among women in their 40s and the percentage increases to 78% when they are in their 50s and above (Mia, 2007).

Table 2.1: Advancing age a determinant risk factor for breast cancer

A Woman's Chances of Breast Cancer Increases With Age	
From age 30 to age 39	0.44% (1 in 227)
From age 40 to age 49	1.47% (1 in 68)
From age 50 to age 59	2.38% (1 in 42)
From age 60 to age 70	3.56% (1 in 28)
From age 70 to age 80	3.82% (1 in 26)

Source: Recreated fromHowlader et al., 2012.

2.1.1.3 Genetic predisposition: According to recent studies approximately 5% to 10% of breast cancer disease is inherited due to a gene mutation with the common mutations called BRCA1 and BRCA2 genes (Mia, 2007).

An estimated 15% to 20% of men, who reported to having breast cancer, have a breast cancer or ovarian cancer in their family history. Accounting to an estimate, about 10% of men with breast cancer, have hereditary susceptibility, pointing out BRCA2 gene mutation to be the cause (Haraldsson et al., 1998, Couch et al., 1996, Thorlacius et al., 1995, Wooster et al., 1995) and BRCA1 gene mutation associate with this type of male neoplasm (Brose et al., 2002). There is also an implied link between breast cancer and PTEN, P53, and CHEK2 (Meijers-Heijboer et al., 2002, Frackenthal et al., 2001, Anelli et al., 1995). Men who suffer from a chromosomal abnormality as seen in Klinefelter's syndrome (XXY), about 3 percent to 7.5 percent of them have breast cancer (Hultborn et al., 1997, Evans et al., 1989). According to a study on cancer risks in BRCA mutation carriers in the 1999, amidst the male carriers of BRCA1 gene mutation, such men have a 5 percent to 10 percent lifetime breast cancer risk in comparison with a 0.1 percent population risk in general(Chodick et al., 2008, Tai et al., 2007, Brose et al., 2002). There is solid link between BRCA2 gene mutation and male breast cancer compared with the association of BRCA1 gene mutations and male breast cancer (Chodick et al., 2008, Tai et al., 2007, Brose et al., 2002). A man with BRCA1 gene mutation has about 1 percent to 5 percent risk of developing breast cancer (Tai et al., 2007, Brose et al 2002, Thompson and Easton, 2002).

2.1.1.4 Family history:A woman having a 1 first-degree relative (mother, sister, or a daughter) with breast cancer will havedouble the chance of increased risk and a 5-fold increased risk if she has 2 first-degree relatives with breast cancer (Kelsey and Gammon, 1990).

2.1.1.5 Personal breast cancer history: Research shows that a woman with breast cancer in one breast has an increased risk of developing another breast cancer in the other breast or another part of the same breast.

2.1.1.6 Race: The susceptibility to the development of breast cancer in white women is higher compared to black African-American women but with higher survival rates among the white

American than the African-American women when the disease is considered at each stage. (Ismail et al., 2003).What many experts feel is that African-American women usually develop more aggressive tumors but the reason is yet to be identified. There is a lower risk of developing and dying of breast cancer disease among the Asian, Hispanic, and the Native-American women (Mia, 2007).

2.1.1.7 Early age at menarche and late menopause: Both early menarche and late menopause increases a woman's risk of developing breast cancer.It is a well-known fact that early menarche and late menopause plays a role in increasing breast cancer risks and is reduced by early first full-term pregnancy. It is also suggested that there is a tendency of increased breast cancer risk among BRCA1 and BRCA2 mutation carriers having pregnancy at a younger age usually before age of 30, and BRCA1 but not BRCA2 pathogenic carriers having a more significant effect (Friebel et al., 2014, Jernstrom et al., 1999 and Johannsson et al., 1998).

Breast feeding also has a tendency of reducing breast cancer risk among BRCA1 but not BRCA2 mutation carriers (Jernstrom et al., 2004). Concerning pregnancy effect on the outcomes of breast cancer, not at all does breast cancer diagnosis during pregnancy nor does pregnancy after breast cancer suggest to be linked with detrimental outcomes of survival among women who carry a BRCA1 or BRCA2 mutation (Valentini et al., 2013). It shows that parity seems to be protective for the mutation carriers of BRCA1 and BRCA2 mutation which has an additional protective effect for live birth before reaching the age of 40years (Milne et al., 2010).

2.1.2. Risk Modulators: This also refers to lifestyle-related breast cancer risk factors.

2.1.2.1 First birth at late age and low parity: If a woman delay in childbirth or she decides to remain childless, this increases her risk of developing breast cancer. In developing countries where there is higher parities and early age at first pregnancy of women, this may explain the lower incidence of breast cancer compared to developed countries (Bray et al., 2004).

2.1.2.2 Oral contraceptives use by females

The use of oral contraceptives have the tendency of producing a small increase in the risk of breast cancer among those that use it for a long time, though this effect shows to be short term. A meta-analysis data of 54 studies suggests that breast cancer risk in association with the use of oral contraceptives never differs in relationship to a family history of breast cancer (Beral et al., 2004). Even though there was no entire consistency in the meta-analysis, it was concluded that there was no compelling breast cancer risk increase associated with the use of oral contraceptive in BRCA1/BRCA2 mutation carriers (Iodice et al., 2010). Notwithstanding, the use of oral contraceptive that was formulated before the year 1975 was linked with increased breast cancer risk (Milne et al., 2010).

2.1.2.3 Hormone Replacement Therapy (HRT): Research shows that long-term use usually several years or more of postmenopausal hormone therapy (PHT), in particular the combination of estrogen and progesterone, increases the risk of developing breast cancer (Brinton and Schairer, 1993).

There is an available data from both observational and randomized clinical trials in regards to the link between postmenopausal Hormone Replacement Therapy (HRT) and breast cancer. There was a 1.35 Risk Ratio (RR) indication of breast cancer in a data meta-analysis from 51 observational studies (95% CI, 1.21 – 1.49) for women who had used Hormone Replacement Therapy for about 5 or more years after menopause (Collaborative Group on Hormonal Factors in Breast Cancer, 1997).

There is a continuous increased incidence rate of breast cancer and increased risk for this disease include – early menarche in age, null parity, advanced first birth age, late age at any birth, low parity, and late menopause. All these risks can explain the hormones which consists largely of estrogen surroundings that the mammary tissue is exposed to right from menarche to menopause (Pike et al., 1983).

2.1.2.4 Endocrine Factors

Imbalance in estrogen/testosterone levels in men pose an increased risk to male breast cancer such as men takingexogenic estrogens as in prostate cancer patients and transsexuals (McClure and Higgins, 1951, Symmers, 1968). An elevated risk of male breast cancer to about twelvefold is observed in men with testicular dysfunction as a result of congenital inguinal hernia, infertility, testicular injury, orchidectomy and mumps orchitis (Thomas et al., 1992). It was suggested that male breast cancer risk can be doubled as a result of common obesity that causes hyperestrogenism in men (Thomas et al., 1992, Johnson et al., 2002). Association between male breast cancer and liver cirrhosis is seen which also causes hyperestrogenism (Hsing et al 1998).

2.1.2.5 Alcohol consumption: Consumption of alcohol increases the risk of developing breast cancer according to recent studies. The risk of developing breast cancer in a summary analysis of epidemiologic studies increased between 40% and 70% with about two glasses of drinks daily (Longneck et al., 1988). In addition, a study by Paul Terry also got similar outcome especially the post-menopausal women (Paul Terry et al., 2001).

Using a population of 1432 as controls, 74 cases were studied in a European multi-centre disclosed a significant relationship between alcohol intake and male breast cancer risk (Guenel et al., 2004); having an odds ratio for alcohol consumption >90g/d of 5.89 (CI – 2.21 – 15.69). An increased risk of 16% for male breast cancer was observed for every 10g of alcohol consumed daily. Patients with hyperprolactinaemia caused by pituitary adenomas have been described to have male breast cancer (Volm et al., 1997). On the other hand, there is by no means a confirmed association between gynaecomastia and male breast cancer (Fentiman et al., 2006).

2.1.2.6 Obesity and high-fat diet: There is a complex relationship between obesity, high-fat intake and breast cancer development. Obesity and high-fat intake has been found in most studies to put one at risk of developing breast cancer even though the relation seem not to be strong enough or consistent (Bray et al., 2004).

2.1.2.7 Occupation

Hot working environments such as steel works, blast furnaces and rolling mills increases male breast cancer risk among men working there (Basham et al., 2002). An increased risk of male breast cancer is observed to be linked with men jobs involving the use of soaps, petrol or exhaust fumes (Hansen et al., 2000, McLaughlin et al., 1988). The suspected carcinogens that causes this male breast cancer is polycyclic aromatic hydrocarbon (PAH), that is found in tobacco smoke and emissions from exhaust. There is a postulate that when one is unprotected in the field of electromagnetic waves, there is breast cancer risk notwithstanding indication for this is defined and weak (Loomi, 1992).

2.1.2.7 Radiation exposure

Men and women have an increased risk of breast cancer when they are exposed to radiation (Lenfant-Penjovic et al., 1988) and exposure to small amounts of chest X-rays does not cause much risk(Olsson and Ranstan, 1988). Only extended exposure to radiotherapy or radiographs is shown to be harmful (Olsson and Ranstan, 1988). High doses of radiotherapy that was used in treating gynaecomastia resulted in a sevenfold increased relative risk of breast cancer as reported in patients who had the radiotherapy (Sasco et al., 1993). Even though some institution uses reduced dose radiotherapy for their gynaecomastia patients, there is still an observed long term effects (Dicker, 2003). There was an increased risk of male breast cancer to about eightfold among the 45,880 survivors of an atomic bomb which was dependent on the exposure level (Ron et al., 2005).

CHAPTER 3

MATERIALS AND METHODS

3.1 Materials

The materials that were used for this research were self-administered questionnaires (see appendix 1).

3.2 Study Area

The study area is located in Kaduna state which is one of the 36 states in Nigeria including the Federal Capital Territory (FCT) Abuja. There are 23 local governments in this state. According to the Nigerian census Figure in 2006, the state has a population of about 6.3million people in 2006. Kaduna is the capital city of the state. The state has a total area of 17,781square miles (46,053kmsq) and its coordinates are 10°20’0”N’7°45’0”E. There are over 60 ethnic groups which include Hausa, Gbagyi, Fulani, Gwong, Atuku, Bajju, Atyab, Gure, Kagoro, Adaraand among others that populate Kaduna State. This region of the country is a major economic hub, a center for trade and a transport axis to nearby agricultural areas and states. Kaduna is an industrial center of Northern Nigeria (Kaduna State Government, 2017).Kaduna city is the metropolitan area where this study was conducted in different schools.

3.3 Ethical Approval

This research was carried out in accordance to principles of ethical practice. The research proposal was reviewed by the Institutional Review Board, Near East University.

An ethical permission was obtained for this research from the Ministry of Health and Human Services by the Health Research Ethics Committee (HREC) Kaduna State, Nigeria.

3.4 Sample

A cross sectional survey was carried out from the month of February to the month of May, 2017 in the Kaduna metropolis, Kaduna State, Nigeria. A total of 1100 school teachers in both public

and private schools (Primary and Secondary) with the ability to understand the structured questionnaire were recruited to take part in the research. A verbal permission was sought from the teachers who wished to participate in the research and they were assured that their individual responses will be kept private before questionnaires were administered.

3.5 Data collection

Questionnaires were used to collect the data. The questionnaire was designed according to the information gathered from the literature review and contained seven sections. Section one for demographic characteristics such as gender, age educational level, marital status and ethnicity. Section two consists of breast cancer knowledge, awareness and attitudes. Data were collected from 997 school teachers who filled and returned the questionnaire with a response rate of 90.6% and 103 administered questionnaires were not returned giving a non-response rate of 9.4%.

3.6 Data Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) Version 18. Categorical variables were described using descriptive statistics of frequencies and percentages. Chi square was used to test for significance using a *p*-value of 0.05.

CHAPTER 4

RESULTS

The total number of participants is 997. The age at the time of data collection ranged from 20 to above 50 years with a mean age of 40.69 (SD = 12.09) years. Of all the participants, 259 (26.0%) were males and 738 (74.0%) were females (Table 4.1).

The highest number of age groups are those who are [> 50] years with a frequency of 307 (30.8%) of all the participants, followed by [40 – 49] 275(27.6%) then [20 – 29] is 218(21.9%) and the lowest is [30 – 39] 197(21.9%). In terms of level of education, 855 (85.8%) have an academic degree, 134 (13.4%), attended secondary school and 8 (0.8%) attended primary school.

Based on their ethnicity, 'Hausa' had a frequency of 179 (18.0%), 'Igbo' 152 (15.1%), Yoruba 91 (9.1%) and 'Other' ethnic groups (Chawai, Jaba (Ham), Kagoma (Gwong), Moro'a, Fulani, Katab (Atyab), Bajju, Gbagyi, Kadara (Adara), Kamantan, Kuturmi, Ikulu, Kagoro (Oegworok), Koro, Numana, Nandu, Ninzom, Atakar (Takad), Koninkon, and Delta) were the highest put together with a frequency of 575 (57.7%). The title 'Others' under the ethnic groups makes the highest population which also reveals the multi-ethnicity of Kaduna State as a whole. Notwithstanding, they consisted of small percentages put together that gave this high numberwhich makes it seems larger than the major ethnic groups Hausa, Yoruba and Igbo put together (Table 4.1).

There were 8 participants that had primary level of education and 134 had secondary education this can be explained by the age of children that they are taking care of (Table 4.1). For example, those that assist in taking care of kindergartens and also some teachers who had secondary level

of education were employed by private primary schools while waiting for admission into higher institutions. This coupled with the fact that some private schools source for cheap labor from such teachers. More than half 540(54.2%) of the participants are married (Table 4.1).

Table4.1: Demographic characteristics of the study participants

Variable	Frequency	Percentage (%)
Age groups (Years)		
20 – 29	218	21.9
30 – 39	197	19.8
40 – 49	275	27.6
>50	307	30.8
Gender		
Male	259	26.0
Female	738	74.0
Educational level		
Primary	8	0.8
Secondary	134	13.4
Tertiary	855	85.8
Marital Status		
Single	240	24.1
Married	540	54.2
Divorced	65	6.5
Widowed	152	15.2
Ethnicity		
Hausa	179	18.0
Yoruba	91	9.1
Igbo	152	15.2
Others	575	57.7

Both males 78(34.5%) and females 148(65.5%) indicated social media which is the highest as their source of breast cancer information which shows the power of social media in disseminating information (Table 4.2). The least source of breast cancer information is religious forum 8 (3.1%) and journal 13 (1.8%) for both male and female respectively (Table 4.2).

Table 4.2: Source of breast cancer knowledge of participants stratified by gender

	Male(n = 259)	**Female(n = 738)**
Source of breast cancer information		
Physician/health worker	19(7.3%)	19(7.3%)
Seminar/workshop	15(5.8%)	58(7.9%)
Radio/TV	39(15.1%)	146(19.8%)
Newspaper	23(8.9%)	35(4.7%)
Friends	34(13.1%)	101(13.7%)
Religious forum	8(3.1%)	23(3.1%)
Social media	78(30.1%)	148(20.1%)
Non-Governmental Organization	17(6.6%)	109(10.9%)
Family	16(6.2%)	47(6.4%)
Journals	10(3.9%)	23(2.3%)

Please note that some participants indicated multiple sources of breast cancer information

n = number

Those that claimed to have an affected family member are 8(3.1%) among the males and 27(3.7%) among the females. 13(1.8%) females and 5(1.9%) males claimed to have survived breast cancer (Table 4.3).

Table 4.3: Participants with family history/once had breast cancer stratified by gender

		Gender		*p*-value
		Male (n = 259)	Female (n= 738)	
Affected family member	**Yes**	8(3.1%)	27(3.7%)	0.668
	No	251(96.9%)	711(96.3%)	
Once had breast cancer	**Yes**	5(1.9%)	13(1.8%)	0.861
	No	254(98.1%)	725(98.2%)	

n=number

A total of 329(44.6%) of females claimed to have a moderate knowledge of breast cancer which is higher than the males where about 106(40.9%) said they have low knowledge about the disease (Table 4.4). At a *p*-value of 0.0068 which is less than α value (0.05), this indicates that there is statistical significant difference between gender and level of knowledge of breast cancer (Table 4.4).

Table 4.4: Level of breast cancer knowledge of participants stratified by gender

	Male(n = 259)	**Female(n=738)**	***p*-value**
Knowledge level			
Low	106(40.9%)	249(33.7%)	
Moderate	86(33.2%)	329(44.6%)	0.0068*
High	67(25.9%)	160(21.7%)	

n = number

One hundred and four (55.0%) of female participants within the age range of 40 to 49 claimed to have moderate knowledge about breast cancer which is the highest among the female age groups. The *p*-value of <0.05 indicated significance in this result (Table 4.5).

Table 4.5: Level of breast cancer knowledge of participants stratified by ages of females

	Age n (%)				**Total**	***p*-value**
	20 – 29	30 – 39	40 – 49	50 – 65		
Breast cancer knowledge level						
Low	77(43.3)	42(29.0)	66(34.9)	64(28.3)	249(33.7)	<0.05*
Moderate	60(33.7)	66(45.5)	104(55.0)	99(43.8)	329(44.6)	
High	41(23.0)	37(25.5)	19(10.1)	63(27.9)	160(21.7)	

n= number

Across all ages of males majority claimed to have low level of breast cancer knowledge except 30 to 39 age range 24(46.2%)that claimed to have high knowledge about the disease (Table4.6). There is statistical significant difference since the *p*-value is <0.05 (Table 4.6)

Table 4.6: Level of breast cancer knowledge of participants stratified by ages of males

	Age n (%)				**Total**	***p*-value**
	20 – 29	30 – 39	40 – 49	50 - 65		
Breast cancer knowledge level						
Low	17(42.5)	16(30.8)	40(46.5)	33(40.7)	106(40.9)	<0.05*
Moderate	14(35.0)	12(23.0)	38(44.2)	22(27.2)	86(33.2)	
High	9(22.5)	24(46.2)	8(9.3)	26(38.8)	67(25.9)	

Majority of the participant were positive that breast cancer can be inherited (Table 4.5) which is true for people who have a BRCA1 and BRCA2 mutation pathogenic carriers(Haraldsson et al., 1998, Couch et al., 1996, Thorlacius et al., 1995, Wooster et al., 1995). It was also observed that majority of females 64.6% identified oral contraceptive use as a risk factor (Table 4.7). The use of oral contraceptives for a long-time has been linked with a small increase in breast cancer risk among young women (Steven et al., 2002). There is statistical significant difference between participants that identified breast feeding, obesity, oral contraceptive use, and trauma to breast as risk factors compared to participants that are on the contrary (Table 4.7). More so, between those that identified breast cancer can be inherited, null parity, smoking, and consanguinity showed no statistical significant difference (Table 4.7).

Table 4.7: Knowledge of breast cancer risk factors of participants stratified by gender

		Male(n=259)	Female(n=738)	*p*-value
Breast cancer can be inherited	Yes	215(83.0%)	647(87.7%)	0.059
	No	44(17.0%)	91(12.3%)	
Breast feeding	Yes	157(60.6%)	572(77.5%)	<0.001*
	No	102(39.4%)	166(22.5%)	
Null parity	Yes	126(48.6%)	404(54.7%)	0.091
	No	133(51.4%)	334(45.3%)	
Obesity	Yes	91(35.1%)	382(51.8%)	<0.001*
	No	168(64.9%)	356(48.2%)	
Oralcontraceptives	Yes	153(59.1%)	644(64.6%)	0.031*
	No	106(40.9%)	353(35.4%)	
Trauma	Yes	149(57.5%)	479(64.9%)	0.034*
	No	110(42.5%)	259(35.1%)	
Smoking	Yes	145(56.0%)	452(61.2%)	0.137
	No	114(44.0%)	286(38.8%)	

n = number

One hundred and ninety (73.4%) male and 555(75.2%) female participants have not had a diagnostic testing, 164(63.3%) males and 425(57.6%) females do not know how to carry out breast self-examination (BSE), 180(69.5%) males and 498(67.5%)females have not done clinical breast examination (CBE), and 208(80.3%) male and 600(81.3%) females have not carried out mammography (Table 4.8). 61.0% of females and 66.0% of males have not practiced breast self-examination (BSE). This result showed no statistical significant difference (Table 4.8).

Table 4.8: Breast cancer examination and screening stratified by gender

		Male(n=259)	Female(n=738)	*p*-value
Diagnostic Test	Yes	69(26.6%)	183(24.8%)	0.557
	No	190(73.4%)	555(75.2%)	
Breast self-examination(BSE)	Yes	95(36.7%)	313(42.2%)	0.106
	No	164(63.3%)	425(57.6%)	
Practice of BSE	Yes	87(33.6%)	260(35.2%)	0.634
	No	172(66.4%)	478(64.8%)	
How often (BSE)				
Never		172(66.4%)	478(64.8%)	0.634
Monthly		52(20.1%)	161(21.8%)	
Yearly		35(13.5%)	99(13.4%)	
Clinical breast examination(CBE)	Yes	79(30.5)	240(32.5%)	0.549
	No	180(69.5%)	498(67.5%)	
How often (CBE)				
Never		180(69.5%)	498(67.5%)	
Once		14(5.4%)	79(10.7%)	
Twice		63(24.3%)	151(20.5%)	0.549
>3 times		2(0.8%)	10(1.4%)	
Mammography	Yes	51(19.7%)	138(18.7%)	0.726
	No	208(80.3%)	600(81.3%)	
How often (mammography)				
Never		208(80.3%)	600(81.3%)	0.726
Once		2(0.8%)	10(1.4%)	
Twice		22(8.5%)	62(8.4%)	
>3 times		27(10.4%)	66(8.9%)	

n=number

The female ages according to their responses to the screening tests shows no significant difference (Table 4.9)

Table 4.9: Breast cancer examination and screening stratified by ages of females

		Age				Total	*p*-value
		20 – 29	30 – 39	40 - 49	50 - 65		
Diagnostic Test	Yes	30	25	36	92	183	<0.001*
	No	148	120	153	134	555	
Breast self-examination(BSE)	Yes	53	48	94	118	313	<0.001*
	No	125	97	95	108	425	
How often (BSE)	Never	137	101	98	114	450	<0.001*
	Monthly	26	22	69	60	177	
	Yearly	15	22	22	52	111	
Clinical breast examination (CBE)	Yes	32	32	76	100	240	<0.001*
	No	146	113	113	126	498	
How often (CBE)	Never	146	110	113	126	495	<0.001*
	Once	18	23	27	14	82	
	Twice	14	12	39	86	151	
	> 3 times	0	0	10	0	10	
Mammography	Yes	0	6	40	92	138	<0.001*
	No	178	139	149	134	600	
How often (mammography)	Never	178	139	149	132	598	<0.001*
	Once	0	0	10	0	10	
	Twice	0	6	10	46	62	
	> 3 times	0	0	20	48	68	

The only not statistically significant difference observed in males is among those that responded to BSE with a *p*-value of 0.067 but the rest are significant (Table 4.10)

Table 4.10: Breast cancer examination and screening stratified by ages of males

		Ages				Total	*p*-value
		20 – 29	30 – 39	40 - 49	50 - 65		
Diagnostic Test	Yes	12	18	6	33	69	<0.001*
	No	28	34	80	48	190	
Breast self-examination(BSE)	Yes	12	22	24	37	95	0.067
	No	29	30	62	44	164	
How often (BSE)	Never	28	34	65	44	171	0.006*
	Monthly	4	16	14	23	57	
	Yearly	8	2	7	14	31	
Clinical breast examination (CBE)	Yes	10	16	17	36	79	<0.001*
	No	30	36	69	45	180	
How often (CBE)	Never	30	36	69	45	180	<0.001*
	Once	2	2	8	2	14	
	Twice	8	14	7	34	63	
	> 3 times	0	0	2	0	2	
Mammography	Yes	0	10	8	33	51	<0.001*
	No	40	42	78	48	208	
How often (mammography)	Never	40	42	78	48	208	<0.001*
	Once	0	0	2	0	2	
	Twice	0	0	4	18	22	
	> 3 times	0	10	2	15	27	

n=number

Regarding the treatment for breast cancer, 78 (30.1%) males and 204 (27.6%) of females think that breast cancer can be cured using alternative or herbal medicine because it is thought to be effective and beneficial (Table 4.11). On the contrary, 181 (25.3%) of male and 534 (74.7%) of female participants disagreed because according to them it has not been proven, cancer has no

known cure, and that a patient still died after the herbal medicine was administered (Table 4.11). Our result indicates no statistical significant difference because all the *p*-values are greater than 0.05 (Table 4.11)

Table 4.11: Knowledge of breast cancer treatment stratified by gender

		Male(n=259)	**Female(n=738)**	***p*-value**
Surgery	Yes	119(45.9%)	341(46.2%)	0.942
	No	140(54.1%)	397(53.8%)	
Alternative/herbal medicine	Yes	78(30.1%)	204(27.6%)	0. 447
	No	181(69.9%)	534(72.4%)	
Prayers	Yes	176(68.0%)	545(73.8%)	0.068
	No	83(32.0%)	193(26.2%)	
Curable if detected early	Yes	223(86.1%)	610(82.7%)	0.276
	No	36(13.9%)	128(17.3%)	

n=number

On hundred and forty one (54.1%) of males and 371(50.3%) which makes the majority of the participants denied the possibility of a breast cancer sign when they observe a painless lump (Table 4.12). Although not all lumps on breast leads to breast cancer notwithstanding, it is also an important indicator. 200(77.2%) of the males and 584(79.1%) females said that they will visit a doctor if they observed a blood discharge from their breast (Table 4.12). Having such attitude of seeking for medical help from the physicians or medical doctors will enable early detection and diagnosis of breast cancer.

Table 4.12: Knowledge of signs and symptoms of breast cancer stratified by gender

		Male (n=259)	**Female(n=738)**	***p*-value**
Painless lump as sign	Yes	118(45.6%)	367(49.7%)	0.248
	No	141(54.4%)	371(50.3%)	
Blood discharge from breast and what to do				
Do nothing		8(3.1%)	12(1.6%)	0.341
Take some drugs		51(19.7%)	142(19.2%)	
Visit a doctor		200(77.2%)	584(79.1%)	

n= number

Seventy five (29.0%) males and 241(32.1%) female participants said lack of awareness is the reason why they do not go for cancer screening which is the highest followed by the fear of a positive result having 68(26.3%) males and 143(19.4%) females. The least is participants that answered'no reason' making 15(5.8%) males and 26(3.5%) females (Table 4.13). A *p*-value of 0.015 shows a statistical significant difference in this result (Table 4.13).

Table 4.13: Reasons why people do not go for breast cancer screening stratified by gender

	Male **n = 259(26%)**	**Female** **n = 738(74.0%)**	***p*-value**
It is expensive	42(16.2%)	113(15.3%)	0.015*
Lack of awareness	75(29.0%)	241(32.7%)	
It is embarrassing	49(18.9%)	150(20.3%)	
Lack of screening equipment	10(3.9%)	65(8.8%)	
Fear of a positive result	68(26.3%)	143(19.4%)	
No reason	15(5.8%)	26(3.5%)	

n = number

Two hundred and ten (81.9%) males and 552(74.8%) female participants did not believe that breast cancer is caused by magic or evil spirits (Table 4.14). Also 183(70.7%) males and 487(66.0%) said that breast cancer is not contagious (Table 4.14).

Table 4.14: Beliefs of participants about breast cancer stratified by gender

		Male(n=259)	**Female(n=738)**	***p*-value**
Caused by magic and spirit	Yes	49(18.9%)	186(25.2%)	0.040*
	No	210(81.1%)	552(74.8%)	
Contagious	Yes	76(29.3%)	251(34.0%)	0.169
	No	183(70.7%)	487(66.0%)	

n = number

The participants are positive about including the breast cancer awareness in the school curriculum looking at the 737(73.9%) of those who agree as against 260(26.1%) who do not agree (Table 4.15).

A *p*-value of 0.085 and 0.718 under inclusion in the school curriculum and sufficient breast cancer awareness in Nigeria respectively shows no statistical significant difference (Table 4.15). But the question that asked if breast cancer is a major problem in Nigeria shows significance at a *p*-value of 0.005(Table 4.15)

Table 4.15: Response of participants to breast cancer inclusion in school curriculum and situation in Nigeria stratified by gender

		Male(n=259)	**Female(n=738)**	***p*-value**
Inclusion in the school curriculum	Yes	181(69.9%)	556(75.3%)	0.085
	No	78(30.1%)	182(24.7%)	
Sufficient breast cancer awareness in Nigeria	Yes	13(5.0%)	33(4.5%)	0.718
	No	246(95.0%)	705(95.5%)	
Breast cancer a major problem in Nigeria	Yes	132(51.0%)	302(43.5%)	0.005*
	No	127(49%)	563(56.5%)	

n=number

CHAPTER 5

DISCUSSION

There is higher mortality rate due to breast cancer among the Sub-Saharan women compared to the women in the Western world; however Western women have a much higher incidence rate of the disease (Fregene and Newman, 2005; Ly et al., 2011). The type of breast cancer that African women develop is the more aggressive type and the cause of high death rate has been associated to lack of public awareness of breast cancer generally. Also the screening programs are limited which usually lead to late diagnosis of the disease even at its metastatic stage to other organs (Wadler et al., 2011).

It was observed that a lower number and a higher percentage of males 5(1.9%)compared to females but a higher number and lower percentage of females 13(1.8%) claimed to have had breast cancer (Table 4.3). This could be due to the method of recruitment of study participants which was not random coupled with the fact that some participants may not have understood the question. Furthermore, of all the participants, the females consist of 74.0% and males 26.0%. It is known that women have a higher percentage of breast cancer compared to men. In response to the name of a type of cancer that a family member might have suffered other than breast cancer, a participant named adamantinomacancer which is a rare primary low-grade bone malignant tumor of which the histogenesis is not known and is mostly found in the mid part of the tibia (Mirra, 1989). The breast cancer disease killed most affected known persons in this study as claimed by the participants willingly added this information.

Campaigns have begun in recent years by the World Health Organization (WHO) with several local and international organizations to create more awareness of the disease among women in

the Sub-Sahara African region. Because breast cancer develops in African women reaching a peak of 10 years earlier between 35 to 40 years, which is why it is crucial that awareness of breast cancer should be at an earlier age. The main focus of this study was to assess knowledge, awareness and attitudes towards breasts cancer among school teachers. The findings here in this study is in agreement with studies in some parts of the world such as Malaysia, Pakistan, Yemen, Nigeria and Saudi (Al-Naggar et al., 2011; Ahmed, 2010; Yadav and Jaroli, 2010, Sait et al., 2010; Gwarzo et al., 2009, Karayurt et al., 2008; and Ahmed et al., 2006). These results showed an overall lack of awareness and knowledge among students in universities regardless of their sex, marital status, study years, and the nature of the high school attended. It was also quite intriguing that the perceptions held by medical program students about the disease of breast cancer showed no difference with the non-medical program students. In a previous study carried out in different parts of the world such as Pakistan and Nigeria, breast cancer knowledge was observed to be limited even among nurses that are of health care professions (Ahmed et al., 2006; Powe et al., 2005; and Odusanya and Tayo, 2001).More than half of the participants think that breast cancer is not a major problem in the country. This is also we think is what affected the awareness level of which 95.4% said that there is no sufficient breast cancer awareness (Table 4.15). Three hundred and sixty seven (49.7%) of females and 118(45.6%) males agreed that painless lump on breast is a sign of breast cancer. This can bemisleading information that is widely spread because not all lumps on breast causes breast cancers. In Nigeria, according to a study report majority of breast cancer patients said that ignorance of how serious a painless lump on breast can be is the reason why they take longer time before they seek for a medical advice (Ukwenya et al., 2008). Hence, women who are affected will tend to prolong and present late to a

healthcare practitioner when they observe changes in their breasts. Some even keep it in silence and try to treat it.

Majority of the participants both male and females does not practice breast self-examination (BSE) nor clinical breast examination (CBE) (Table4.8). This could also imply that they have not yet received proper information on how to perform BSE. However, most of them agreed that contraceptives use increases the chances of developing breast cancer and breast feeding decreases the risk of developing the disease (Table 4.7).

This study shows that one of the reasons why people do not go for asymptomatic diagnosing is due to lack of awareness (Table 4.13). Asymptomatic screening isvery important for early breast cancer detection. Some of them indicated little or no knowledge about breast cancer risk factors even though they know about the disease (Table 4.13).

This highlights the important part education can play in minimizing the delay or late presentation for a clinical checks of women because they are already breast aware and are ready to take action. Breast cancer is uncommon in those below the age of 30, but between the age of 30 and 60, there is a quick rise in an age specific incidence (Table 2.1). The highest incidence rate is in the early 70s and there is a 5 year survival rate following examination which is more than 70% (EBCTCG, 1998 and Cancer in Ireland, 2001). Nonetheless, the overall lifetime risk of development of breast cancer is relatively 1 in 12, which is different with age, across countries and the level of screening for the disease, also the overestimating incidence of breast cancer due to borderline pathologies detection (EBCTCG, 1998 and Cancer in Ireland, 2001).

It might be argued that there is no specific reason as to why school teachers should know much about breast cancer. But there is the tendency of some of them carrying the wrong understanding

of this disease too. However, this disease develops rarely in men, but they are greatly affected if their partners or relatives develop breast cancer. The attitudes and beliefs of some women may be influenced or shaped by their family, friends or even married partner that will tend to affect their opinion concerning risk factor modification or breast cancer screening (Chamot and Perneger, 2002). For example, Norcross et al., in 1996 showed that 18.5% of women who attended a primary care practice were encouraged to attend by a friend or a male relative. In creating or shaping policies and public health opinions, there is a representation of both male and female sexes to balance. Therefore, it will be improper to only investigate breast cancer knowledge, awareness and attitudes in female teachers. A previous study carried out in Switzerland assessed knowledge of breast cancer in males and females; the investigation at the end found breast knowledge was not quite different between men and women (Chamot and Perneger, 2002). Even though breast cancer is a predominantly a female disease, it is quite surprising that women do not know much better than men concerning the risks factors. A question can be asked, why are most participants aware of breast cancer and yet they do not have much understanding about the risk factors with the signs and symptoms? The source of information the study participants indicated that they first learnt about the disease had social media 78(30.1%) males and 148(20.1%) females as the highest (Table4.2). Perhaps, the reason is because most information about breast cancer is gotten from the popular social media instead of physicians/health workers or professional sources, writers may influence and sensationalize this disease and concentrate anecdotally on patients that are young (Marino and Gerlach, 1999). This may present inaccurate and unclear general depiction of their understanding. A few number of participants claimed to have had their information of breast cancer from a physician/health worker and low information grip from such

professionals may indicate that the funding by the Nigerian government of health budget allocation for the year 2016 (approximately 2.7%) although it has been increased to 4.7% in 2017 is insufficient.In addition, even professional health workers are the source of the breast cancer information; it has been found by researchers that the quality of such information is sometimes poor pointing to poor risk assessment, screening and mortality information (Slaytor and Ward, 1998).

In our study, it was observed that 83.0% males and 87.7% females agreed that breast cancer can be inherited (Table 4.7). One hundred and fifty seven (60.6%) males and 572(77.5%) females agreed that breast feeding reduces the risk of breast cancer with a *p*-value of <0.001 (Table 4.7). Ahmed et al., in 2006 observed that 35% of the nurses had good knowledge 40% with fair knowledge and 25% were having poor knowledge of breast cancer risk factors. Almost all of the nurses (99%) were able to identify that breast cancer is not contagious and 96% said that breast feeding does not put one at risk of developing breast cancer and majority were positive that evil spirits had no link with breast cancer. However, the percentage of nurses who had the knowledge that overweight increases breast cancer risk was 23%. In this study, 81.1% males and 74.8% females said that evil spirits does not cause breast cancer and 70.7% males with 66.0% females answered that breast cancer is a non-communicable disease. Notwithstanding, 64.9% and 48.2% of males and females respectively also said that obesity is not a risk factor for breast cancer. In response to the why participants have not yet gone for breast cancer screening, 75(29.0%) males and 241(32.7%) females point to lack of awareness. This result showed statistical significant difference at a *p*-value of 0.015 (Table 4.13). There is need to create more awareness about breast cancer screening methods available and the government should please supply more.

CHAPTER 6

CONCLUSION

At the end of this study, it was observed that majority of the participants know about breast cancer disease but their knowledge on the signs and symptoms of the disease alongside carrying out screening is poor. Especially for breast self-examination (BSE) which is a very cheap lifesaving technique that needs to be upheld seriously alongside clinical breast examination (BSE), Mammography and Diagnostic test.

Although in the course of this study, it cannot be stated clearly that the breast cancer disease that was revealed is sporadic or hereditary as majority of the participants have not been tested. So what we have to hold unto and which is the best right now is prevention. This can be achieved through creating public awareness so that the public can have good knowledge about the breast cancer. It will also help the public to know what to always do because they are already breast aware. Majority of the study participants do not carry out screening tests.

The fact that they know about the disease is good but they need to gain more in-depth knowledge about the disease. This can be achieved by the teachers making a deliberate effort to learn more about breast cancer. The government on the other hand can help organize seminars, workshops or as suggested by 69.9% male and 75.3% female participants that breast cancer should be included in the school curriculum (Table 4.15). This will really go a long way in helping the public in making informed decisions or taking actions that can help prevent breast cancer. The general public or females who are at risk can then undergo breast cancer risk management including screening, treatment choices or changes in risk lifestyle modification.

6.2 Recommendation

Teachers should make conscious effort as to learn about breast cancer disease from reliable sources. In that way, they can disseminate such information to their wards or students easily. Non-Governmental Organizations (NGOs) can also contribute to teach especially the females to be breast aware. The government should invest more money in the infrastructure and health personnel in that way people can have access to breast cancer screening services and it will really reduce the incidence of this disease. At the same time, government should consider having a national screening program as well as educative programs to raise awareness on early signs and symptoms.

6.3 Study Limitation

This study population which consists of school teachers in Kaduna Metropolis is just a specific group of people in the same professionand in a particular location of the state. Majority of them are educated and this does not merely represents the general population of the state. In spite of this, the planned study was designed specifically on school teachers because they impact lives with knowledge in the classroom and outside the classroom.

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Appendix 1

Questionnaire

Title: Knowledge, Awareness and Attitudes to Breast Cancer

Breast Cancer is a Global public health problem. To ensure primary prevention and treatment population based screening program as well as breast cancer awareness is necessary. To assess the knowledge and attitude regarding breast cancer some information is required from you. Your response will contribute immensely to conduct this study.

Please answer the questions by ticking or circling your option and write where necessary

E.g.: Which of the following is used for writing? Car ( ) Keys ( ) Pen (√)

PART 1

Demographic Characteristics

1. Please indicate your age – ……..
2. Gender – Male ( ) Female ( )
3. Educational Level – Primary ( ) Secondary ( ) Tertiary ( )
4. Marital Status – Single ( ) Married ( ) Divorced ( ) Widowed ( )
5. Ethnicity – Hausa ( ) Yoruba ( ) Igbo ( ) Others ……..

PART 2

Response about breast cancer knowledge source

1. Which was the source of your information about breast cancer?

a. Physician/health worker
b. Seminar/workshop
c. Radio/TV
d. Newspaper
e. Friends
f. Religious forum
g. Social media
h. Non-Governmental Organization
i. Family
j. Journals

Response about breast cancer risk factors and level of knowledge questions

1. Have you had breast cancer before? – Yes ( ) No ( )
2. a. Do you know anyone in your family who have/had cancer? – Yes ( ) No ( )

2b.What is the name of the cancer if you answered 'Yes' above ……

3. Indicate your level of breast cancer knowledge – Low ( ) Moderate ( ) High ( )
4. Can breast cancer be inherited? Yes ( ) No ( )
5. Does breast feeding decrease risk of breast cancer? Yes ( ) No ( )
6. Is not becoming pregnant at all (nulliparity) a risk factor for breast cancer? Yes ( ) No ( )
7. Is obesity a risk factor for breast cancer? Yes ( ) No ( )
8. Do oral contraceptive pills increase the risk of breast cancer? Yes ( ) No ( )
9. Is trauma (injury) to breast a risk factor of breast cancer? Yes ( ) No ( )
10. Is smoking a risk factor for breast cancer? Yes ( ) No ( )

Screening tests and how often

1. Have you carried out diagnosis/genetic testing for breast cancer? Yes ( ) No ( )
2. Do you know how to carry out breast self-examination (BSE)? – Yes ( ) No ( )
3. Do you practice breast self-examination (BSE) – Yes ( ) No ( )
4. How often do you do breast self-examination (BSE) – a. Monthly b. Yearly c. Never
5. a. Have you done clinical breast examination (CBE) before? Yes ( ) No ( )

   5b. if yes, how many times? – Once ( ) Twice ( ) More than 3 times

6. a. Have you had mammography before? – Yes ( ) No ( )

   6b. If yes, how often? Once ( ) Twice ( ) More than 3 times ( )

Knowledge about breast cancer treatment

1. You think surgery is the most effective method of treatment for breast cancer? – Yes ( ) No ( )
2. Do you think alternative or herbal medicine can cure breast cancer? – Yes ( ) No ( )
   3a. If No or Yes why? ……....
3. Can Breast cancer disappear following prayers? – Yes ( ) No ( )
4. Is breast cancer curable if detected early? – Yes ( ) No ( )

Sign of breast cancer and what to do

1. Is painless breast lump a risk factor for breast cancer? Yes ( ) No ( )
2. What will you do if you see blood stained discharge from your breast? a. Do nothing b. Take some drugs c. Visit a doctor

3. In your opinion, what do you think is the reason why people don't go for breast cancer screening?

a. It is expensive ( )
b. Lack of awareness ( )
c. It is embarrassing ( )
d. Lack of screening equipment ( )

e. Fear of a positive result ( )
f. No reason ( )

Breast cancer beliefs

1. Is breast cancer caused by magic or/ and evil spirits? Yes ( ) No ( )
2. Is breast cancer contagious? Yes ( ) No ( )

Breast cancer in Nigeria and school curriculum

1. Do you think breast cancer awareness should be included in school curriculum? Yes ( ) No ( ).
2. Do you think there is sufficient breast cancer awareness in Nigeria? – Yes ( ) No ( )
3. Do you think that breast cancer is a major problem in Nigeria? – Yes ( ) No ( )

Appendix 2

Ethical Approval

MINISTRY OF HEALTH AND HUMAN SERVICES
KADUNA STATE, NIGERIA

MOH/ADM/744/VOL.1/853 24TH April, 2017

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NOTICE OF APPROVAL AFTER FULL COMMITTEE REVIEW

KNOWLEDGE AWARENESS AND ATTITUDES TO BREAST CANCER AMONG SCHOOL TEACHERS IN KADUNA METROPOLIS

Name of Principal Investigator:	**SOLOMON TABAT YAYA**
Address of Principal Investigator:	**Department of Medical Genetics and Biology Institute of Health Sciences NEU, Nicosia, Northern Cyprus.**
Date of receipt of Application	**29th March, 2017**
Date of Ethical Approval	**24th April, 2017**

This is to inform you that the Research described in the submitted Protocol, the Consent forms, advertisements and other participant information materials have been reviewed and given full approval by the Health Research Ethics Committee (HREC).

If there is delay in starting the research or any change, inform the HREC so that the dates of approval can be adjusted accordingly.

However, Researcher is kindly requested to submit a copy of his/her findings to the State Ministry of Health, please.

DR. BUTAWA NUHU N.
SECRETARY
FOR: CHAIRMAN

KADUNA STATE MINISTRY OF HEALTH
OPEN REGISTRY
DESPATCH
SIGN. DATE 4/5/17

Independence Way, P.M.B 2014, Kaduna, Kaduna State-Nigeria
Tel: +234 (0) 818 407 8693 | Website: www.kdsg.gov.ng | Email: health@kdsg.gov.ng