

AN INTEGRATIVE REVIEW OF LITERATURE ON THE DETERMINANTS OF HEALTH  
OUTCOMES OF WOMEN LIVING WITH BREAST CANCER IN CANADA AND NIGERIA  
FROM 1990-2014: A COMPARATIVE STUDY

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By  
Agatha Ogunkorode

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## ABSTRACT

**Background and Aim:** Globally, breast cancer is the most common cancer among women. The stage of the disease at diagnosis is a core determinant of its health outcome. In low to middle-income countries like Nigeria, advanced stage of disease presentation for medical care represents a significant problem. While mortality rates from breast cancer are declining in developed countries like Canada, they are increasing in developing countries like Nigeria. It is well documented that presentation for medical care at the early stages of the disease improves outcome. Knowledge of the factors that impact seeking medical care after breast cancer symptom discovery in women and knowledge of the factors that impact participation in breast health activities by women is important in reducing breast cancer-related mortality.

**Methods and Design:** This integrative review critically examined the determinants of health outcomes of women living with breast cancer in Canada and Nigeria from 1990-2014. Specifically, it examined the factors that impact seeking medical care after breast cancer symptom discovery in women. It also explored the factors that impact participation in breast health activities by women in the two countries from 1990 to 2014. A total of 303 articles were identified and retrieved by searching the following databases: CINAHL, MEDLINE, and EMBASE. Grey literature from relevant organizations websites were identified using Google Scholar. Among the 303 articles identified, 55 met the inclusion criteria.

**Results and Conclusion:** Findings from the articles that met the inclusion criteria showed that Canadians have a high level of breast health awareness. The findings also suggest that women in Nigeria have rather poor knowledge of breast health awareness and breast cancer. In Nigeria, presentation with an advanced stage of the disease made survival very low. This also compromises the quality of life of the patients. The major factors responsible for the late

presentations were a lack of breast cancer awareness and education. Other social factors that mitigate against early presentations for medical care include misconceptions about breast cancer treatment and outcomes. In line with the findings of this study, it is recommended that wide spread culturally sensitive, linguistically appropriate, health education programs to teach breast health awareness should be developed and disseminated. Such health awareness programs should be targeted at women through various channels such as the media, the television, and radio. Also, within the hospital, the developed education programs should be integrated into the existing women health education programs. Non-government and other charitable organizations can also make significant contributions to breast health awareness through sponsoring health talks and workshops targeted at relevant segments of the population.

**Key search words:** Breast cancer, breast neoplasm, diagnosis, prevention and control, health knowledge, patient attitude and practice, breast self-examination, awareness, patient education as topic, mass screening, early detection of cancer, Nigeria, Canada.

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## **DEDICATION**

This thesis is dedicated to our Loving and faithful God for being my God. To Our Lord and Savior Jesus Christ, To Our Blessed Mother Mary and all the Angels and Saints of God for their fidelity to me. The work is also dedicated to the memory of my loving parents Baba and Mama Dominic Ogunkorode for their love for me at all times and their faith in me. May their gentle and godly souls continue to rest in perfect peace. Amen.

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## LIST OF ABBREVIATIONS

|         |  |
|---------|--|
| BSE     | Breast Self-Examination.                                 |
| BHGI    | Breast Health Global Initiative                          |
| CBE     | Clinical Breast-Examination.                             |
| CINAHL  | Cumulative Index to Nursing and Allied Health Literature |
| EMBASE  | Excerpt Medical Databases                                |
| GNI     | Gross National Income                                    |
| HER2    | Human Epidermal Growth Factor 2                          |
| IARC    | International Agency for Research on Cancer.             |
| LABC    | Locally Advanced Breast Cancer                           |
| MBC     | Metastatic Breast Cancer                                 |
| MEDLINE | Medical Library On-Line                                  |
| NHIS    | National Health Insurance Scheme (Nigeria)               |
| WHO     | World Health Organization.                               |

## **DEFINITION OF TERMS**

### **World Bank Classification of Countries**

The World Bank classifies countries according to their gross national income as low income, lower-middle-income, upper-middle-income, and high-income. The World Bank defines low-income countries as those with a 2008 gross national income (GNI) per capita of US \$ 745 or less. Lower-middle-income countries as those with GNI of US \$ 746-\$2,975 and upper-middle-income countries are defined as those with a GNI per capita of US \$ 2,976 -\$9,205, high-income countries are those with a GNI of US \$ 9,206 or more. The high-income countries are largely in North America and Europe. The low-middle income countries are mainly in Africa and Asia. The low and middle-income countries are usually referred to as developing economies while high-income countries are referred to as developed economies. These groupings provide an indication of the range of economic situations among countries.

The term does not imply either that all the developing countries are actually in the process of development or that those in the developed group have reached some final stage of development. For global health care, this classification provides a useful framework to assess how the countries' available resources should be allocated to address the most relevant health issues. According to this classification, Nigeria belongs to the lower middle-income country. (Oyinye et al., 2015; World Bank Economic Classification, 2012).

## 1.1 Introduction

Globally, breast cancer is the most commonly diagnosed cancer among women after lung cancer. According to GLOBOCAN (2012), an estimated 14.1 million new cases and 8.2 million breast cancer-related deaths occurred in 2012, compared with 12.7 million and 7.6 million, respectively, in 2008. Prevalence estimates for 2012 showed that there were 32.6 million people (over the age of 15 years) alive who had had cancer diagnosed in the previous five years. Projections based on the GLOBOCAN (2012) estimates predict a substantive increase to 19.3 million new breast cancer cases per year by 2020. The increase will be due to the growth and aging of the global population (Ferlay et al., 2010; Forman, 2013). More than half of all cancers (56.8%) and cancer-related deaths (64.9%) in 2012 occurred in less developed regions of the world. These proportions will increase further by 2025 (WHO, 2012). Since the 2008 estimates, breast cancer incidence has increased by more than 20% while mortality has increased by 14%. Breast cancer is the most frequently diagnosed cancer among women in 140 of 184 countries worldwide. It now represents one in four of all cancers in women (GLOBOCAN, 2012).

Worldwide trends show that in developing countries going through rapid societal and economic changes, the shift towards lifestyles typical of industrialized countries leads to a rising burden of cancers associated with reproductive, dietary, and hormonal risk factors (Porter, 2008). Incidence has been increasing in most regions of the world, but there are huge inequalities between rich and poor countries (Ferlay et al., 2010). Incidence rates remain highest in more developed regions, but mortality is relatively much higher in less developed countries due to a lack of early detection and access to treatment facilities (Forman, 2013; GLOBOCAN, 2012). For example, in Western Europe, breast cancer incidence has reached more than 90 new cases

per 100,000 women annually, compared with 30 per 100,000 in Eastern Africa; in contrast, breast cancer mortality rates in these two regions are almost identical, at about 15 per 100,000, which clearly points to a later diagnosis and much poorer survival in Eastern Africa (Ferlay et al., 2010). An urgent need in cancer control today is to develop effective and affordable approaches to the early detection, diagnosis, and treatment of breast cancer among women living in less developed countries; it is critical to bringing morbidity and mortality in line with progress made in recent years in more developed parts of the world (Wild, 2013).

Priority should be given to breast cancer early detection and control measures due to striking patterns of breast cancer across the globe (Forman, 2013; GLOBOCAN, 2012). It is crucial that there is a widespread increase in educational programs to increase awareness, early presentation, and the introduction of screening where affordable (Howell, 2010).

The Breast Health Global Initiatives (BGHI) guidelines are useful indicators for governments, of the potential sequence of the developments for early detection and treatment of breast cancer (Anderson et al., 2008). In countries with basic and limited resources, the guideline suggested the widespread introduction of culturally sensitive, linguistically appropriate, local education programs to teach breast health awareness and awareness with mammography in countries with enhanced or maximal health care systems (Howell, 2010). Richard et al., (1999) also point out that the therapies developed in high income countries may not always be directly transferred without evaluation of their effectiveness, including drug metabolism, cultural and psychosocial issues, and the operation of health care systems.

This study explored the determinants of health outcomes of women living with breast cancer in Canada and Nigeria from 1990-2014. It specifically looked at the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact

participation in breast health activities by women in Canada and Nigeria from 1990-2014. The findings showed that Canadian women have a high level of breast health awareness and breast cancer. On the other hand, Nigerian women seem to have poor knowledge of breast health and breast cancer. This finding might partly explain the late stage of disease at presentation seen in Nigeria. The later stage of the disease process at presentation is said to be responsible for the poor outcome of breast cancer in developing countries like Nigeria (Adebamowo et al., 2012; Afolayan, 2008; Agboola et al., 2012; Anderson et al., 2008; Jedy-Agba et al., 2012; Pruitt et al., 2014; Yip et al., 2012;). However, there is a paucity of studies in the literature exploring why women with breast cancer present with the later stages of the disease.

The aims of this study were to investigate those factors that impact seeking medical care after breast cancer symptom discovery in women in Canada and Nigeria from 1990-2014. The study also explored the factors that impact participation in breast health activities by women in the two countries. This study is significant because if the factors that impact seeking medical care after breast cancer symptom discovery in women are known, and if the factors that impact participation in breast health activities are discovered, they could be adequately addressed so that women could seek appropriate care at the earlier stages of the disease. According to Anderson et al. (2008), diagnosing breast cancer at earlier stages will reduce breast cancer mortality. This study was a comparative study of two countries, Canada, a developed country, and Nigeria, a developing country. The study compared breast health activities in the two countries, with aim of importing best practices from a developed country to a developing country. This strategy could help to bring morbidity and mortality from breast cancer in women in a developing country like Nigeria in line with the progress made in recent years in more developed parts of the world like Canada (Wild, 2013). The research questions addressed were a) “What are the factors that impact



seeking medical care after breast cancer symptom discovery in women in Canada and Nigeria from 1990-2014”, and b) “What factors impact participation in breast health activities by women in Canada and Nigeria from 1990-2014?”

## **1.2 Outline of the Manuscript Style Thesis**

This study was an integrative review of the literature from 1990-2014 on the determinants of health outcomes of women living with breast cancer in Canada and Nigeria. Chapter 2 presents the proposal for the study. It outlines the overall purpose and objectives of the review, the methodology and procedures used for data collection and analysis, and the importance of the research study. Chapter 3 of the thesis is written as a manuscript for publication. It contains the overall findings of the review. This manuscript will be formatted and be presented for publication in the *International Journal of African Nursing Services*. Chapter 4 is a second manuscript presenting the need for Nigeria to have an operational policy for breast cancer care and management. This second manuscript will also be formatted and be presented for publication in *Research Journal of the Nursing and Midwifery Council of Nigeria*. Chapter 5 presents further literature on some issues that were not presented in the manuscripts. Since this study was a comparative study, valuable lessons learned from Canada, which can be applied in a Nigerian situation, are also presented. The summary of the study and a reflection of the author on the whole process with significant lessons that can be applied in future research work are also presented.

### 2.1 Problem Statement

Among women, breast cancer is the most common cause of cancer-related deaths worldwide, and case fatality rates are highest in low-resource countries (Anderson et al., 2008; Ferlay et al., 2010). Over 411,000 deaths result from breast cancer annually, accounting for greater than 1.6% of female deaths from all causes (Anderson et al., 2008). The incidence of breast cancer in Nigeria has risen significantly (Jedy-Agba et al., 2012). The age-standardized incidence rates for breast cancer in the period between 1960-1969 was 13.7 per 100,000. It rose to 24.7 per 100,000 by 1998-1999; more or less a doubling of incidence over four decades or approximately 25% increase in rate per decade. The rate in 2009-2010 was 54.3 per 100,000. This represents a 100% increase in the last ten years (Jedy-Agba et al., 2012). Despite the threat that breast cancer poses to public health especially in sub-Saharan Africa, few countries in the region have data on breast cancer incidence (Sylla & Wild, 2012). Most of the breast cancer incidence data in Sub-Sahara Africa in recent times were based on reports from registries in The Gambia, Zimbabwe and Uganda (Curado et al., 2011). Jedy-Agba et al. (2012) reported that the incidence rate of breast cancer in their study was higher than that reported by GLOBOCAN's (2008) estimate of 38.7% per 100,000. According to Forouzanfar (2011), the reported increasing incidence may be real, due to the prevalence of risk factors for these cancers. Jedy-Agba et al. (2012) highlighted the need for high-quality regional cancer registries to serve a vast country like Nigeria to adequately inform policy and allocation of resources for breast cancer treatments.

Cancer registries play a significant role in the design and monitoring of disease control activities and policies. Population-based cancer registries are the primary source of information in developed countries like Canada. In developed countries, the health care infrastructure enables

the registration of quality cancer data. In low and middle-income countries, where medical facilities are limited or scarce, cancer registration data may be of low quality. According to Curado et al. (2009), high-quality data are necessary to guide cancer care and improvement of identified goals. Afolayan et al. (2012) also alluded to the poverty of data and sparse literature review on the trends of breast cancer in Nigeria due to few existing cancer registries most of which are either hospital-based or pathology-based instead of the preferred population-based cancer registries. According to Boyle and Levin (2008), looking ahead with the rapidly rising cancer burden in low and middle-income countries, more high-quality incidence data are needed from regions and countries to establish the breast cancer burden and to monitor its evolution particularly in response to cancer control and care activities (Boyle & Levin, 2008).

Many studies (Afolayan et al., 2008; 2012; GLOBOCAN, 2012; Jedy-Agba et al., 2012) consistently reported and predicted increases in breast cancer incidence and mortality for Nigeria. In countries like Canada, the Canadian Cancer Society reported that fewer Canadian women are dying from breast cancer than in the past. The Canadian Cancer Society reported a decrease by 42 percent since the peak in 1986 (Canadian Cancer Statistics, 2014). According to the Canadian Cancer Society, women in Canada, who are diagnosed with breast cancer, are living longer than ever before, with 5-year survival rates of 88 percent (Canadian Cancer Statistics, 2014). The situation in Nigeria is not the same. There is a prediction of more than a 100% increase in incidence and mortality rates of breast cancer in Nigeria by 2030 (Jedy-Agba et al., 2012; Sylla et al., 2012). With the disparities in outcomes in breast cancer between developed and developing countries, it is imperative that action be taken to understand the causes of these differences and address them appropriately.

Despite the reported cases of poor prognosis of breast cancer, there is a lack of research

evidence precisely detailing the determinants of the observed high mortality rate, particularly in Nigeria. Afolayan et al. (2012) likewise echoed the same observation. The current research study intends to make available quality data that can be used as baseline information to guide breast cancer care. This study will examine for the first time the extent to which breast cancer care is similar and different across these two countries. The findings can advance theoretical knowledge and practical care. It can also give insight into ways of improving breast health care outcomes for women living with breast cancer, particularly in a developing country like Nigeria.

## **2.2 Introduction and Background.**

Breast cancer is a significant cause of cancer-related mortality in women all over the world (Agboola et al., 2012). The incidence of breast cancer in women is rising across the globe (GLOBOCAN, 2012). A comparison of the World Health Organization's International Agency for Research On Cancer [IARC], latest two versions (GLOBOCAN, 2008 & 2012) showed that the number of new cases increased from 12.7 million in 2008 to 14.1 million cases in 2012. Approximately 1.4 million women were diagnosed with breast cancer in 2012. There are 6.3 million women alive who have been diagnosed in the previous five years (Ferlay et al., 2010). Since the 2008 estimates, breast cancer incidence has increased by more than 20% while mortality has increased by 14%. GLOBOCAN (2012), predict that the total number of new breast cancer cases in women would increase to an alarming number of 22 million by 2025. The mortality rate is expected to rise to 13 million at that rate. Hudis (2014) stated that a possible explanations for this observation are fourfold: a) many countries now have resources to diagnose and report breast cancer more accurately, b) populations are growing, c) women around the world are living longer, and d) there is a global trend towards weight gain and obesity, with a broad adoption of the Western lifestyle and diet. Hudis (2014) therefore called for applying the

strategies that were successfully used in the West to bringing down the mortality rate of breast cancer to the developing countries so as to save millions of lives.

In Canada, GLOBOCAN (2012) reported 23,420 cases of breast cancer in women for the year 2014. This figure amounted to 27.1% of all cancers in women. A mortality of 4,924 cases was reported. This figure amounted to 14.0% of deaths from all other types of cancer in women at that time. For the five-year prevalence rate, GLOBOCAN (2012) predicted the incidence of 98,091 cases for Canada. This prediction amounts to 37.7% of all cancer cases in women. In Nigeria, GLOBOCAN (2012) reported 27,304 cases of breast cancer in women in for the year 2014. This figure amounted to 42.2% of all cases of cancer in women at that time, with a mortality of 13,960 cases. This figure amounts to 34.3% of deaths from cancer in women. The five-year prevalence prediction for Nigeria stands at 87,579 cases. This figure amounts to 53.1% of all cancers in women. The comparison of these data between Canada and Nigeria show a significant disparity in the health outcomes of women living with breast cancer in the two countries.

Maxmen (2012) stated that many factors influence a woman's chances of survival, including how early the tumor was detected and the molecular profile of the tumor. Women diagnosed now are much more likely to survive than women in decades past (Fregene et al. 2005; Maxmen, 2012). This is because women are living longer each decade because of improvements in surgery, screening, chemotherapies, hormone and biologic therapies. Tumors that are discovered while still localized, grant patients the best prognosis. As cancer spreads, it often becomes increasingly difficult to cure (Maxmen, 2012). Incidentally, breast cancer can be tracked along the continuum of care at different stages by the application of effective strategies for prevention, early detection, treatment, and care (Yip et al., 2012). With the estimated increase in the burden of breast cancer, urgent action is needed to understand the determinants of these

health outcomes so as to arrest this trend. Such understanding can inform programs that will assist in the implementation of evidence-based strategies for prevention, early detection, diagnosis, treatment, and palliation of breast cancer in women, while making the best use of available resources.

This study intends to explore and have an understanding of the factors that determine health outcomes of women who are diagnosed as having breast cancer in Canada and Nigeria from 1990-2014. Specifically, this study sets out to explore the factors that impact seeking medical care after breast cancer symptom discovery in women and the factors that impact participation in breast health activities by women in the two countries. Given the mortality rate of breast cancer in women, the development of knowledge in this area is critical. The findings of this integrative review can provide appropriate conclusions directly relevant to women with breast cancer healthcare needs and future research.

**2.3.1 Global Trends in Incidence and Mortality from Breast Cancer.** The impact of breast cancer has been increasing in most regions of the world (GLOBOCAN, 2012). However, there are enormous inequalities between rich and poor countries (Wild, 2013). Incidence rates remain highest in more developed regions, but mortality rate rates are relatively much higher in less developed countries. According to Taib et al. (2012), it is estimated that the burden of breast cancer will increase in the years to come, not only because of the steep increase in incidence rate but because of the rise in population in these countries. An increase in life expectancy is believed to be a result of a reduction in mortality from infectious diseases by 2020 (Jemal et al., 2010; Portal, 2008). Wild (2013) therefore called for greater attention to prevention and control measures to offset lifestyle changes that pushed breast cancer to be the leading cause of cancer death among women, particularly in developing countries. Ferlay et al. (2010), called for the

development of practical and affordable approaches to the early detection, diagnosis and treatment of breast cancer among women living in less developed countries. According to Wild (2013), it is critical to bringing mortality and morbidity rates in developing countries in line with the progress made in recent years in more developed parts of the world.

Improved treatment strategies have led to a decrease in mortality rates from breast cancer in developed countries (Yip & Taib, 2014; Ragaz, 2011). However, death from breast cancer continues to increase in developing countries due to increasing incidence, presentation at later stages of the disease, and lack of access to appropriate care (Coughlin & Ekwueme, 2009; Taib et al., 2011). Forman (2013), explained that breast cancer mortality is higher in women living in less developed countries partly because clinical advances to combat the disease are not reaching women living in these regions. There is a lack of early detection and poor access to treatment due lack of awareness, deficient infrastructure and healthcare facilities. The trend extends to all types of cancer with nearly 57% of the incidence and 65% of deaths reported in less developed countries, a tendency expected to increase further in 2015 (GLOBOCAN, 2012).

According to Hudis (2014), the report of GLOBOCAN (2012) on breast cancer in women revealed an alarming disparity in breast cancer incidence and mortality between the United States of America and the rest of the world. Domestically in the United States of America, breast cancer incidence remained stable from 2001 to 2010 with 15.6% decrease in mortality across the life span; whereas worldwide, breast cancer killed 522,000 women in 2012, a figure that went up 14% from 2008. Hudis (2014) adds that while incidence rates remain highest in more developed countries, the GLOBOCAN (2012) data showed mortality rates are greatest in less developed countries. Hudis (2014) stated that possible explanations for this observation are fourfold: many countries now have resources to diagnose and report breast cancer more accurately; populations are

growing; women around the world are living longer, and there is a global trend towards weight gain and obesity, with a broad adoption of the Western lifestyle and diet (Porter, 2008). Hudis (2014) therefore called for applying the strategies that were successfully used in the West to bringing down the mortality rate of breast cancer to the developing countries so as to save millions of lives.

### **2.3.2 Barriers to Early Presentation of Breast Cancer in Developing Countries.**

In low to middle socioeconomic countries, breast cancer is diagnosed at late stages of the disease (Story et al., 2012). The reasons given for the delayed presentation are geographical isolation, lack of early detection programs, ignorance, financial problems, and lack of an efficient healthcare system. Psychosocial and cultural factors also play important roles in the delayed presentation. In Bangladesh, a woman with cancer is viewed as having brought a curse to the family. Thus, a divorce is frequent after the diagnosis of breast cancer (Story et al., 2012; Taib et al., 2011). This would lead to a woman hiding a breast lump because of the fear of being abandoned.

A qualitative study conducted in the Asian country of Malaysia on why women present late showed that submission to fate is one of the leading causes for delayed presentation. Belief in traditional medicine as an active form of therapy prevails (Taib et al., 2011). The traditional healer is seen as being more holistic than the Western-trained doctor. Poor communication with health care providers in a busy public hospital discourages women from further follow-up. Added to this problem is the lack of autonomous decision-making power by the woman (Story et al., 2012; Taib et al., 2013; Yip et al., 2012). Women need approval by their significant others, whether spouse, parent or children, to seek help from a doctor. Stigmatization and fear of being socially marginalized are also factors in the late presentation (Story et al., 2012; Taib et al., 2011;



Yip et al., 2012). Cancer fatalism is prevalent, especially in religions where any form of illness or misfortune is seen as a punishment from God. Strong beliefs that witchcraft causes cancer prevail in some communities. Because of these barriers, delayed presentation of breast cancer is prevalent in developing countries. Because of late presentations and advanced stage of disease, the prognosis is poor even with treatment (Agarwal et al., 2007; Yip et al., 2012).

The incidence of poverty is one of the key issues linked to health indicator in Africa and in Nigeria. The incidence of poverty is widespread. Between 2003-2004, a household survey was conducted by the government and the results revealed that 54.4 percent of the Nigerian population is poor, with a higher poverty rate of 63.3 percent in rural areas. Over half of the population live below the poverty line; on less than \$1 a day and so cannot afford the high cost of health care (Oyibocha et al., 2014). Obansa and Orimisan (2013), identified some of the factors affecting the overall performance of the Nigerian healthcare system as follows: a) inadequate health facilities and structure, b) shortage of essential drugs supply, c) inadequate supervision of the healthcare system, d) poor human resources, management, remuneration and motivation, e) lack of fair and sustainable health care financing with very low per capita spending, f) unequal economic policies of the Nigerian state and corruption, g) high out-of-pocket expenditure in health by citizens, h) absence of community-based integrated system for disease prevention, surveillance and treatment. It is therefore necessary to come up with plans and strategies that will checkmate these aforementioned factors that militate against effective health care delivery in the Nigerian population.

**2.3.3 Breast Cancer in Canada.** According to the Canadian Breast Cancer Foundation, breast cancer continues to be the most common cancer in Canadian women over the age of 20 years with one in four cancer diagnoses being breast cancer. It is the second leading cause of cancer

death in Canadian women, after lung cancer. Breast cancer incidence rates in women are consistent across Canada and do not vary significantly by geography (Canadian Cancer Society, 2013). Breast cancer incidence rates have remained relatively stable since the late 1980's though the actual numbers each year are increasing due to population growth. For example, from 2012-2013, Canada's population of women grew by almost 200,000 while the number of women estimated to be diagnosed with breast cancer increased by 900 cases. The Canadian Cancer Society predicted a slight, but statistically significant, decrease of 0.7 percent in the incidence rate of breast cancer for 2013 (De, Neutel, Olivotto, & Morrison, 2010).

Fewer Canadian women are dying from breast cancer than in the past. Breast cancer deaths have decreased by 42 percent since the peak in 1986 due to earlier detection through regular mammography screening, advances in testing technology, and improved treatments. According to The Canadian Cancer Society (2014), this represents a small but positive change from 2012 statistics, which quoted a 39 percent reduction in deaths from breast cancer in women since 1986.

**2.3.4 Breast Cancer in Nigeria.** Breast cancer is the most common cancer in Nigerian women (Jedy-Agba et al., 2012). In Nigeria, the incidence increased from 13.5-15.3/100,000 women in 1976 to 33.6/100,000 women in 1992 reaching the level of 116/100,000 women in 2001. It is now the leading cause of death among women in Nigeria (Adebamowo et al., 2010). Afolayan et al. (2012) observed a steady rise in the incidence of breast cancer in their ten-year (1999-2008) study. There were occasional drops in incidence that coincided with periods of national or regional industrial unrest when public health facilities were closed. In Nigeria, breast cancer is characterized by regional variation (Agboola, 2012). In the North Western geopolitical zone of Nigeria, cancer of the breast is second to cancer of the cervix, while at University Teaching

Hospital (UCH) Ibadan, situated in the South Western geopolitical zone of Nigeria, breast cancer is the leading cause of malignancy among women (Jedy-Agba et al., 2012; Afolayan et al., 2012). At Ilorin located in the North Central geopolitical zone, breast cancer constituted 22.4 percent of new cancer cases registered in five years, and it accounted for 35.41 percent of all cancers in women. Breast cancer in Nigeria is associated with high mortality rates (Jedy-Agba et al., 2012). Forbes (1997) also stated that with the adoption of Western lifestyles by African women, breast cancer incidence would continue to rise. Yip and Taib (2014) predicted that increased mortality rate would follow this growth.

According to Afolayan et al. (2012), unfortunately, there is a poverty of data and sparse literature review on the trends of breast cancer in Nigeria. There are very few cancer registries most of which are either hospital-based or pathology-based instead of the preferred population-based cancer registries such as Canada's. However, according to Curado et al. (2011), in low-resource countries, hospital-based cancer registries have been serving as a fundamental source of information on cancer.

**2.3.5 Ethnic and Racial Disparities in Breast Cancer Treatment.** Racial disparities have been demonstrated in breast cancer mortality (Blinder, 2012). Differences in tumor biology can result in more aggressive cancers, such as those that are negative for estrogen and progesterone receptors (HER2) called the triple negative cancers. According to Richard et al. (1999), in the United States of America, prognosis and survival after the diagnosis of breast cancer is poorer among Black patients and to a lesser extent, among Hispanic patients compared with White patients. Black patients are more likely to be diagnosed with breast cancer that is hormone receptor-negative (Amed et al., 2006; Gukas et al., 2006; Huo et al., 2009; Ijaduola et al., 1998;). Conditions such as the lower socioeconomic class of minority women, a delay in diagnosis

related to lack of access to medical care, and cultural beliefs, are associated with worse prognosis (Elledge, 1994; Newman, 2005). Other explanations for the poorer prognosis may include a longer interval between onset and seeking medical treatment, thereby allowing for tumor growth, metastatic spread, and advanced tumor stage at diagnosis (Elledge, 1994; Hortobagyi et al., 2005).

Genetic factors associated with differences in drug metabolism may alter both the toxicity and the efficacy of treatment drugs; such pharmacogenomic differences are thought to contribute to pharmaco-ethnic differences in the effects and the effectiveness of chemotherapy (O'Donnell, 2012). Women of African ancestry may have a lower tolerance for the side effects of treatments (Elsheikh et al., 2009), resulting in a reduction or early termination of chemotherapy, which is significantly associated with poorer outcomes. For these reasons, it is recommended that future drug development in breast cancer incorporate genomic markers to identify the inter-individual and inter-ethnic variability of drug pharmacokinetic and pharmacodynamics. With the development of more efficacious and less toxic drugs regimens, one can expect to see a reduction in health disparities for the most vulnerable patients, especially women of African ancestry (O'Donnell, 2012).

## **2.4 Gaps in Literature**

In many developing countries like Nigeria, 70-79 percent of breast cancer patients still present with advanced disease (Chirdan et al., 2006). Whereas 44 percent of European and 36 percent of American breast cancer diagnoses between 1990 and 1992 presented with locally advanced breast cancer (Sant et al., 2004). The delayed presentation makes survival very low. Advanced stage of disease presentation compromises the quality of life and the treatments given to these patients (Oluwatosin et al., 2006). The late presentation is often ascribed to lack of

screening programs, reduced breast awareness and other social factors that mitigate against early presentation by patients (Oluwatosin et al., 2006). With the disparities in outcomes in breast cancer between developed and developing countries, it is imperative that action be taken to close the gap.

The stage of diagnosis is a crucial determinant of breast cancer treatment outcomes (Ferlay et al., 2010). In a developing country like Nigeria, advanced stage of diagnosis and delayed initiation of treatment represent significant problems (Oluwatosin et al., 2006; Yip & Taib, 2014). Social barriers contribute to delays in the presentation (Jedy-Agba et al., 2012; Taib et al., 2011). However, no previous study has been identified which addresses and compares the particular determinants of health outcomes of women diagnosed as having breast cancer in Canada and Nigeria.

There are many potential barriers that prevent women from seeking treatment upon noticing breast cancer symptoms. Some of these may include economic and logistical barriers as well as cultural and social factors (Anyanwu, Egwuonuwu and Ihekwoaba 2011). However, the identification of specific factors and the extent of their influence on the prognosis of breast cancer have never been explored in depth (Anyanwu et al., 2011; Ukwenny, et al., 2008). To meet the needs of breast cancer patients across the globe, there is need to understand the diverse local behaviors and beliefs related to breast cancer (Anyanwu et al., 2011).

This study will therefore systematically and comprehensively search and retrieve all completed research studies and grey literature such as policies and documents of relevant organizations relating to the factors that impact seeking medical care after breast cancer symptom discovery in women, and the factors that impact participation in breast health activities, in an effort to discover the determinants of health outcomes of women living with breast cancer

in Canada and Nigeria from 1990-2014; appraise these studies; complete a classification of findings and synthesize the findings.

Integrating the evidence base is a significant step in knowledge translation and the design of new research. The integrative review is a critical scientific approach to identifying and summarizing the evidence, an essential in changing current policy and practice. This review may lead to evidence-informed guidelines for health promotion and development for women living with breast cancer in Nigeria.

## **2.5 Purpose and Aims of this Study**

This integrative review of literature will explore and synthesize the national evidence and knowledge base currently available to guide research, practice and policy in the area of health outcomes of women diagnosed as having breast cancer in Canada and Nigeria from 1990-2014. Specifically, this study will explore the factors that impact seeking medical care after breast cancer symptom discovery in women, and the factors that impact participation in breast health activities by women in the two countries. The study will do the following: a) systematically search and retrieve all relevant research and grey literature relating to the early detection, diagnosis, and the predictors of seeking medical care after breast cancer symptom discovery in women in Canada and Nigeria from 1990-2014; b) compile a database of relevant articles covering the breadth of research in this area; c) critically appraise these studies; and d) synthesize the findings in order to identify research gaps. This process can inform policy to improve care outcomes.

## **2.6 Research Question**

The overall goal of this integrative review is to explore the determinants of health outcomes of women diagnosed as having breast cancer in Canada and Nigeria from 1990-2014.

Since some research studies (Anderson et al., 2008; Pruitt et al., 2014; Yip et al., 2012) have identified that there is strong correlation between the stage of disease presentation and health outcomes of breast cancer in women. This integrative review will try to identify those factors that impact seeking medical care after breast cancer symptom discovery in women and the factors that impact participation in breast health activities by women. The research questions to be addressed are: a) “What are the factors that impact seeking medical care after breast cancer symptom discovery in women in Canada and Nigeria from 1990-2014?” and b) “What factors impact participation in breast health activities by women in Canada and Nigeria from 1990-2014?” This comparative study will highlight the similarities and differences in health care services rendered to women in the area of breast health between the two countries that may inform better policies and improve health outcomes. The study also intends to import best practices from a developed country like Canada to a developing country like Nigeria, in an effort improve the health of women and to save millions of lives.

## **2.7 Relevance of this Study**

This integrative review can assist in exposing those factors that have impact on the health outcomes of women suffering from breast cancer. This new understanding can provide the foundation for innovative health research, evidence-informed policy, and clinical guidelines to support health care systems, thereby, improving health outcomes for women afflicted with this disease. Given the lack of research in this area, understanding the factors that determine health outcomes of women having breast cancer can result in clinically useful knowledge, translatable into improving care outcomes. The results of this integrative review can also have immediate application to practice and policy in the areas of early detection and presentation for medical care for women having breast cancer. This can be an important health promotion strategy that can

improve the quality of life of breast cancer patients.

Synthesising countrywide evidence-base is a significant step in knowledge translation and the design of new research. An integrative review of the literature to explore the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women has not been identified in the literature. This new understanding can assist in exposing those factors that influence the stage of disease presentation. If the determinants of health outcomes of women diagnosed as having breast cancer are not known and addressed, the mortality rate would continue to rise.

An integrative review is an important scientific approach to identifying and summarizing evidence-informed knowledge. This integrated review will bring together the results of many studies to increase their combined contribution to the advancement of more formalized knowledge in the area of breast cancer health outcomes in women.

This study is expected to address a substantial gap in the literature concerning the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women in Canada and Nigeria. Along these lines, the determinants of health outcomes of breast cancer in women in the two countries. It is imperative that health care providers have a better understanding of the needs of this population of patients. The results of this integrative review have the potential to offer practical ways to translate the findings into clinically relevant knowledge for ongoing improvements in the health care systems and research that can improve the health outcomes of women suffering from breast cancer. The findings can add new information to the larger existing body of knowledge on the topic. It can provide important indicators for policy and clinical guidelines development. The results are expected to offer a foundation for future research.



## 2.8 Method

In a discussion of knowledge synthesis, Grimshaw (2013) stated that reliable, reproducible, and explicit methods must be used to best inform policy, practice and future research. Integrative reviews utilize rigorous, transparent approaches thereby allowing researchers to examine the extant literature critically and identify key themes, summarize and disseminate research findings through the body of literature. It also clearly identifies gaps in the existing research (Arksey & O'Malley, 2005). This integrative review of the literature will be on breast cancer in women from 1990-2014 in Canada and Nigeria. It will be a comparative study. The specific areas to be compared include the detection, and early diagnosis of breast cancer in women.

An integrative review is an accurate evaluation method that summarizes the past empirical literature to provide a more comprehensive understanding of a particular phenomenon or health care problem (Broome, 1993). Integrative reviews may combine data from the theoretical as well as empirical literature. The integrative analysis allows for the inclusion of diverse methodologies (i.e. experimental and non-experimental research). Integrative studies incorporate a broad range of purposes to describe concepts, analyze theories, examine the evidence, and analyze methodological issues of a particular topic (Kirkevold, 1997; Broome, 1993). Integrative reviews enable a comprehensive understanding of complex concepts, theories or health-care problems of importance to nursing. Well-done integrative studies present the state of the science, contribute to theory development and have direct applicability to practice. Integrative reviews have the potential to build nursing science, inform research, practice, and strategic initiatives (Whittemore & Knafl, 2005). It has the potential to play a greater role in evidence-based practice for nursing (Russell, 2005).

This comparative integrative study will try to illuminate why there are such a high disparity between the survival rate from breast cancer in Canada and Nigeria. It will also try to reveal the general structure, which generates or accounts for such variation.

**2.8.1 Framework.** The framework to be used for this study is the framework outlined by Cooper (1998) and modified by Whittemore and Knafl, (2005) to enhance the rigor of the review. This framework conceptualizes the integrative review as occurring in five stages: a problem formulation stage, a literature search or data collection stage, a data evaluation stage, a data analysis stage, and interpretation and presentation of results stage (Cooper, 1998). Kirkevold (1997) suggests that the last stage of the integrative review is necessary to enhance both the science and practice of nursing.

**2.8.2 Problem Formulation Stage.** A clear identification of the problem and the variables of interest that the review is addressing is a necessary first step (Cooper, 1998; Kirkevold, 1997). Whittemore and Knafl (2005) also stated that a precise problem identification and review purpose are essential to providing focus and boundaries for the integrative review process. This study proposes to carry out an integrated review of the literature on the determinants of health outcomes of women living with breast cancer in Canada and Nigeria from 1990-2014. Specifically, it intends to explore the factors that impact seeking medical care after breast cancer symptom discovery in women and the factors that impact participation in breast health activities by women. It will be a comparative study of the two countries. The variables of interest are the detection and early diagnosis strategies of breast cancer.

**2.8.3 Literature Search Stage.** According to Cooper (1998), well-defined literature search strategies are critical for enhancing rigor. Incomplete and biased data search can result in an inadequate database and the potential for inaccurate results. Therefore, the following steps will

be taken: a) creating inclusion and exclusion criteria, b) completing a literature search with the guidance of an experienced medical librarian, and c) constructing a data set.

**2.8.4 Inclusion and Exclusion Criteria.** Given that the integrative review involves a circular approach, Ganong (1987) believes that inclusion criteria should be tentative. Substantive or methodological changes should be made if suggested by the findings from the reviewed literature. For this study, the inclusion criteria will be: a) peer-reviewed research studies done in Canada or Nigeria, b) the studies must be on factors that impact seeking medical care for breast cancer in women, or factors that impact participation in breast health activities, c) the studies must be published in English language from 1990-2014, d) qualitative, quantitative, and mixed methods designs, meta-synthesis are acceptable, e) relevant policy documents and grey literature will also be included. No age limit will be imposed on the target population. To be excluded are: a) research studies done outside of Canada or Nigeria, b) research studies not written in English language, c) unpublished manuscripts such as abstracts or dissertations and d) breast cancer studies done on men.

**2.8.5 Literature Search.** Search syntaxes will be developed in consultation with an experienced University of Saskatchewan Medical Librarian, taking into account a broad range of terms and phrases used in definitions related to breast cancer (e.g. breast cancer, breast neoplasm, breast carcinoma, breast tumor, mammary carcinoma). The following variables will be used: prevention and control, detection/diagnosis, breast self-examination, patient attitude and practice, mass screening, patient education as topic, early detection of cancer, and awareness. These terms will be chosen after reviewing initial studies and with the guidance of the librarian, to ensure that the maximum number of all relevant and eligible primary sources of literature on early detection and diagnosis of breast cancer in women were included in the review. Therefore, a systematic search

of existing English, peer-reviewed literature on the prevention and early detection/ diagnosis of breast cancer in women in Canada and Nigeria from 1990-2014 will be conducted using the following computerized databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medical Literature On-Line (MEDLINE), and Excerpt Medical Databases (EMBASE). Grey literature will be located through the websites of relevant organizations such as the Canadian Cancer Society, the World Health Organization (WHO), and the Cancer Registry in Nigeria using Google Scholar. Hand searching of journals to identify eligible studies will also be done to include relevant studies that will not be located in electronic databases.

**Key search words:** Breast cancer, breast neoplasm, breast carcinoma; diagnosis, prevention and control, health knowledge, patient attitude and practice, breast self-examination, awareness, mass screening, early detection of cancer, patient education as topic, Canada, Nigeria.

All potentially eligible studies and documents will then be retrieved to assemble a complete data set. The data retrieved will be displayed using the preferred reporting system of systematic reviews and meta-analysis, the Prisma (2009) flow diagram as shown in Figure 1.

**2.8.6 Content Experts.** Content experts in the field will be contacted as they may be aware of research studies that may not have been identified through any of the above channels. Content experts will be contacted at the beginning of the review to identify key studies and after the searches have been screened to identify any missing studies. This will help to reduce the risk of missing critical studies relevant to the review. Based on a preliminary literature search on Medline database, it was estimated that about 200 studies would be included in this review.

## **2.9 Procedure of Data Analysis**

**2.9.1 Data Appraisal.** The purpose of data appraisal is to become familiar with the reports and evaluate them, according to predetermined inclusion criteria. Whittemore (2005b), recommend

the extraction of specific methodological features of primary research to assess the overall quality of the studies. Quality scores are subsequently incorporated into the data analysis stage (Cooper, 1998). Conn and Rantz (2003), however, stated that the process of quality in the integrative review is complex, and there is no gold standard for calculating quality. Each type of research design has different criteria that exemplify quality. In an integrative review with a diverse sampling frame (inclusive of empirical and theoretical sources), an approach similar to historical research may be appropriate for evaluating the quality (Whittemore & Knafl, 2005).

For this study, the quality assessment tool developed by Walsh and Downe (2005) will be used for assessing all the qualitative studies (Table 1). The grading tool developed by Downe et al. (2009), based on the work of Lincoln and Guba, (1985) will be used for grading the quality (Table 2). The Bowling (2002) checklist for the critical appraisal of research, appropriate for systematic reviews and meta-analysis, recommended by Joanna Briggs Institute available at [www/http://wwwbiomedcentral.com/1471-2288/7/10](http://www.biomedcentral.com/1471-2288/7/10) will be adapted to assess the literature review articles that will be retrieved for this study (Figure 3). This tool will facilitate the systematic appraisal of studies with regards to the clarity of aims, objectives, methods and appropriate analysis of data. The quality assessment tool consists of ten questions covering credibility and relevance of the study. It has been used in previous reviews. The overall assessment of the study will then be graded on the grading system included in the tool. They will be classified as either high quality, moderate or low quality. No study will be excluded based on the quality grading.

**2.9.2 Data Comparison.** According to Cooper (1998), data analysis in research reviews requires that the data from primary sources be ordered, and summarized into a unified and integrated conclusion about the research problem. Once patterns begin to be discerned, a conceptual map

should be drawn that includes a majority of the variables defined. Similar variables should be grouped near one another, and temporal order can be displayed. This process of data visualization and comparison will provide some clarity to the empirical and theoretical support emerging from early interpretive efforts (Whittemore & Knafl, 2005).

**2.9.3 Conclusion Drawing.** Conclusion drawing is the final phase of data analysis that moves the interpretive review effort from the description of patterns and relationships to a higher level of abstraction, subsuming the particulars into the general. Patterns and processes should be isolated; commonalities and differences should be identified with the gradual elaboration of a small set of generalizations that encompass each subgroup database of the study (Whittemore & Knafl, 2005). The results will then be evaluated for similarities and differences using constantly targeted comparison to clarify defining and overlapping attributes and discern relationships between phenomena. The constantly targeted comparison will also help to draw conclusions on findings in the reports of the studies reviewed and their relationships to other findings (Sandelowski & Barroso, 2007).

**2.9.4 Findings Presentation.** Interpretation and presentation of findings are the final stages of integrative reviewed as identified by Cooper (1998) and Whittemore and Knafl (2005). The dissemination of the findings from an integrative literature review is paramount to the development of a knowledge base. Therefore, the conclusion of this integrative study will be reported in the format for reporting research studies. It will include an introduction, methods, results, and discussion sections. Since the ability to reproduce review findings is impaired if details of the study methods and moderators of relationships are not stated, much attention will be given to details of the report. The search strategy will be explicit so that another reviewer could follow the same strategy without difficulty.

## **2.10 Researcher's Role**

In my practice as a bedside and nurse educator for 33 years in Nigeria, I observed that the late presentation of breast cancer cases had been consistent. This delay in seeking diagnosis and treatment had resulted in a poor prognosis for the disease resulting in high mortality rates. I also observed that those women who presented early and who benefited from early diagnosis and treatment before the cancer spreads usually had better outcomes of management. The fact of the persistent late presentation of breast cancer for over three decades in an environment where there is an absence of established national screening program for breast cancer and a low level of awareness calls for action (Oluwatosin, 2010). It is, therefore, pertinent to explore the issues surrounding breast cancer in women in these areas so as to make a contribution to reducing the mortality rates associated with the disease.

Also, while working with women in a rural area of Nigeria, I observed that women living in the rural areas living with breast cancer tended to have poorer health outcomes than women living in the larger cities. Residential remoteness correlated with increased likelihood of dying from breast cancer among women. This might be accounted for by socio-economic situations. However, this observation needs to be studied and addressed.

Female healthcare providers such as nurses, in which group I belong, constitute a primary and an important source of information and education in cases like breast cancer to a large number of women in Nigeria. Nurses, therefore, play significant roles in identifying and bridging barriers to early detection of breast cancer in women. Female health care providers, particularly nurses in their closeness to their female patients, associates, and friends can assist in alerting women to the early detection of breast cancer and the dangers of the negative issues and misconceptions surrounding the disease. This could facilitate early presentation and treatment in

the appropriate health care facility.

### **2.10.1 Moral Obligation**

In the year 2013, the Deputy Governor of my home state, Ekiti State in Nigeria died from breast cancer in her 40's. This was considered as a tremendous loss to the State and her aged parents. The question many people were asking was; "Is there nothing that can be done about this disease that kills our illustrious young daughters in their graceful years?" I believe that we need evidence-based knowledge of the determinants of health outcomes of this disease so that something can be done to stop its deleterious effects on our young, promising and illustrious daughters. One potentially important strategy for reducing breast cancer mortality is creating awareness about the disease. This could constitute an important tool for increasing the response to early breast cancer detection, diagnosis, and treatment.

### **2.11 Scientific Rigor in this Integrative Review**

The integrative review can be considered as the research of research and, therefore, it should meet the same standards as primary research in rigor (Cooper, 1998; Ganong, 1987). According to Russell (2005), there are four questions that the reviewer answers when a body of knowledge is evaluated using integrative review technique: what is known about this issue?, what is the quality of what is known?, what should be known?, and what is the next step for research and practice. Thus, this study will involve a literature search of theoretical and empirical research work and grey literature to identify the factors that impact women participation in breast health activities or the factors that impact seeking medical care after breast cancer symptom discovery in women in Canada and Nigeria from 1990-2014; evaluate the identified studies; identify research gaps; inform future directions for research studies and care in the area of breast cancer early detection and presentation for medical care.



Maintaining scientific integrity while conducting an integrative review involves paying attention to threats to validity at each stage of the review process (Cooper, 1998). According to Crossetti (2012), if an integrative review is properly conducted, it should be characterized by the criticality peculiar to primary research in terms of replication, clarity, and scientific rigor. Therefore, one of the key aspects to be considered in an integrative review is the size of the sample in the literature search. It must be exhaustive. In an integrative review, the accessible population is all published reports relating to a topic. The threats to validity here is inadequate sampling. In this study, efforts will be made to conduct a literature search that is as comprehensive as possible. This will be done with the assistance of an experienced Librarian. To ensure the representativeness of the sample, an exhaustive data collection strategy will be created. The study will also clearly delineate information about data collection such as the keyword used in the literature search, the sources, and the variables used in the search.

In the data evaluation phase, the threat to validity is the tendency to positively evaluate those studies that are congruent with the reviewer's own beliefs and negatively evaluate those studies that are not (Russell, 2005). In this study, therefore, evaluating each study's methodology to determine whether the findings were valid will enhance objectivity.

In presenting the findings of this study, detailed information about how the study was conducted will be given. This becomes paramount because any omission could affect the availability of important information about relationships between the variables under study. This can affect the ability to reproduce the study. Attention will also be given to all possible details of the report. The report of this study will be so explicit that another reviewer could follow the same strategy without difficulty.

The final report for publication will comprise of an integration of concepts, thoughts,

definitions, or other information peculiar to the authors whose papers were the object of this review. This means that the report will focus on the results and consequent conclusions from the analysis. The discussions will be on the information derived from the articles analyzed on the fundamental question of this study. This way, this study will represent a resource for building knowledge in nursing.

### **2.12 Ethical Consideration**

Before any research study is carried out, the researcher must obtain ethical approval from the University of Saskatchewan Research Ethics Review Board or Committee. The design of this study will be an integrative review of published literature. Independent ethical approval is not required for the use of previously published manuscripts. It might be necessary to obtain a review exemption letter from the University of Saskatchewan Research Ethics Review Board or Committee. However, efforts will be made to promote the aims of the study and avoid error. The final report for publication will comprise of an integration of concepts, thoughts, or other information peculiar to the authors whose papers were the object of this review.

### **2.13 Potential Findings**

From the literature review, the determinants of health outcomes of women living with breast cancer in many regions are related to the stage of disease at presentation, diagnosis, and access to optimum treatment (Anderson et al., 2008). In developed countries, there is a decrease in mortality rate due to earlier detection through regular mammography screening, advances in screening technologies and improved treatments. In low to middle socioeconomic countries, breast cancer is diagnosed at late stages of the disease. The reasons given for the late presentations are geographical isolation, lack of early detection program, ignorance, financial problems, and long waiting times in public hospitals. Psychosocial and cultural factors also play

significant roles. Added to these is the lack of autonomous decision-making power of women. In many low to middle income countries, women need to get the approval of their significant others to seek medical care (Taib et al., (2014).

#### **2.14 Project Committee Members**

##### **Dr. Wanda Martin. RN, BSCN, MN, PhD, Committee Chair**

Dr. Wanda Martin is an Assistant Professor at the College of Nursing, University of Saskatchewan. Dr. Martin has conducted qualitative and quantitative research studies including an integrative review and study of the: “Perceived risk and surveillance practices of women with a family history of breast cancer”. She is currently working on other studies focused on reducing health inequities.

##### **Dr. Lorraine Holtlander, RN, BSCN, MN, PhD CHPCN(c), Supervisor**

Dr. Holtlander is my project supervisor. She is an Associate Professor at the College of Nursing, University of Saskatchewan, with a program of research focused on bereaved family caregivers. She has completed three meta-synthesis projects. She brings both methodological and experiential expertise to this study.

##### **Dr. June Anonson, RN, BSCN, MEd, PhD, Committee Member**

Dr. Anonson is an Associate Professor at the College of Nursing, University of Saskatchewan. She brings expertise in international nursing, rural and remote health care, community health, and health promotion. She also brings methodological and experiential expertise to this study.

##### **Dr. Johanna Maree, RN, Hons B Soc Sc (Nursing), MCur (Advanced general nursing), DCur, Committee Member**

**Dr. Johanna Maree** is a Professor and Head of Department of the Faculty of Nursing

Education, University of Witwatersrand, South Africa. Dr. Maree has just published an integrative review of South African Cancer Nursing. Dr. Johanna Maree brings methodological and experiential expertise to this study.

### **2.15 Summary**

Breast cancer is one of the leading cancers worldwide. While the incidence in developing countries is lower than in developed countries, the mortality rate is much higher. In developing countries, women present with late stages of the disease. The barriers to early detection are related to geographical isolation, financial as well as psychological issues, including lack of awareness of breast health, misconceptions about breast cancer, and belief in traditional medicine. There are virtually no functional population-based cancer registries in many low to middle-income countries. Cancer screening facilities are not available in many developing countries. Inadequate access to optimal treatment of breast cancer remains a problem.

This integrative literature review will focus on the determinants of health outcomes of women living with breast cancer. Specifically, it will explore the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women, comparing two countries namely Nigeria and Canada. The outcomes of this review can be a significant contribution to the available body of knowledge and consequently, to practice and research work.

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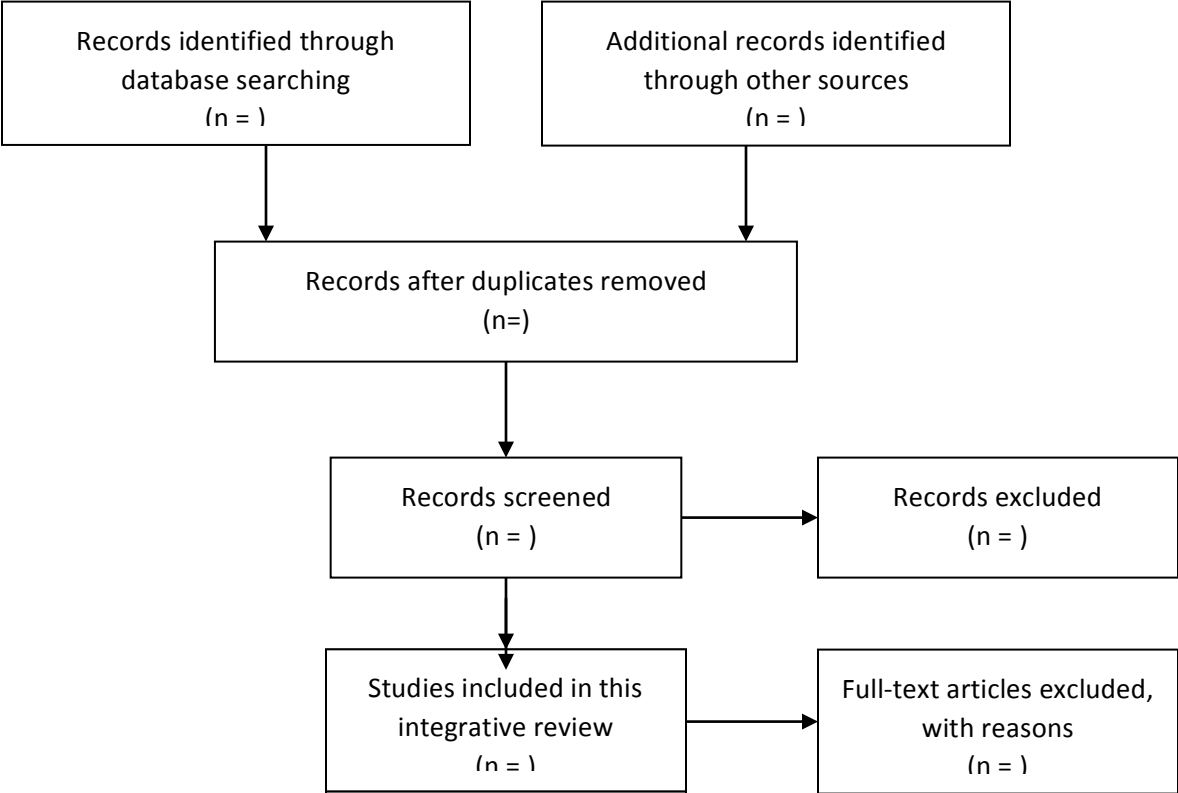
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**Figure 1: Flow Diagram to be used for The Search and Selection Process of Studies**



From: Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G. (2009). The PRISMA Group. Preferred reporting items for Systematic reviews. doi:10.1371/journal.pmed1000097.

**Table 1 Quality assessment tool developed by Walsh and Downe, (2005)**

| Stages            | Essential Criteria   | Notes |
|-------------------|--|-------|
| Scope and Purpose | Clear statement of, and rationale for, research questions/aims/ purposes |       |
|                   | Study thoroughly contextualized by existing literature                   |       |
| Design            | Method/design apparent, and consistent with research intent              |       |
|                   | Data collection strategy apparent and appropriate                        |       |
| Sampling strategy | Sampling and sampling method appropriate                                 |       |
| Analysis          | Analytic approach appropriate  |       |
| Interpretation    | Context described and taken account of in interpretation                 |       |
|                   | Clear audit trail was given<br>Data used to support interpretation       |       |
| Reflexivity       | Researcher reflexivity demonstrated                                      |       |

|                               |  |  |
|-------------------------------|--|--|
| Ethical dimensions            | Demonstration of sensitivity to ethical concerns |  |
| Relevance and Transferability | Relevant and transferability evident             |  |



**Table 2 Grading system created by Down et al. (2009), based on the work of Lincoln and Guba, (1985).**

|   |  |
|---|--|
| A | No, or few flaws. The study credibility, transferability, dependability, and conformability is high                                  |
| B | Some flaws, unlikely to affect the credibility, transferability, dependability and /or conformability of the study                   |
| C | Some flaws that may affect the credibility, transferability and/or conformability of the study.                                      |
| D | Significant flaws that are very likely to affect the credibility, transferability, dependability and /or conformability of the study |

**Table 3 Data Extraction Form**

| Source of study | Objectives of the study | Method | Data Collection Method | Quality grading | Findings |
|-----------------|-------------------------|--------|------------------------|-----------------|----------|
|                 |                         |        |                        |                 |          |

### **3 CHAPTER THREE - MANUSCRIPT ONE**

**Integrative Review of Literature on The Determinants of Health  
Outcomes of Women Living with Breast Cancer in Canada and Nigeria from  
1990-2014: A Comparative Study.**

### 3.1 Abstract

**Background and Aim:** Globally, breast cancer is the most common cancer among women. The stage of the disease at diagnosis is a core determinant of its health outcome. In low to middle-income countries like Nigeria, advanced stage of the disease presentation for medical care represents a significant problem, whereas, in Canada, the early presentation has improved outcomes. Knowledge of the factors that impact seeking medical care after breast cancer symptom discovery and knowledge of the factors that impact participation in breast health activities are important in reducing breast cancer-related mortality.

**Methods and Design:** This integrative review critically examined and compared the determinants of health outcomes of women living with breast cancer in Canada and Nigeria from 1990-2014. Specifically, it examined the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women in the two countries. Fifty-five studies meeting the inclusion criteria were identified from the following databases: CINAHL, MEDLINE, and EMBASE, as well as the grey literature of relevant organizations using Google Scholar.

**Results and Conclusion:** Canadians have a high level of breast health awareness. The findings also suggest that women in Nigeria have rather a poor breast health awareness. In Nigeria, presentation with an advanced stage of the disease made survival very low. This also compromises the quality of life of the patients. The major factors responsible for the late presentations were a lack of breast cancer awareness and education. Other social factors that militate against early presentations for medical care include misconceptions about breast cancer treatment and outcomes. In line with the findings of this study, it is recommended that culturally sensitive and linguistically appropriate health education programs should be developed and

promulgated extensively. The health education programs should be targeted at women through various channels such as social media, the television, and radio. Also, within the hospital, breast health awareness education should be integrated into existing health education programs. Non-government and other charitable organizations can also make significant contributions to breast health awareness through sponsoring health talks and workshops targeted at relevant segments of the population.

**Key search words:** Breast cancer, breast neoplasm, diagnosis, prevention and control, health knowledge, patient attitude and practice, breast self-examination, awareness, patient education as topic, mass screening, early detection of cancer, Nigeria, Canada.

**An integrative review of Literature on Health Outcomes of Women Living with Breast  
Cancer in Canada and Nigeria from 1990-2014: A Comparative Study.**

### **3.2 Problem Statement**

Cancer is the most common cancer diagnosed in women. Its incidence is rising especially in developing countries (Tfayli et al., 2010). The global burden of breast cancer in women measured by incidence, mortality, and economic costs is substantial and on the increase. Worldwide, it is estimated that more than one million women are diagnosed with breast cancer every year, and more than 400,000 will die from the disease (Ferlay et al., 2010; Tfayli et al., 2010.).

There is a marked geographical variation in incidence rates. It is highest in developed countries and lowest in developing countries. The mortality rates are highest in developing countries. It is estimated that 45% of the 1.35 million new cases diagnosed each year and more than 55% of breast cancer-related deaths occur in the low-and middle-income countries. An estimated 1.7 million women will be diagnosed with breast cancer globally in 2020, a 26% increase from current levels. The increase in incidence will mostly be in the developing world (Ferlay et al., 2010; Tfayli et al., 2010). In low-middle-income countries like Nigeria, breast cancer burden is increasing. The mortality rate is also increasing (Jedy-Agba et al., 2012; Pruitt et al., 2014). In low-to-middle-income countries like Nigeria, advanced disease stage diagnosis, and delayed treatment represent significant problems (Oluwatosin, 2010). There are many potential barriers that prevent women from seeking treatment when they first notice a breast cancer symptom. These include economic and logistic obstacles (Anyanwu, Eqwuonu & Ihekwoaba, 2011), as well as cultural and social factors such as stigma and inadequate healthcare infrastructure (Bello, 2012; Pruitt et al., 2014).

It is estimated that the burden of breast cancer will increase in the years to come, not only because of the steep increase in incidence rate that is seen in many low-middle-income countries, but also because of the rise in the population of those countries (Anderson et al., 2008; Ferlay et al., 2010). Even assuming conservatively that there will be no change in underlying age-specific rates, there could be a nearly 50% increase in global incidence and mortality between 2002 and 2020 due to demographic changes alone. These increases will be disproportionately high in the developing world, with projected respective increases of 55% and 58% in incidence and mortality by year 2020 in comparison to the known statistics from only 18 years prior (Anderson et al., 2008; Ferlay et al., 2005; Parkin et al., 2006). These statistics most likely underestimate the actual rising breast cancer rates (Curado et al., 2011; Jedy-Agba et al., 2012). The few data available from low to middle-income countries reveal increases in breast cancer age-specific incidence and mortality rates caused at least in part by the adoption of Western lifestyles which tends to promote decreased parity, delayed childbirth, decrease physical exercise, and dietary habits associated with earlier menarche, all of which have been related to increasing rates of postmenopausal breast cancer (Potter, 2008).

Despite significant scientific advances in breast cancer management, most of the world face resource constraints that limit the capacity to improve early detection, diagnosis, and treatment of the disease (Anderson et al., 2008). In low-middle-income countries, worsened cancer survival is largely because of late disease stage at presentation, which leads to particularly poor outcomes when coupled with limited diagnosis and treatment capacity (Anderson et al., 2008; Bray et al., 2004; Hisham et al., 2001; Yip et al., 2012). It was reported in 2001 that, in India, between 50% and 70% of new patients presented with locally advanced breast cancer (LABC) (stage 3) or metastatic breast cancer (MBC) (stage 4) at diagnosis (Chopra, 2001);

whereas approximately 44% of European and 36% of American breast cancer cases diagnosed between 1990 and 1992 presented with LABC (Sant et al., 2004). Compounding the problem of late diagnosis, breast cancer mortality rates are high, because low-middle-income countries typically lack the major components of healthcare infrastructure and resources necessary to implement improved methods for early detection, diagnosis, and treatment of breast cancer. Although most low-middle-income countries have not yet identified breast cancer as a priority healthcare issue, it will become a significant health problem as the control of communicable diseases improves (Kangolle & Hanna, 2010; Parkin et al., 2006).

With this estimated increase in the burden of breast cancer, a national breast cancer control program is urgently needed to decrease the incidence of breast cancer, reduce mortality from breast cancer and improve the quality of life of breast cancer patients through a systematic and equitable implementation of evidence-based strategies for prevention, early diagnosis, treatment and palliation, making the best use of available resources (Anderson et al., 2008; Yip et al., 2012). In low to middle-income countries, breast cancer is diagnosed at late stages of the disease (defined as stage 3 and 4). The reasons given for late presentation are geographical isolation, lack of an early detection program, ignorance, financial problems, and long waiting times at a public hospital because of inadequate quantity of infrastructure and medical equipment. Psychological and cultural factors also play significant roles in delayed presentation (Adisa et al., 2010; Pruitt et al., 2014; Yip et al., 2012).

Early detection covers treatment of the symptomatic disease as well as screening for asymptomatic disease. According to Yip et al. (2012), early detection programs cannot succeed unless the population is aware of the benefits, which include improved survival. This study explored the factors that impact seeking medical care after breast cancer symptom discovery in



women, and the factors that impact participation in breast health activities by women in Canada and Nigeria from 1990-2014. The aim was to address the identified factors appropriately, so that women with breast cancer can present promptly for early detection, diagnosis and treatment of breast cancer.

### **3.3 Research Question**

The Breast Health Global Initiative (BHGI) consensus statement discussed the importance of a culturally tailored approach in addressing the breast cancer burden (Hartford et al., 2008; Pruitt et al., 2014). It discussed the importance of research inquiry in the design of interventions aimed at understanding local attitudes and barriers to breast cancer care (Hartford et al., 2008). The purpose of this integrative review was to explore the determinants of health outcomes of women living with breast cancer in Canada and Nigeria from 1990-2014, identify the factors that impact seeking medical care after breast cancer symptom discovery in women, and understand the factors that impact participation in breast health activities by women in the two countries. The questions this study attempted to answer were: a) “What are the factors that impact seeking medical care after breast cancer symptom discovery in women in Canada and Nigeria from 1990-2014?” and b) “What factors impact participation in breast health activities by women in Canada and Nigeria from 1990-2014?”

### **3.4 Research Method and Design**

In a discussion of knowledge synthesis, Grimshaw (2013) stated that reliable, reproducible, and explicit methods must be used to best inform policy, practice and future research. Integrative reviews utilize rigorous, transparent approaches thereby allowing researchers to examine the extant literature critically and identify key themes, summarize and disseminate research findings through the body of literature (Whittemore & Knafl, 2005). It also

clearly identifies gaps in the existing research (Arksey & O'Malley, 2005). This integrative review of the literature was on breast cancer in women from 1990-2014 in Canada and Nigeria. It was a comparative study of the two countries. The specific areas compared include: the factors that impact seeking medical care after breast cancer symptom discovery in women and the factors that impact participation in breast health activities.

An integrative review is an accurate evaluation method that summarizes the past empirical literature to provide a more comprehensive understanding of a particular phenomenon or health care problem (Broome, 1993). Integrative reviews may combine data from the theoretical as well as empirical literature. The integrative analysis allows for the inclusion of diverse methodologies (i.e. experimental and non-experimental research). This process enables a comprehensive understanding of complex concepts, theories or health-care problems of importance to nursing (Broome, 1993; Evans & Pearson, 2001). Robust integrative studies present the state of the science, contribute to theory development and have direct applicability to practice and policy. Integrative studies have the potential to build nursing science, inform research, practice, and policy initiatives, and provide an evidence-base for nursing practice (Russell, 2005; Whitemore & Knafl, 2005).

**3.4.1 Framework.** The framework used for this study was the format outlined by Cooper (1998) and modified by Whitemore and Knafl, (2005) to enhance the rigor of the review. This framework conceptualizes the integrative review as occurring in five stages: problem formulation, literature search or data collection, data evaluation, data analysis and interpretation and presentation of the result (Cooper, 1998). The last step in the integrative review is the reporting of results to readers, which Kirkevold (1997) suggests is necessary to enhance both the science and practice of nursing.

**3.4.2 Problem Formulation Stage.** Cooper (1998) stated that a clear identification of the problem and the variables of interest are necessary. A well-specified research problem in an integrative review will facilitate the ability to operationalize variables accurately and thus extract appropriate data from the primary source. This will also provide focus and boundaries for the review process (Kirkevold, 1997; Whitemore & Knafl, 2005). This study carried out an integrated review of the literature on the factors that impact seeking medical care after breast cancer symptom discovery in women in Canada and Nigeria from 1990-2014 and the factors that impact participation in breast health activities by women in Canada and Nigeria from 1990-2014. It was a comparative study of the two countries. The variables of interest were the factors that impact seeking medical care after breast cancer symptom discovery in women and the factors that impact participation in breast health activities by women.

**3.4.3 Literature Search Stage.** According to Cooper (1998), well-defined literature search strategies are critical for enhancing rigor. Incomplete and biased data search can result in an inadequate database and the potential for inaccurate results. In this review, the following steps were taken: creating a potential inclusion and exclusion criteria, completing a literature search, and constructing a data set.

**3.4.4 Inclusion and Exclusion Criteria.** Given that the integrative review involves a circular approach, Ganong (1987) believes that inclusion criteria should be tentative. Substantive or methodological changes should be made if suggested by the findings from the reviewed literature. In this study, the inclusion criteria were peer-reviewed research studies and articles done in Canada or Nigeria, the studies must be on breast cancer in women since men also have breast cancer, the studies must have been published in English language from 1990-2014; qualitative, quantitative, and mixed methods designs, meta-synthesis, references to studies were

also considered for inclusion. Also included were policy documents and grey literature from relevant organizations such as World Health Organization (WHO), Canadian Cancer Society and Cancer Registries in Nigeria. No age limit was imposed on the target population because cancer can afflict anybody at any time. Excluded were research studies that were done outside of Canada or Nigeria; research studies not done in English language; unpublished manuscripts such as abstracts or dissertations and breast cancer studies done on men.

**3.4.5 Literature Search.** Search syntaxes were developed in consultation with an experienced University Librarian, taking into account a broad range of terms and phrases used in definitions related to breast cancer (e.g. Breast cancer, breast neoplasm, breast carcinoma, breast tumor, mammary carcinoma, etc.) with the following variables : diagnosis, prevention and control, health knowledge, patient attitude and practice, breast self-examination, awareness, patient education as topic, mass screening, early detection of cancer, Canada, and Nigeria. This was to ensure that the maximum number of all relevant and eligible primary sources of literature on the factors that impact seeking medical care after breast cancer symptom discovery in women were included in the review. Thus, a systematic search of existing English, peer-reviewed literature on the factors that impact seeking medical care after breast cancer symptom discovery in women and the factors that impact participation in breast health activities by women in Canada and Nigeria from 1990-2014 was conducted using the following computerized databases: the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medical Literature On-Line (MEDLINE), and Excerpt Medical Databases (EMBASE). Grey literature was located through the websites of the following relevant organizations: the Canadian Cancer Society, the World Health Organization (WHO), and the Cancer Registry in Nigeria using Google Scholar. Many references (Broome, 2005; Kirkevold, 1997; Whittemore & Knafl, 2005) to integrative

literature reviews suggest that electronic database searches lead to between 10-50 percent of articles in an exhaustive review. Therefore, hand searching of journals to identify eligible studies was also done. This was to allow for the inclusion of relevant studies that had not been located in electronic databases.

**3.4.6 Findings from the Search.** The total number of articles retrieved was 303. A search in CINAHL using the search terms stated above yielded 46 articles. A search in MEDLINE using the same terms as the previous search resulted in 232 articles. A search in EMBASE using the terms produced two articles. Hand searching of references to articles yielded 23 relevant studies (See Table 4).

All potentially eligible studies and documents were then retrieved to assemble a complete data set. Out of the 303 articles retrieved, 50 were duplicates. The duplicates were removed. Out of the remaining 253 articles, 198 did not meet the inclusion criteria as stated above. Those articles that did not meet the inclusion criteria were also removed; leaving 55 articles that met the inclusion criteria. Out of the 55 articles that met the inclusion criteria, 32 were Canadian articles while 23 were Nigerian articles. Only the data meeting the inclusion criteria were used for this review. The data retrieved were then displayed using the preferred reporting system of reviews (Prisma 2009 Flow diagram as shown in Figure 2). The characteristics of the selected articles are presented in Table 5).

### **3.4.6 Summary**

In summary, this integrative review was directed by the approach proposed by Cooper (1998), which was modified by Whitemore and Knafl (2005). A systematic review of the literature was conducted via electronic databases of CINAHL, MEDLINE, and EMBASE, using selected keywords. Supplemental search methods included a hand search of relevant

bibliographies and related organizations website. After reviewing the search findings, 55 articles were selected for inclusion in the literature review.

### **3.5 Process of Data Analysis**

**3.5.1 Data Appraisal.** The purpose of data appraisal is to become familiar with the reports and evaluate them, according to predetermined inclusion criteria. Whittemore (2005b), recommend the extraction of specific methodological features of primary research to assess the overall quality of the studies. Quality scores are subsequently incorporated into the data analysis stage (Cooper, 1998). Conn and Rantz (2003) stated that the process of quality in the integrative review is complicated, and there is no gold standard for calculating quality. Each type of research design has different criteria that exemplify quality. In an integrative review with diverse sampling frame (inclusive of empirical and theoretical sources), an approach similar to historical research may be appropriate for evaluating the quality (Whittemore & Knafle, 2005).

The results of the searches, as well as the retrieved articles for this study, were entered into Endnote 17 by the researcher. Endnote is a bibliography database. Duplicates were removed with Endnote software. The quality assessment tool developed by Walsh and Downe (2005) was used (See Table 1) to assess the quality of retrieved qualitative articles. The grading tool developed by Downe et al. (2009), based on the work of Lincoln and Guba, (1985) (See Table 2) was used for the grading of the articles. Bowling (2002) checklist available at [www/http://wwwbiomedcentral.com/1471-2288/7/10](http://www.biomedcentral.com/1471-2288/7/10) (See Figure 2) recommended by Joanna Briggs Institute for the critical appraisal of research, appropriate for systematic reviews and meta-analysis was adapted to assess the quality of the systematic and the integrative reviews that were included in the studies. The Joanna Briggs Institute is an Australian evidence-based resource center for nursing. Its 10-item standardized quality evaluation tool for health research

requires the appraiser to assess the presence or absence of theoretic, methodologic, and methods of data analysis in each study. A reviewer responds to each item by scoring it no (“0”), yes (“1”), or unsure. A total study quality score is tabulated and can range from 0 (“low Quality”) to 10 (“high quality”). Depending on the total appraisal score, the included articles were classified as low (1-3), medium (4-6), high (7-10) quality. Evaluating the quality of the literature entails an assessment of the title, abstract, problem statement, review of the literature, methods, design, data analysis, discussion, and overall style. Each study that met the inclusion criteria was evaluated for quality by the researcher. To increase the reliability of the review, the researcher’s supervisor did the validation of the quality assessment. Table 6 shows the results of the quality appraisal of the articles. No study was excluded based on the quality grading.

**3.5.2 Data Reduction.** The studies were then organized based on the Country of study, the title of the study, aims and objective of the study, quality score and study design. (See Table 6 for details). This displayed pertinent information on each study. The display enhanced the visualization of patterns and relationships within and across primary data sources.

**3.5.3 Data Comparison.** According to Cooper (1998), data analysis in integrative reviews requires that the data from primary sources be ordered, categorized and summarized into a unified and integrated conclusion about the research problem. In this review, studies were synthesized under the following subheadings: author and year of publication, the title of study and journal of publication, study design and significant findings (Table 7). The display enhanced visualization of patterns and relationships within and across primary data sources (Whittemore & Knafl, 2005). The results were then evaluated for similarities and differences using constantly targeted comparison to clarify defining and overlapping attributes and discern relationships between phenomena. The constantly targeted comparison also helped to draw conclusions on

findings in the reports of the studies reviewed and their relationships to other findings (Sandelowski & Barroso, 2007).

**3.5.4 Conclusion Drawing.** Conclusion drawing is the final phase of data analysis that moves the interpretive review effort from the description of patterns and relationships to a higher level of abstraction, subsuming the particulars into the general. In this stage, researchers provide readers with explicit details from each of the primary sources to exhibit evidence in support of the conclusion from the review (Whittemore & Knafl, 2005). The information provided a final summarization of the findings about what is known about the factors that impact seeking medical care after breast cancer symptom discovery in women and the factors that impact participation in breast health awareness programs. All these leading to the determinants of health outcomes of women living with breast cancer in the populations studied

## **3.6 Findings**

**3.6.1 Quality and Extent of the Literature Base.** Overall, 32 articles (58%) out of the 55 articles received a high-quality appraisal; 20 articles (36%) received moderate grading; while three articles (6%) received low grading. Lack of the discussion of the ethical consideration for the articles was the most common deficit identified. There was 100% rater agreement between the author and her supervisor on the quality category (high, moderate or low) of the included articles. The features of the included articles are presented in Table 5. Most of the articles, 51% (n=28) were cross-sectional qualitative studies; 22% (n= 12) articles were survey studies; 15% (n= 8) articles used data from randomized control studies from national or provincial health surveys among the Canadian studies; 2% (n=1) study was a quasi-experimental study, 2% (n=1) was a retrospective study; 2% (n=1) was an integrative review study; 2% (n=1) was a systematic review; 4% (n=2) were news articles representing grey literature.



### 3.6.2 Summary of Findings

The summaries of the significant findings from the retrieved articles are presented in Table 7. Findings from the articles regarding the factors that impact seeking medical care after breast cancer discovery and the factors that impact participation in breast health activities by women could broadly be divided into two major categories namely: a) factors that facilitate seeking medical care or factors that facilitate participation in breast health activities and b) factors that inhibit or factors that act as barriers to seeking medical care or participating in breast health activities (Tables 8, 9, & 10, show the summaries). The same set of factors that act as facilitators could also act as barriers to seeking medical care after breast cancer symptom discovery and participation in breast health activities. The identified factors could further be subdivided into three categories: personal or individual factors, healthcare system factors, and sociocultural factors. The personal factors could further be subdivided to awareness and knowledge. The sociocultural factors could be related to attitudes and beliefs, which could include misconceptions about breast cancer, spirituality, and perceived susceptibility to breast cancer. The healthcare system factors could be related to access to care. Access to care could include issues related to healthcare financing and healthcare delivery.

The findings within the Canadian studies showed that the intentions to participate in screening activities or to engage in breast health activities positively correlated with previous mammography, encouragement to have a mammography from the physician and other healthcare providers such as the nurses, knowledge and awareness about breast cancer, knowing a person with breast cancer, and absence of negative attitudes (O'Connor et al., 1995; Vahabi, 2011; & Kolahdooz et al., 2014). The authors concluded their studies by stating that improvements in participation rates will be achieved only if women are convinced of the need for screening and

physicians encourage them to be screened.

Bottorff et al. (1998) and Donnelly (2009) discussed four central domains of beliefs within ethnic minority groups related to breast health practices: a) beliefs about a woman's calling, b) beliefs about cancer, c) beliefs about taking care of one's breasts, and d) beliefs about accessing services. These beliefs hold important implications for how health promotion strategies should be structured and offered to the ethnic minority groups. In particular, attention must be paid to the language that is used to talk about breast cancer. According to the authors, these factors can either act as facilitators or barriers to participating in breast health promotion activities. It depends on how they are tailored. Ahmed et al. (2005) and Donnelly et al. (2007) affirmed that to provide quality and equitable health care for clients of different ethnocultural backgrounds, an alternative approach is needed that is not only sensitive but also considers the socioeconomic factors that affect their lives. If health care professionals are to advocate for holistic health care, then health care services ought to examine how socioeconomic status at the intersection of race, gender, and class shapes an individual's multiple social positions, which in turn affect health and healthcare behaviour. De et al. (2000); De Grasse et al. (1996); de Konning (2003), recommended the need to continually search for and continually evaluate innovative strategies to align practices within the Canadian health care system to encourage ethnic minorities to participate in breast health activities. According to Vahabi (2010), opportunistic teaching during each health encounter should be encouraged and reinforced.

Having a strong family history of breast cancer was not considered as an isolated situation but part of one's journey in choosing to undergo genetic testing for inherited breast cancer susceptibility (Maheu, 2009). According to Martin et al. (2006), the perception of risk was not associated with surveillance practices and screening in women with a family history of

breast cancer. However, depression should be considered closely when dealing with women with a higher-than-average risk of breast cancer.

Paquette et al. (2000) stated that the results of randomized trials showed that breast cancer screening with mammography reduces breast cancer mortality by up to 40% in women aged 50-69 years. As a result of these findings, by 1998, 22 countries, including Canada had established population-based screening programs. The authors recommended the translation of the benefits of breast cancer screening by mammography as demonstrated in the randomized trials, into population-based community programs. de Koning et al. (2003) advocated for the continuation of the current Canadian nationwide population-based mammography screening programs.

The satisfaction women get from health care services can influence their participation in breast cancer screening activities (Decker et al., 1999). Women who are satisfied with healthcare services are more likely to use the facility again. Study by Donnelly et al. (2008) revealed valuable insights that might be helpful to healthcare professionals caring for Vietnamese Canadian women. The authors recommended that for the promotion of breast cancer screening, efforts should be made to a) recruit Vietnamese-speaking female healthcare professionals for breast cancer health promotion programs, b) reduce woman-physicians hierarchical relationships and foster effective doctor-patient communications, c) healthcare providers must be aware of their own cultural beliefs, values and attitudes that they bring to practice, and d) more institutional support and resources should be given to both Vietnamese Canadian women and their healthcare providers.

Within the Canadian studies, identified barriers to mammography screening were: membership in an ethnic minority group, concerns about pain, radiation and embarrassment,

misconception about breast cancer, and linking a negative lifestyle with the development of breast cancer (Bryant et al.,1992; Hansen et al.,1999). According to the authors, many women attributed breast cancer to “being in the hands of others”, explaining that breast cancer was caused by careless words, curses or divine power and that breast cancer was seen as something that could be passed down within the family. Study by McDonald et al. (2010) revealed that mammography use was significantly lower in rural and remote areas, even after a range of other demographic and socioeconomic factors were accounted for. One important factor underpinning this result according to the authors appears to be differences in attitudes about the importance of regular mammography screening for women residing in the rural and urban areas. The authors recommended that information campaigns raising awareness about the importance of mammography screening should be targeted, in particular, at women residing in rural and remote areas. The inability to speak one of the two official languages was an important barrier among Asian immigrant women identified by Sun et al. (2009). (Table 9 shows the details).

Within the Nigerian studies, findings showed that a greater majority of breast cancer patients presented with late stages of the disease in the hospital due to lack of awareness and knowledge about breast cancer and breast health issues (Akhigbe et al., 2006; Anyanwu, 2011; Chirdin et al., 2006; Ibrahim et al., 2012; Ihenacho et al., 2013; Irurhe et al., 2001; Isara et al., 2011; Moorley et al., 2014; Obajimi et al., 2013; Odusanya, 2001; Okobia et al., 2006; Oluwatosin et al., 2006; & Oluwatosin, 2010). Other barriers identified by Bello (2012); Pruitt et al. (2014); and Ukwenya et al. (2008) were a lack of access to optimal care and adequate infrastructure. Bello et al. (2011); Ibrahim et al. (2009); Ibrahim et al. (2012); Moorley et al. (2014); Omoyeni et al. (2014); & Pruitt et al. (2014), identified various attitudes and beliefs such as belief in spiritual healing, belief in herbal treatment, fear of mastectomy as factors impacting

presentation for medical care after breast cancer symptom discovery in women. Ntekim et al. (2009); Ohaeri et al. (1999), identified socioeconomic factors as impacting presentation for medical care, while Odusanya et al. (2001) and Okobia et al. (2006) advocated for the establishment of institutional framework and policy guidelines that will enhance adequate and urgent dissemination of information about breast cancer and breast health activities to all women in Nigeria.

### **3.7 Discussion**

This integrative study reviewed 55 articles. From the data, three themes emerged as the factors impacting seeking medical care after breast cancer symptom discovery and participating in breast health activities: a) personal factors which could be related to lack of knowledge and awareness about breast cancer and breast health issues, b) sociocultural factors, and c) access to care. Sociocultural factors could include attitudes, beliefs, spirituality and perceived susceptibility. While the factors relating to access to care could be subdivided into healthcare financing and healthcare delivery issues.

#### **3.7.1 Lack of Awareness and Knowledge about Breast Cancer and Breast Health Issues**

Three things have been identified as essentials in advancing the well-being of breast cancer patients around the world: a) Women's knowledge and awareness about breast cancer, b) availability of adequate infrastructure, and c) women being empowered to get care (Anderson, 2012). Kollahdooz et al. (2014) also stated that the most common factors affecting attitudes and behaviors towards breast cancer screening included knowledge about breast cancer and screening, educational attainment, perceived necessity of screening, and age. In Canada, being well informed or knowledgeable about breast cancer or screening was a major factor facilitating participation in breast health activities (Hanson et al., 2009). Other factors included a woman's

perception of the importance of screening activities, support or encouragement from the health community such as physician recommendation and encouragement from nurses (Black et al., 2006). Ragaz (2011), in his report card on cancer in Canada, stated that the main factors known to impact breast cancer mortality include widespread public education about breast cancer leading to earlier diagnosis, particularly by using screening mammography and evidence-based therapy, for example effective surgery, adjuvant chemotherapy, hormonal therapy, radiotherapy and post-recurrence therapy (Ragaz, 2011).

Diagnosis of breast cancer in the earlier stages of the disease pathway remains the cornerstone of breast cancer control (Anderson et al., 2008; WHO, 2007; Yip et al., 2012). According to Yip et al. (2012), early detection programs cannot succeed unless the general public is aware of the benefits, namely improved survival. Beyond creating awareness among the general public, creating awareness among government officials, medical educators, policy makers and key advocates in the public and press is crucial (Black et al., 2006; Kangolle & Hanna, 2010).

Along these lines, a first step towards early breast cancer detection and early disease presentation is a breast health awareness program. Breast health awareness is a term that includes not only education about early signs and symptoms of breast cancer but also breast self-examination (Anderson et al., 2008; Yip et al., 2012). Although a population-based breast self-examination program has not been shown to be effective in reducing mortality from breast cancer, in a low to middle-income country, it is a valuable tool for creating awareness (Thomas et al., 2002). According to Thomas et al. (2002), if there is no mammography screening program or a clinical breast examination program, unless a woman touches her breast, a breast lump can remain undetected until it reaches a significant size.

Irrespective of the early detection method used, central to the success of population-based early detection are careful planning and a well organised and sustainable programme that targets the right population group and ensures coordination, continuity and quality of actions across the whole continuum of care (Yip et al., 2008). According to the authors, targeting the wrong age group, such as younger women with low risk of breast cancer, could cause a lower number of breast cancers found per woman screened and, therefore, reduce its cost-effectiveness. Also, targeting younger women would lead to more evaluation of benign tumors, which causes an unnecessary overload of health care facilities due to the use of additional diagnostic resources (Yip et al., 2008).

The early detection methods that are least expensive in low to middle-income countries are breast self-examination (BSE) and clinical breast-examination (CBE) (Miller, 2011). They do not require advanced technology. However, according to Jonsson and Wilking (2014), there is no evidence that self-breast examination has any effect on earlier diagnosis. Nevertheless, in many countries, with limited coverage of breast cancer screening, the majority of breast cancers are detected when women seek care after having noticed a breast lump. Therefore, initiatives to increase the awareness of breast cancer are extremely important so that women are conscious that breast lumps and other changes in the breast can be signs of disease and therefore, do not postpone seeking care until the symptoms have reached a critical stage. Thomas et al. (2002), stated that BSE should be encouraged only as part of breast cancer awareness programs and not be depended upon alone to decrease breast cancer mortality. This is because randomized trials of BSE have not shown improved breast cancer mortality. CBE, when used as a screening tool, has been shown to reduce breast cancer mortality when adequate treatments are available (Duffy et al., 2006.) The efficacy of CBE continues to be studied and debated, particularly in countries

where women commonly present with large (>3cm) palpable masses (Thomas et al., 2002). Clinical breast examinations do not need to be performed by physicians or nurses alone. Community healthcare workers could be trained to perform breast examination efficiently. It is important to understand the level of awareness and education of breast cancer among community health care practitioners such as pharmacists, nurses, and community health extension workers. The impact of building awareness of the principles of breast cancer prevention, early detection, treatment and access to care in developing countries through this group of healthcare providers may be tremendous (Mitra, 2008; Corbex et al., 2012).

Mammography and other expensive technologically complicated resources and therapies will not likely to be available to many women in a developing country like Nigeria. However, there are ways closer at hand to improve the immediate outlook for women in these settings. Such approaches include effective breast education programs, increased breast cancer awareness, detection of tumors palpable with self or clinical-examination. Education efforts need to address the reality that many women, particularly those with less education and income may not seek care when they feel a breast mass, because they are unaware of what it represents, are concerned about stigma of cancer and being rejected by their community and their partners, fear of potential loss of their breast, or belief there are no effective therapies for the disease especially if all the women they have known with breast cancer died. By combining education, with better and more accessible health care facilities, trained medical personnel, and effective therapy, patients are more likely to seek and comply with treatment and benefit from it. Earlier detection and timely, adequate surgery would likely result in substantial improvements in survival (Jonsson & Wilking, 2014). Education about breast cancer, advocacy around curability and increased coverage of basic health care including skilled breast physical examination could also produce



improvements in survival rates.

Healthcare systems provide the framework for improving outcomes for women with breast cancer in limited-resource countries. The barriers to reform are numerous and sometimes difficult to clearly identify. However, a firm understanding of the obstacles within these systems is a necessary initial step. Women themselves are stakeholders in the outcome and as such, they are invaluable resources. Through education and organization, they can help to facilitate needed change and save lives. They should therefore, be involved and be carried along in every of the strategies to be put in place in curtailing the devastating morbidity and mortality of breast cancer.

**3.7.1.1 Clinical Care Alternatives.** The WHO guidelines on early detection of cancer distinguishes clearly two programmatic approaches namely screening which focuses on detecting cancer in asymptomatic at-risk populations and early diagnosis which focuses on detecting cancer early in symptomatic patients (WHO, 2005; 2007). Early diagnosis aims at simply ensuring that women who have early symptoms go rapidly to the doctor and receive rapid and adequate evaluation and diagnosis. Early diagnosis is a cheap and easy-to-implement alternative to screening that is relevant to countries with limited resources, where the majority of cancers are diagnosed in stages 3 and 4. It has been experimented with success in some low to middle-income countries (Mitra, 2008; WHO, 2007).

Early diagnosis programs intend to make better use of available health care resources. It consists of the organization and the education of the first line health care staff and the public about the early signs and symptoms of breast cancer and the benefits of early detection. The second aspect is improved referral procedure and patient flow, which will ensure that women who present with early symptoms get rapid diagnosis and treatment. According to Corbex et al. (2012), early diagnosis can be integrated into an already existing health programs. Data

collection and evaluation are also part of the program. WHO and the BHGI recommend this approach, as the minimal breast cancer early detection intervention in low resources setting (WHO, 2005; Yip et al., 2008). The WHO guideline stated that “ A cancer screening program is a far more costly and complex undertaking than an early detection program. Therefore, where resources are limited, and where the majority of cases are diagnosed in the late stages, early detection of the most frequent cancers, linked to appropriate treatment is likely to be the best option to reduce premature deaths and suffering due to cancer” (WHO, 2005; 2007).

### **3.7.2 Sociocultural Factors**

There are many potential sociocultural factors that impact seeking care upon first noticing breast cancer symptoms. A woman’s formal and informal network of friends, family, coworkers and associates could be influential. Other factors include economic and logistical factors (Anyanwu, Egwuonwu, & Ihekwoaba, 2011; Pruitt et al. 2014). According to the authors, once a breast cancer diagnosis was made, multiple social and personal factors acted to influence the initiation or completion of breast cancer treatment. Denial, fear of surgery particularly mastectomy, and costs of treatment could be factors (Adisa et al., 2010; Donnelly, 2009; McDonald et al., 2010; Pruitt et al., 2014). Because the healthcare system in Nigeria relies mainly on out-of-pocket payments, ability to pay for treatments could also play a significant role in late presentation and non-participation in breast health activities (Adisa et al., 2010).

Social or cultural factors could impact women’s participation in early detection programs, and failure to anticipate these factors could adversely affect research or clinical outcomes (Pisani et al., 2006). Acceptability of treatment could be limited by values surrounding the loss of hair, fertility during chemotherapy, and loss of organs due to surgery e.g. mastectomy (Ajekigbe, 1991; Pruitt et al., 2014). Stigma from being formally diagnosed with breast cancer,

embarrassment, cultural factors, personal beliefs, powerlessness or fear of treatment could lead to patient-related delays in treatment (Pruitt et al., 2014). In developing countries with Indigenous populations, there often exists the idea that social misbehaviour causes breast cancer and that if a woman develops breast cancer, she will be divorced by her husband and rejected by the community (Coughlin et al., 2009; Yip et al., 2008). In the light of these factors, women tend to hide symptoms at early stages when treatment is typically most effective.

**3.7.2.1 Cultural Beliefs and Attitude.** The norms, beliefs, and attitudes about breast cancer that are shared by a group could play important roles in their decisions about breast cancer. Some of those factors are spirituality, perceived susceptibility to breast cancer, attitudes, and cultural beliefs. According to Bach et al. (2002), research performed in low-middle income countries also applies to care for underserved populations in the United States. Notably, minority women in the US, are more likely to present with advanced-stage disease and have high mortality rates than do white women. Although white and black women presenting with similar stage disease and receiving similar treatments have similar outcomes. This finding suggests that differences in stage at presentation should represent primary targets for research, the goal of which is to determine which factors best impact the decision to seek medical care after noticing an abnormality on the breasts. The factors responsible for the late stage of disease presentation among women from different social or racial groups also need to be explored.

Nigerian women have different beliefs about breast cancer. For instance, Nigerian women are more likely to hold the belief that swelling or a lump in the breast that is not painful need not be reported to a physician, and furthermore, if the lump is not painful, it is unlikely to be cancerous (Pruitt et al., 2014). Fear of discovering a cancerous lump, fear of premature death, fear of losing a significant other, fear of insufficient and ineffective treatment for breast cancer,

and embarrassment may contribute to the late-stage breast cancers that are often detected among Nigerian women and some other minority groups (Adesunkanmi et al., 2006; Anyanwu et al., 2011; Bello, 2012; Okobia et al., 2006). Nigerian women's medical care seeking behavior could also be influenced by misconceptions and beliefs about breast cancer treatment. They may, therefore, display less confidence in Western medicine (Pruitt et al., 2014). For example, Nigerian women are likely to believe that cutting into a cancerous tumor may cause it to spread more quickly. When Nigerian women are diagnosed with breast cancer, a reaction described by many of them is a complete denial of their condition (Oluwatosin, 2010). The belief that breast cancer is inevitably fatal and the lack of survivorship may be contributing to this denial (Oluwatosin et al., 2006; Oluwatosin, 2010). In a study done in Delhi in India, only one-third of the patients seeking medical care believed that cancer could be cured (Kishore et al., 2008). A study conducted in the Philippines from 1996-1997 found that 42% of women with a lump detected during screening refused further investigation. This study highlights the need to identify and address cultural mindset, and logistic barriers to diagnosis and treatment before initiating early detection programs (Pisani et al., 2006). Further identification of culture-specific barriers is vital for efforts aimed at encouraging women to seek medical care as soon as a breast abnormality is detected. Greater understanding of the impact of cultural barriers on breast cancer-related behaviors and outcomes would enable healthcare providers to provide better care for their patients.

**3.7.2.2 Spirituality.** Spiritual beliefs and practices are prominent among many women. Spiritual beliefs guide many women to cope with sickness, and make treatment-related choices. In Nigeria, it is not uncommon for the terminally ill patients to turn to faith, spiritual or traditional healers for treatment (Adisa et al., 2012). There is a widespread belief among Africans that there

is a spiritual component to chronic illnesses (Adisa et al., 2012; Gukas et al., 2005). This presupposes that part of the cure must also be spiritual. Another reason patients may seek such remedies is the fear of surgery and taboos relating to mastectomy. For example, many Nigerian women believe that only God has the power to decide life and death. Therefore, spirituality and divine intervention are the most effective ways to promote cure (Pruitt et al., 2014).

Although many women derive a great deal of strength from their faith, delegating responsibility for one's health to a higher power could have negative consequences if it deters one from seeking appropriate medical care. Resignation to fate could impact seeking medical care promptly and participating in early detection activities. Since participation in an early detection program depends upon a person's acceptance that early intervention could favorably influence one's destiny. A person who has strong fatalistic beliefs may be unlikely to accept that early detection program approaches could work (Ibrahim et al., 2009). Fatalistic belief systems may be more common among people who consider themselves to be more religious. Thus, one approach to improving participation in breast cancer screening and breast health activities might be to recruit church or religious leaders as spokespersons for early detection messages. Additionally, when religious practices require women to remain completely covered, as in the case of many Muslims, women may feel that BSE and CBE are unacceptable or shameful practices. Special screening clinics staffed by women physicians and nurses and adapted to the needs of the specific religious communities may be required to promote screening participation in these areas (Anderson et al., 2008). Community outreach programs, with government agencies working with religious leaders, civil society groups, breast cancer survivor groups, and community leaders could do a lot in educating the public about breast health, dispelling myths as well as advocating for better access to early detection facilities (Anderson et al., 2008; Gray,

1997).

**3.7.2.3 Perceived Susceptibility to Breast Cancer.** Low-risk perceptions could impact participation in screening activities and in seeking treatment for breast abnormality. One factor that could contribute to this relative perception of invulnerability is the cultural norm against discussing breast cancer that exists among Nigerian communities (Oluwatosin, 2010). This norm could inhibit communication among Nigerian women thereby reducing the salience of issues related to breast cancer screening, follow-up, and treatment. A study conducted in Alexandria, Egypt over one-year period found that out of 565 women surveyed, BSE had been practiced in 10.4% of cases. BSE was more commonly performed by women from higher socioeconomic levels and those with a positive family history of breast cancer or a benign breast mass. There was a significant association between failure to practice BSE and diagnostic delay (Abdel-Fattah et al., 2000).

### **3.7.3 Access to Care**

**3.7.3.1 Geographical Access to Care.** Poverty seems to be one of the primary factors impacting seeking medical care and the reception of optimum breast cancer care (Adisa et al., 2010). Breast cancer screening, diagnosis, and treatment become difficult when primary care clinics and physicians are not easily accessible in the geographical areas where the economically deprived population live. Thus, women residing in disadvantaged communities may be required to travel long distances and bear long waiting times to utilize breast cancer screening and treatment facilities. Extensive travel time, public transportation hassles, and inconvenient hours of operation can prevent women from regular visits to the healthcare facilities (Adisa et al., 2010).

In low-middle income countries, the facilities are typically located in urban centers (Sankaranarayanan et al., 2010). According to Schroen et al. (2005), distances as short as dozens

of kilometres from the patient's home to the radiation therapy centre may be associated with less use of radiation or fewer daily treatments per patient treated. In a country like Nigeria, the effect of geography or spatial accessibility to breast cancer treatment centers constitute a significant barrier to access (Oluwatosin, 2010). For example, cancer treatment such as radiation are only available at a few sites nationally and often in the cities. For poor people, the cost of traveling may exhaust any financial reserves before the first cancer treatment is offered. Thus, late-stage presentation of breast cancer is still common (Kamangar et al., 2006; Oluwatosin, 2010).

**3.7.3.2 Poverty.** Adisa et al. (2010) stated that patient's inability to afford the cost of treatment was the single most important reason patients could not complete their scheduled cycle of chemotherapy treatment for breast cancer. According to the authors, it is possible that where patients chose faith or traditional treatment over orthodox therapy, they might have perceived these as cheaper options. The percentage of private financing that is out-of-pocket (i.e. user fees derived from the patient or the patient's family) is a significant obstacle for patients to access health care services. In low to middle-income countries, 90.3% of private funding is out-of-pocket compared to 69.7 % for upper middle-income countries and only 36.3% for high-income countries (World Bank, 2010). Out-of-pocket payments for cancer care can cause middle-income households to incur catastrophic expenditures, which in turn can push them into poverty (Pruitt et al., 2014; Xu et al., 2007).

**3.7.3.3 Canadian and Nigerian Health Care System in Profile.** Canada provides universal insurance coverage to all its residents through provincial health insurance plans jointly financed by the federal and provincial or territorial authorities. Although private insurance companies exist, they are not allowed to cover services provided under provincial plans (Fuch et al., 1991). In each province, only one public insurance entity handles reimbursing hospitals and physicians.

Patients are free to choose their physicians, but they do not reimburse these physicians or hospitals for insured health care services. Most physicians are in private practice. They are paid on a fee-for-service basis. Most hospitals are private, non-profit organizations financed by provincial government's overall budgeting (Canadian Health Act, 1991; Fuch et al., 1991; Lindenberg, 2012).

In Nigeria, the healthcare delivery system is pluralistic (orthodox and traditional health care delivery system). Private and public sectors provide orthodox health care services (Oyinbocha et al., 1014). However, the national health system is, in principle, decentralized into a three-tier structure with responsibilities at the federal, state and local government levels. Currently, the three tiers are involved, to some extent, in all the major health systems functions: stewardship, financing, and service provision (Nigeria Health Reform, 2004). The federal ministry of health is responsible for policy and technical support to the overall health system, international relations on health matters, the national health management information system, and the provision of health services through the tertiary, teaching hospitals, and national laboratories. The state ministries of health handle the secondary hospitals, the regulation and technical support for primary health care services. The local government manages the organization of the primary health care services. Each local government is subdivided into 7-15 wards. While the organization of the health sector seems well coordinated, the practical workings of the system are not as seamless as depicted here. There is often a duplication and confusion of roles and responsibilities among the different tiers of government. The implications of these are weaknesses in coordinating and tracking performance and benchmarking (Adeniyi et al., 2001; Nigerian Federal Ministry of Health, 2004).

**3.7.3.4 Healthcare Financing.** All Canadians have insured access to medically necessary



hospital and physician services under their provincial government health insurance plan (Fuch et al., 1991; Lindenberg, 2012). Under the Canadian Health Act, the provinces must not permit user fees for publicly insured services, except for the extended care for those with chronic illness living in hospitals, nursing homes, and similar institutions. If they permit such charges, provinces are subject to dollar-for-dollar deductions from the federal cash contributions provided to them under the Established Programs Financing (EPF) as well as any other federal cash transfers (Canadian Health Act, 1991; Fuch et al, 1991). This ensures that individuals are not forced to forgo needed care because of expense. Canadians spend out of their own pockets or purchase private insurance, only for services such as dental care, cosmetic surgery, and additional hospital room amenities that are not covered by their provincial plan (Fuch et al., 1991).

In Nigeria, health financing is borne by households who make out-of-pocket payment for healthcare services. This has massive implication for access to health care services across the country. In Nigeria, in addition to financial factors, the three critical factors that determine access to health care services are: distance to the health care facility, perceived quality of the care rendered and the type and severity of the illness (Federal Ministry of Health and WHO, 2004; World Bank, 1996). Wealthy Nigerian citizens in need of perceived complex operations are often sent abroad to get treatment.

**3.7.3.5 Health Care Services Delivery.** In Canada, the health care system is characterized by its universal access. All residents of a province are entitled to the insured health services provided for by the public health insurance plan on uniform terms and conditions (Canadian Health Act, 1991; Lindenberg, 2012). Also, health care provided to someone who is temporarily visiting another province is reimbursed under the insurance of the patient's home province (Canadian Health Act, 1991; Fuch et al., 1991). Canadians moving from one region to another continue to

be covered for insured health services by their home province during any waiting period (not to exceed three months) imposed by their new province of residence.

By contrast, in Nigeria, there is no universal public health insurance. The government's answer to financing health care is the National Health Insurance Scheme (NHIS) that was first mooted in 1978. The implementation of NHIS started in 2005, focusing initially on public sector employees. This scheme has not yet improved access for the poor and the informal sector. Health consumers predominantly have to pay at the point of service delivery. While the cost of health care for those in formal employment may be subsidized as a component of their remuneration packages. However, the majority of the poor must make out-of-pocket payment at the service delivery point. This limits access for the vast majority of people who need health care the most.

This high cost of medical treatment is one of the most commonly cited constraints in accessing health services. (Federal Ministry of Health and WHO, 2004; Nigeria Federal Ministry of Health, 2004; World Bank, 1996). To achieve a sustainable healthcare system, it was suggested by Obasan and Orimisan (2013) that the Nigerian government should: a) provide a system of equitable distribution of health facilities, resources (human and material), and services to those in greatest need particularly, the vulnerable populations, b) ensure and implement cost-effective interventions and healthcare plans that strengthen the delivery of basic health referral services, c) ensure the provision and equitable distribution of agreed “ essential packages of care” at all levels of the healthcare system, d) establish a functional and competent monitoring and evaluation system to track progress and changes in the health sector at all levels of operation and periodically review their findings to improve the quality of care, e) encourage strategic and progressive leadership in healthcare system, f) provide incentives to healthcare personnel at different levels and improve their salary structure so as to restrain them from seeking for more

lucrative opportunities abroad, and g) create an environment that is conducive for the advancement of science and research in Nigeria while adhering to highest ethical and scientific standards (Obasan & Orimisan, 2013).

**3.7.3.6 Health System Barriers.** Institutional and policy-level delays within the health care system contribute to delays in care at both the level of diagnosis and the degree of treatment. In Nigeria, for instance, accessing the orthodox medical system with a non-physician health care worker at the primary point of care is a significant problem. Many patients are treated improperly for months to years by these practitioners before being referred if at all, for diagnosis and treatment at a larger medical center (Akhigbe & Omuemu, 2009; Odusanya, 2001; Odusanya & Tayo, 2001). This shows the importance of addressing community-level, institutional-level, as well as individual-level barriers. Frequently, patients were turned away from hospitals due to strikes and dysfunctional treatment equipment (Akinyemi et al., 2013; Bello, 2012). Often, patients had to wait for months for a test result or an appointment for surgery. In recent years, strikes by health care workers, over working conditions, and remunerations have become more frequent and have had significant effects on the ability of hospitals to treat patients (Adisa et al., 2010; Akinyemi & Atilola, 2013; Umukoro, 2012). To develop a streamlined system of care, these barriers, as well as patient behaviours and attitudes, will have to be addressed.

Although mammography screening is recognised as the primary evidence-based early detection method, there could be challenges using this detection method in light of infrastructure limitations and competing demand for resources particularly in low and middle-income countries such as Nigeria (Smith et al., 2006). Thus, before an early detection program is implemented, facilities for adequate diagnosis and treatment must already be present. This challenge could partly be met by increasing government investment in infrastructure to accommodate screening

equipment. This could be achieved through advocacy.

**3.7.3.7 Training of Manpower.** Training of health care workers is essential. Education, training, and adapted use of affordable technology for breast cancer early detection, diagnosis, and treatment will ensure that skilled staff are available to attend to the health care needs of patients (Anderson, 2008). The training would be best done on site. On-site training has the advantage of customizing the training so as to optimize management in limited resources settings. It is necessary for health facilities in low-resource countries to retain their skilled staff by ensuring decent wages and reasonable working conditions, together with providing continuing medical education and opportunities for career development for all their health workers (Anderson et al., 2008).

### **3.8 Summary**

The most common factors impacting participation in breast health activities in the Canadian and the Nigeria communities are knowledge and awareness about breast health and breast cancer. The major factors impacting participation in breast health activities and seeking medical care for breast cancer in the Canadian communities are breast health awareness and knowledge about breast cancer. Canadians are well informed about breast health. The major factor impacting seeking medical care for breast cancer identified in the Nigerian literature were a lack of awareness and knowledge about breast cancer in women and breast health activities. The early diagnosis approach then should consist of the promotion of the awareness of the early signs and symptoms of breast cancer among the Nigerian public. The education of first line health professionals and improved referral procedures to facilitate the prompt and adequate diagnosis and treatment of breast cancer in the early stages of the disease are urgent. The Nigerian community could learn from the Canadian community by exposing her citizens to early

awareness messages using the media, literature, pamphlets, and video messages. This awareness and knowledge need to involve all and sundry especially physicians, nurses, health workers, religious leaders, community leaders and civil society groups. The WHO recommends awareness and education of the public as the most basic breast cancer early detection strategy to implement before moving on to consider mammography screening.

### **3.9 Limitations**

Although efforts were made to conduct a thorough review of the literature, it is possible that some of the available literature may not have been retrieved. This potential exists because of inconsistencies in search terminology and publication bias (Whittemore & Knafl, 2005). The author's personal biases and experiences may have impacted the selection, interpretation and analysis of the literature and ultimate conclusions reached. Several steps were taken to address this limitation. The author's supervisor cross-checked and validated the articles' retrieval and selection process. Relevant literature could have been missed and impacted the study findings. To address this risk, a broad range of literature was retrieved from multiple sources, erring on the side of inclusion versus exclusion. Reference searches were also added to decrease the likelihood of missing key relevant literature. This review was restricted to studies that were carried out in Canada or Nigeria this might explain why research articles from other countries were not assessed. Also, articles were limited to those done in the English language. Valuable information from studies done in other languages could have been lost. The use of a structured tool for the assessment of study quality was strength, but the application of the quality assessment tool was challenging.

### **3.10 Ethical Consideration**

Before any research study is carried out, the researcher must obtain an ethical approval

from a University of Saskatchewan Research Ethics Review Board or Committee to conduct the study. The design of this study was an integrative review of published literature. Independent ethical review and approval is not required for the use of previously published manuscripts. However, review exemption letter was obtained from the University of Saskatchewan Research Ethics Review Board or Committee. Efforts were made to conduct an ethical study, to promote the aims of this research study, and to avoid errors. Efforts were also made to make sure that this final report comprises of the integration of the concepts, thoughts and other information peculiar to the authors whose papers were the objects of this review.

### **3.11 Conclusions**

The present study identified the determinants of health outcomes of women living with breast cancer in Canada and Nigeria from 1990-2014. It specifically explored the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women. The study compared Canada and Nigeria breast health care. The findings suggest that the same set of factors that facilitated seeking medical care could also act as barriers to seeking medical care, and participation in breast health activities. Enhancing the knowledge of the Nigerian population about breast health activities could assist in reducing breast cancer-related mortality.

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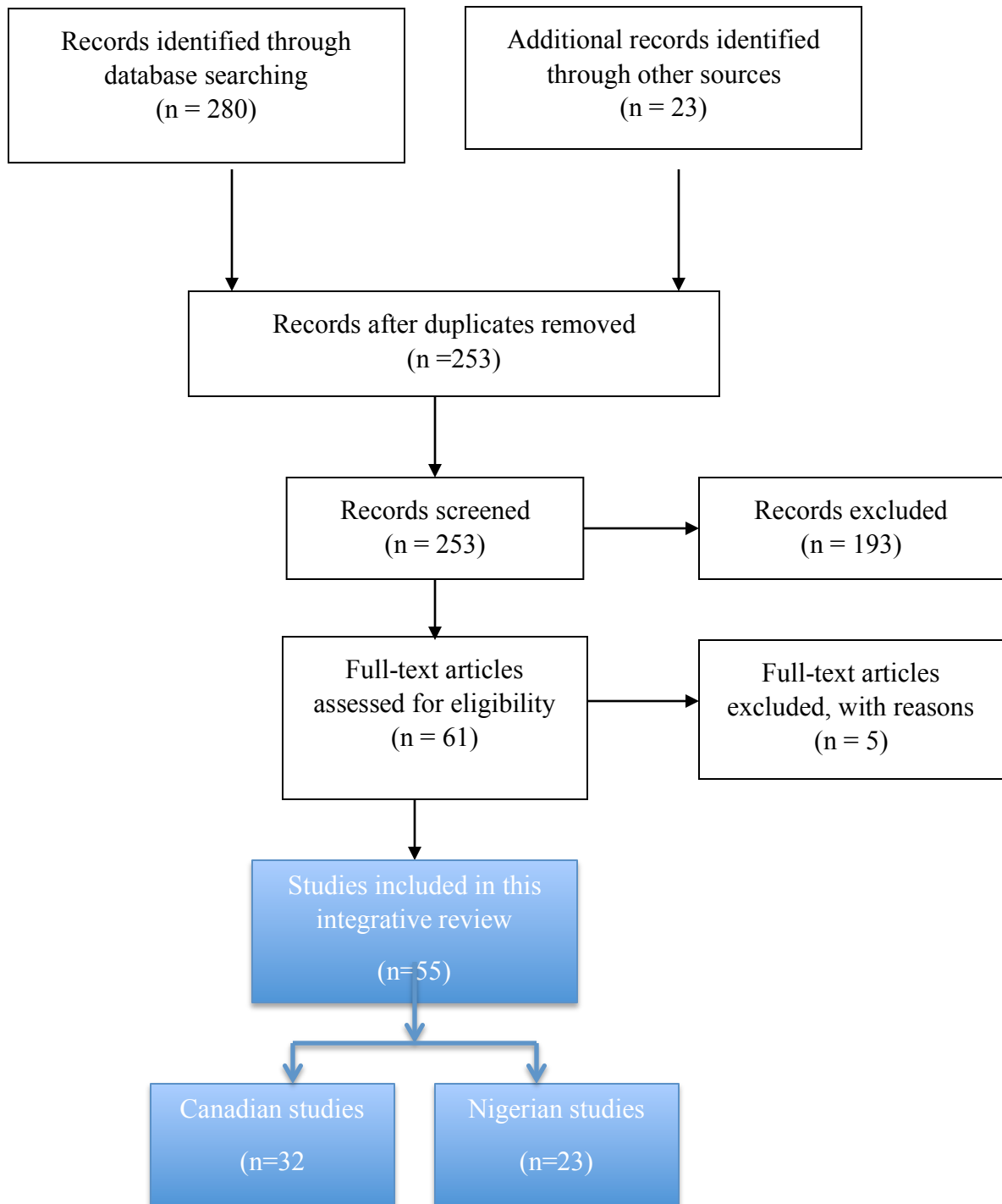
**Table 4 Search strategies**

| Databases,<br>1990-2014   | Search terms   | Returned<br>articles |
|---------------------------|--|----------------------|
| CINAHL                    | Breast cancer, breast neoplasm, diagnosis, prevention and control, health knowledge, patient attitude and practice, human, breast self-examination, patient education as topic, awareness, Mass screening  | 46                   |
| EMBASE                    | Breast cancer, breast neoplasm, diagnosis, prevention and control, health knowledge, patient attitude and practice, human, breast self-examination, patient education as topic, awareness, Mass screening. | 2                    |
| Hand searched<br>articles | Breast cancer, breast neoplasm, diagnosis, prevention and control, health knowledge, patient attitude and practice, human, Female, peer-reviewed.  | 23                   |
| MEDLINE                   | Breast cancer, breast neoplasm, diagnosis, prevention and control, health knowledge, patient attitude and practice, human, breast self-examination, patient education as topic, awareness, Mass screening. | 232                  |

*All selected search engine column numbers were associated with advanced searches and explode.*



**Figure 3. Flow Diagram of the Search and Selection Process for the Included Studies**



From: Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G. (2009). The PRISMA Group. Preferred reporting items for Systematic reviews. doi:10.1371/journal.pmed1000097

**Table 5 Characteristics of Selected Studies**

| Citation               | Country | Title of Study   | Aims and Objective of study  | Quality grading | Design   |
|------------------------|---------|--|--|-----------------|--|
| Ahmed et al. (2005).   | Canada  | A tailored intervention to promote breast cancer screening among South Asian immigrant women.                      | The purpose of this study was to show how a socioculturally tailored intervention could improve the knowledge, beliefs and clinical breast examination (CBE) among South Asian (SA) immigrant women. | High            | An Innovative Method Study, using newspaper/ and local language. |
| Akhigbe et al. (2009). | Nigeria | Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city. | The purpose of this study was to assess the awareness of female health workers about risk factors and screening methods for early detection of breast cancer.  | Moderate        | A Cross-Sectional Descriptive Study.                             |
| Anyanwu et al. (2011). | Nigeria | Acceptance and adherence to treatment among breast cancer patients in Eastern Nigeria.                             | The purpose of this study was to assess the adherence and acceptance behaviors of patients presenting with a clinical suspicion of breast cancer at a breast clinic in Nigeria during a              | Moderate        | A Survey Study, using patients.                                  |

|                         |         |  |   |          |   |
|-------------------------|---------|--|---|----------|---|
|                         |         |  | 5-year period (2004-2008).  |          |   |
| Bancej et al. (2003).   | Canada  | Contribution of clinical breast examination to mammography screening in the early detection of breast cancer.  | The purpose of this study was to assess the contribution of CBE to screening mammography in the early detection of breast cancer was evaluated.   | Moderate | A Survey Study, using Canadian Breast Cancer Screening Database.  |
| Bello (2012).           | Nigeria | Awareness is the first step in the battle against breast cancer.   | This was a news article from the Bulletin of the World Health Organization.   | High     | A News Article.   |
| Bello et al. (2011).    | Nigeria | Knowledge and practice of breast cancer screening among female nurses and laywomen in Oshogbo, Nigeria.<br><i>The Nigeria Postgraduate Medical Journal, 18 (1): 8-15</i> | The purpose of this study was to evaluate the relationship between knowledge and practice of breast cancer screening in two groups of women with different levels of knowledge of breast carcinoma. | Moderate | A Cross-Sectional Study, using a self-administered questionnaire. |
| Black et al., (2006).   | Canada  | Improving early detection of breast and cervical cancer in Chinese and Vietnamese immigrant women.   | The purpose of this article was to describe a project designed to promote cancer screening among immigrant women in a midsize urban center in south-central Canada.                                 | Moderate | A Qualitative Study, using Interview and focus group discussion.  |
| Bottorff et al. (1998). | Canada  | Beliefs related to breast health practices: The perceptions of   | The purpose of this qualitative ethnoscience study was to   | Moderate | A Qualitative Ethno-science Study, using open-ended               |

|                        |         |  |   |          |  |
|------------------------|---------|--|---|----------|--|
|                        |         | South Asian women living in Canada.  | examine breast health practices from the perspective of South Asian women to provide a foundation for the development of culturally suitable breast health services for this group. |          | interview.   |
| Bryant et al. (1992).  | Canada  | Breast cancer screening attitudes and behaviors of rural and urban women.  | The purpose of this study was to assess the breast cancer knowledge, attitudes, and awareness of women age 40 to 74 in Alberta, a Canadian province of 2.4 million people.          | Moderate | A Telephone Interview Survey.                                  |
| Chirdan et al. (2006). | Nigeria | The practice of breast self-examination among women attending primary health care centers in Jos North Local Government Area of Plateau State Nigeria. | The purpose of this study was to assess the practice of breast self-examination among women attending primary health centers in Jos.  | Low      | A Cross-Sectional Study, Using structured interview.           |
| De et al. (2010).      | Canada  | Breast cancer incidence and hormone replacement therapy in Canada.   | The purpose of this study was to assess the long-term risks of combined estrogen and progesterin  | High     | A Baseline Survey as part of Province-wide screening exercise. |

|                          |        |   |  |      |   |
|--------------------------|--------|---|--|------|---|
|                          |        |   | hormone replacement therapy.   |      |   |
| De Grasse et al. (1996). | Canada | Changes in women's breast cancer screening practices, knowledge, and attitudes in Ottawa-Carleton since 1991. | The purpose of this study was to describe changes in breast screening knowledge, attitudes, and practices among women aged 50 to 69 years since initiation of a regional mass-screening program in Ottawa-Carleton in 1991.                                | High | A Random Telephone Survey.                  |
| Decker et al. (1999).    | Canada | Satisfaction of women attending the Manitoba Breast Screening Program.  | The purpose of this study was to evaluate the satisfaction of women who attended the Manitoba Breast Screening Program (MBSP) during the first 17 months of operation and examined differences in satisfaction by screening location and screening result. | High | A Qualitative Study, using a questionnaire. |
| de Konning (2003).       | Canada | Mammographic screening: Evidence from randomized controlled trials.   | The purpose of this study was to access the efficiency of mammography  | High | A Randomized Breast Screening Trials        |

|                            |        |   |   |      |  |
|----------------------------|--------|---|---|------|--|
|                            |        |   | screening in reducing the incidence of breast cancer.   |      | Review.  |
| Del Guidice et al. (2005). | Canada | Breast self-examination: Resistance to change.  | The purpose of this study was to investigate whether Canadian family practitioners routinely teach breast self-examination (BSE) after the publication of the 2001 Canadian Preventive Health Task Force guideline advising them to exclude teaching BSE from periodic health examinations. | High | A Cross Sectional Survey, self-administered questionnaire. |
| Donnelly et al. (2007).    | Canada | Keeping healthy! Whose responsibility is it anyway? Vietnamese Canadian women and their healthcare providers' perspectives. | The purpose of this study was to explore Vietnamese Canadian women's breast cancer and cervical cancer screening practices.   | High | A Qualitative Study, using semi-structured interview       |
| Donnelly et al. (2008).    | Canada | Challenges in providing breast and cervical cancer screening services to Vietnamese Canadian women:                         | The purpose of this study was to report the factors that influence Vietnamese women's participation in  | High | A Qualitative Study, using semi-structured interview.      |

|                  |        |  |  |          |   |
|------------------|--------|--|--|----------|---|
|                  |        | the healthcare providers' perspective.   | breast and cervical cancer screening from the healthcare providers' perspectives.  |          |   |
| Donnelly (2009). | Canada | The health-care practices of Vietnamese-Canadian women: Cultural influences on breast and cervical cancer screening. | The purpose of this study was to explore the participation of Vietnamese-Canadian women in screening for breast and cervical cancer; The appropriateness of current cancer prevention services for Vietnamese women; and the influence of social, cultural, political, historical, and economic factors, shaped by race, gender, and class, on the screening practices of Vietnamese-Canadian women. | High     | A Qualitative Exploratory Study, using the semi-structured interview. |
| Gray (1997).     | Canada | One-stop care at breast center another sign of patients' increasing influence.                                       | The purpose of this article was to give a report on the creation of a new center as a response to patients' requests for changes in the way care is provided.  | Moderate | A News Article from a medical journal.                                |

|                          |         |   |  |      |   |
|--------------------------|---------|---|--|------|---|
| Hanson et al. (2009).    | Canada  | Factors influencing mammography participation in Canada: An integrative review of the literature.   | The purpose of this integrative review was to critically examine quantitative and qualitative evidence concerning factors influencing the participation of Canadian women in mammography.                                | High | An Integrative Review.  |
| Ibrahim et al. (2009).   | Nigeria | Knowledge of risk factors, beliefs, and practices of female healthcare professionals towards breast cancer in a tertiary institution in Lagos, Nigeria. | The purpose of this study was to investigate the knowledge of breast cancer risk factors, beliefs about treatment and practice of Screening methods among a cohort of female healthcare professionals in Lagos, Nigeria. | High | A Cross-Sectional Study, using a self-administered questionnaire. |
| Ibrahim et al. (2012).   | Nigeria | Socio-demographic factors and reasons associated with delay in breast cancer presentation: A study in Nigerian women.                                   | The purpose of this study was to evaluate the effects of selected socio-demographic factors on late presentation and reasons why breast cancer patients delay reporting for treatment.                                   | High | A Survey Study, using the interview method.                       |
| Iheanacho et al. (2013). | Nigeria | Awareness of breast cancer risk   | The purpose of this study was to   | High | A Descriptive Survey, using                                       |



|                        |         |   |   |          |   |
|------------------------|---------|---|---|----------|---|
|                        |         | factors and practice of breast self-examination among female undergraduates in University of Nigeria Enugu Campus.                  | determine the awareness of breast cancer risk factors and practice of breast self-examination among female students of the University of Nigeria Enugu Campus.  |          | structured questionnaire.   |
| Irurhe et al. (2010).  | Nigeria | Knowledge, Attitude And Practice Of Breast Self-Examination Among Female Medical Students In The University Of Lagos.               | The purpose of this study was to investigate the knowledge, attitude and practice of breast self-examination (BSE) among female medical students in University of Lagos.  | High     | A Cross-Sectional Survey, using self-administered questionnaire.            |
| Isara et al. (2011).   | Nigeria | Knowledge of breast cancer and practice of breast self-examination among female senior secondary school students in Abuja, Nigeria. | The purpose of this study was to assess the knowledge of breast cancer and practice of breast self-examination (BSE) among female senior secondary school students in the municipal council Area of Abuja, Nigeria. | High     | A Descriptive Cross-Sectional Study, using self-administered questionnaire. |
| Johnson et al. (1999). | Canada  | South Asian women's views on the causes of breast cancer: Images and explanations.  | The purpose of this study was to explore the explanations and images of breast cancer embedded  | Moderate | A qualitative study using, the open-ended interview.                        |

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|--------------------------|--------|--|---|------|---|
|                          |        |  | in the women's stories of breast cancer.  |      |   |
| Kadaovi et al. (2012).   | Canada | Breast cancer screening practices for women aged 35 to 49 and 70 and older.                                  | The purpose of this study was to describe physician practices with regards to opportunistic screening for breast cancer in women aged 35 to 49 years and 70 years of age and older, and to identify the determinants associated with the practice of prescribing screening mammography. | High | A postal survey, using self-administered questionnaire. |
| Koladooze et al. (2014). | Canada | Knowledge, attitudes, and behaviors towards cancer screening in indigenous populations: A systematic review. | The purpose of this systematic review was to explore the knowledge, attitudes, and behaviors of the indigenous population towards cancer screening among Indigenous peoples worldwide.  | High | A Systematic Review.                                    |
| Maheu (2009).            | Canada | Implications of living with a strong family history of breast cancer.  | The purpose of this article was to explore the experiences of women living  | High | A Qualitative Study, using Interpretive Description.    |

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|                         |        |   | with a personal and strong family history of breast cancer.   |      |   |
| Martin et al. (2006).   | Canada | Perception of risk and surveillance practices for women with a family history of breast cancer. | The purpose of this retrospective study was to examine the relationship between perception of risk and surveillance activities (mammography and clinical breast examination) in women with a family history of breast cancer. | High | A Retrospective Study.                    |
| McDonald et al. (2010). | Canada | Determinants of mammography use in rural and urban regions of Canada.                           | The purpose of this study was to assess disparities in knowledge and attitudes about risk and treatment of breast cancer that exist between rural and urban women.  | High | A Community Health Survey.                |
| Miller et al. (1991).   | Canada | The role of the nurse examiner in the National Breast Screening Study.                          | The National Breast Screening Program employed 75 nurse examiners in 12 screening centers across Canada, who screened 67,740 women, some of whom received up to 5 annual screening examinations. 17                           | High | A National Breast Cancer Screening Study. |

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|                        |         |  | nurses each performed more than 5,000 physical examinations of the breast, 38 performed 1,000-4,999 and 20 performed less than 1,000.   |          |  |
| Miller (2011).         | Canada  | The role of clinical breast examination and breast self-examination. | The purpose of this study was to review the efficacy of screening by clinical breast examination (CBE) and/or breast self-examination (BSE).  | Moderate | Review of Randomized Control Trials Studies and observational studies. |
| Moorley et al. (2014). | Nigeria | Breast cancer awareness among an inner-city group of Nigerian women. | The purpose of this study was to gather data on knowledge, cultural beliefs and attitudes towards breast cancer screening services among Nigerian women.  | High     | A cross-Sectional Descriptive Survey.                                  |
| Ntekim et al. (2009).  | Nigeria | Breast cancer in young women in Ibadan, Nigeria.                     | The purpose of tis study was to determine the clinical and socio-economic features of breast cancer in young females aged 40 years and below treated at the Radiotherapy Department of The University | Low      | A Survey Study, using the review of patient's records.                 |

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|                         |         |  | College Hospital,<br>Ibadan Nigeria.  |          |   |
| O'Connor et al. (1995). | Canada  | Importance of physician's role highlighted in a survey of women's breast screening practices.                                    | The purpose of this study was to describe women's breast screening knowledge, attitudes, intentions and practices.  | High     | A telephone Survey with a random selection of patients.                                 |
| Obajimi et al. (2013).  | Nigeria | Level of awareness of mammography among women attending outpatient clinics in a teaching hospital in Ibadan, South-West Nigeria. | The purpose of this study was to examine the level of awareness of mammography and the factors influencing the level of awareness among women attending outpatient clinics in a teaching hospital in Ibadan, South-Western Nigeria. | High     | A Cross-Sectional Survey, using patients at the out patient department of the hospital. |
| Odunsanya (2001).       | Nigeria | Breast cancer: knowledge, attitudes, and practices of female schoolteachers in Lagos, Nigeria.                                   | The purpose of this study was to examine the knowledge, attitudes, and practices of female schoolteachers concerning breast cancer.   | Moderate | A Cross – Sectional Survey, using a self-administered questionnaire.                    |
| Odusanya et al. (2001). | Nigeria | Breast Cancer Knowledge, Attitudes and Practice among Nurses in Lagos, Nigeria.  | The purpose of this study was to determine nurses' working in a general hospital in Lagos knowledge level, attitude and   | Moderate | A Cross-Sectional Survey, using self-administered questionnaire.                        |

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|                           |         |  | practice regarding breast cancer.  |          |   |
| Ohaeri et al. (1999).     | Nigeria | The psychosocial burden of caring for some Nigerian women with breast and cervical cancer.                                       | The purpose of this study was to assess the severity of indices of psychosocial and economic burden among relatives of women with breast and cervical cancer; and its relationship with patients' psychosocial distress. | Moderate | A Qualitative Study, using questionnaire.                               |
| Okobia et al. (2006).     | Nigeria | Knowledge, attitude and practice of Nigerian women towards breast cancer: A cross-sectional study.                               | The purpose of this study was to assess the knowledge, attitude and practices of community-dwelling women in Nigeria towards the breast.   | Low      | A Cross-Sectional Survey, using interviewer administered questionnaire. |
| Oluwatosin et al. (2006). | Nigeria | Knowledge of breast cancer and its early detection measures among rural women in Akinyele Local Government Area, Ibadan, Nigeria | The purpose of this study was to assess rural women's level of knowledge of breast cancer and its early detection measures.  | High     | A Descriptive Study, using structured questionnaire.                    |
| Oluwatosin, (2010).       | Nigeria | Rural women's perception of breast cancer and its early detection measures in  | The purpose of this study was to assess rural women's perception of  | High     | A Descriptive Study, using a structured questionnaire.                  |

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|                         |         | Ibadan, Nigeria   | breast cancer.  |          |  |
| Omoyeni et al. (2014).  | Nigeria | Assessment of the knowledge and practice of breast self-examination among female cleaners in Obafemi Awolowo University Ile-Ife, Nigeria. | The purpose of this study was to assess the knowledge, practice and attitude of female cleaners in Obafemi Awolowo University, Nigeria towards Breast Self-examination as a means of early detection of breast anomaly. | High     | A Qualitative Survey, using semi-structured self-administered questionnaire. |
| Osime et al. (2008).    | Nigeria | Knowledge attitude and practice about breast cancer among civil servants in Benin City, Nigeria   | The purpose of this study was to access the level of awareness about breast cancer among civil servants in Benin City.  | High     | A Survey Study, using structured questionnaire                               |
| Paquette et al. (2000). | Canada  | Performance of screening mammography in organized programs in Canada in 1996.   | The purpose of this study was to assess the efficiency of mammography screening in reducing breast cancer mortality in women aged 50-69 years.  | Moderate | A Randomized Trial Control Study.  |
| Poole et al. (2010).    | Canada  | Is Canadian women's breast cancer screening behavior associated with having a family doctor?  | The purpose of this study was to re-evaluate using more recent data whether having family doctors continues to be Strongly  | High     | Secondary Analysis of 2006 Canadian Community Health Survey data.            |

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|                       |         |   | associated with women's participation in regular screening mammography.   |          |   |
| Pruitt et al. (2014). | Nigeria | Social barriers to diagnosis and treatment of breast cancer in patients presenting at a teaching hospital in Ibadan, Nigeria. | The purpose of this study was to use qualitative methods to assess what cultural and social barriers influence delayed breast cancer diagnosis and to understand healthcare seeking behaviors of women presenting for care at a tertiary hospital in Ibadan, Nigeria. | High     | A Qualitative Study, using semi-structured interview.   |
| Sun et al. (2009).    | Canada  | Breast cancer screening among Asian immigrant women in Canada.  | The purpose of this study was to examine the pattern of breast cancer screening among Asian Immigrant women aged 50–69 years and compare it with corresponding non-immigrant women in Canada.   | Moderate | A Qualitative. Survey. Data from Canadian screening activity was used with self-reported screening history. |
| Thomas et al. (2002). | Canada  | Using the internet to identify women's sources of breast health education and screening.                                      | The purpose of this study was to learn more about the sources that influence women to participate in breast screening.  | Moderate | A Survey Study, using the internet.   |



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| Thomas et al. (2002).  | Canada  | Breast health educational interventions: Changes in beliefs and practices of working women.                              | The purpose of this study was to examine the responses women working in the automotive industry had to two health education interventions, mailed pamphlets, and a combination of mailed material and classes at the worksite compared to a control group. | Moderate | A Quasi - Experimental Study.                                    |
| Todd et al., (2011).   | Canada  | Predicting breast and colon cancer screening among English-as-a-second-language older Chinese immigrant women to Canada. | The purpose of this study was to explore predictors of colon and breast cancer screening in this population.   | Moderate | A Qualitative Study, using Questionnaire.                        |
| Ukwenya et al. (2008). | Nigeria | Delayed treatment of symptomatic breast cancer: The experience from Kaduna, Nigeria.                                     | The purpose of this cross-sectional study carried out at a teaching hospital in Kaduna, Nigeria, was to investigate the extent and reasons for the delay between the onset of symptoms and admission for treatment of symptomatic breast cancer.           | Moderate | A Cross-Sectional Survey, using interview and patient's records. |

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| Vahabi (2010). | Canada | Knowledge of breast cancer and screening practices among Iranian immigrant women in Toronto. | The purpose of this exploratory cross-sectional study was to assess breast health knowledge and practices among Iranian immigrant women residing in Toronto, Canada. | High | A Cross-Sectional Exploratory Study, Using self-reported interview |
| Vahabi (2011). | Canada | Knowledge of Breast Cancer and Screening Practices Among Iranian Immigrant Women in Toronto. | The purpose of this cross-sectional the exploratory study assessed breast health knowledge and practices among Iranian immigrant women residing in Toronto.          | High | A Cross-Sectional Exploratory Study.                               |

**Table 6 Quality Assessment Grading with Reasons.**

| Study citation             | Identified flaws  | Grading           |
|----------------------------|---|-------------------|
| Ahmad et al. (2005).       | All the required areas were identified and addressed.   | High quality.     |
| Akhigbe et al. (2009).     | No ethical consideration discussed. It says patients were counseled.  | Moderate quality. |
| Anyawun et al. (2011).     | Ethical consideration was not discussed.  | Moderate quality. |
| Bancej et al. (2003).      | Data from screening program was used for this study. Protocol for getting the data was not discussed. Other areas were discussed. | Moderate quality. |
| Bello et al. (2011).       | Ethical consideration was not discussed.  | Moderate quality. |
| Bello, (2012)              | The Bulletin of the World Health Organization.  | High quality.     |
| Black et al. (2006).       | The discussions were based on what the nurses learned not from the participant's perspectives.                                    | Moderate quality. |
| Bottorff et al. (1998).    | Ethical consideration not discussed.  | Moderate quality. |
| Bryant et al. (1992).      | Ethical consideration not discussed.  | Moderate quality. |
| Chirdan et al. (2006.)     | The aim and purpose were not explicitly stated; Ethical consideration was not discussed.  | Low quality.      |
| De et al. (2009).          | All the major areas were discussed.   | High Quality.     |
| De Grasse et al. (1996).   | All the major areas were well addressed.  | High Quality.     |
| de Konning et al. (2003).  | All the major areas were addressed.   | High quality.     |
| Decker et al. (1999).      | All the major areas were addressed.   | High quality.     |
| Del Guidice et al. (2005). | All the major areas were addressed.   | High quality.     |
| Donnelly et al. (2007).    | All the major areas were discussed.   | High quality.     |

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| Donnelly et al. (2009).   | All the major areas were discussed.   | High quality.     |
| Donnelly (2008).          | Ethical consideration was not discussed.  | Moderate quality. |
| Ezeome (2012).            | All the major areas are addressed. Institutional ethical approval was not described.                                | Moderate quality. |
| Gray (1997).              | This is a news item. It was well presented. However, it did not discuss the confidentiality of patient information. | Moderate quality. |
| Hanson et al. (2009)      | All the major areas were discussed.   | High quality.     |
| Ibrahim et al. (2009).    | All the major areas were addressed.   | High quality.     |
| Ibrahim et al. (2012).    | All the major areas were addressed.   | High quality.     |
| Ihenacho et al. (2013)    | All the major areas were discussed.   | High quality.     |
| Irurhe et al. (2010).     | Ethical consideration was not discussed.  | Moderate quality. |
| Isara et al. (2011).      | All the major areas were discussed.   | High quality.     |
| Johnson et al. (1999).    | Issues of confidentiality and patient consent were not discussed. It says the study was part of an ongoing study.   | Moderate quality. |
| Kadaoui et al. (2012).    | All the major areas were discussed.   | High quality.     |
| Kolahdooze et al. (2014). | Protocol for accessing data was not discussed; quality assessment was not discussed.                                | Moderate quality. |
| Maheu (2009).             | All the major areas were addressed.   | High quality.     |
| Martin et al. (2006)      | All the major areas were addressed.   | High quality.     |
| McDonald et al. (2010).   | All the major areas were addressed.   | High quality.     |
| Miller et al. (1991).     | All the required protocol   | High quality.     |

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|                           | were described and followed.   |                   |
| Miller et al. (2011).     | Protocol for accessing data was not discussed.<br>Institutional ethical approval was not discussed.  | Moderate quality. |
| Moorley et al. (2014).    | All the required areas were addressed.   | High quality.     |
| Ntekim et al. (2009).     | The aim and scope of the study were not explicitly stated, Protocol for accessing data was not discussed; ethical considerations were not discussed with the patients that were interviewed. | Low quality.      |
| O'Connor et al. (1995).   | All the major areas were addressed.  | High quality.     |
| Obajimi et al. (2013).    | All the major areas were addressed.  | High quality.     |
| Odusanya et al. (2001).   | Institutional approval was not discussed.  | Moderate quality. |
| Odusanya (2001).          | Institutional ethical approval was not discussed; patient consent was not discussed.   | Moderate quality. |
| Ohaeri et al. (1999).     | Ethical considerations were not discussed. Participant's consent was not discussed.<br>Institutional approval was not discussed.   | Moderate quality. |
| Okobia et al. (2006).     | The type of design was not stated; protocol for obtaining the data used was not discussed; ethical issues with participants who were interviewed were not discussed.                         | Low quality.      |
| Oluwatosin et al. (2006). | All the major areas were discussed.  | High quality.     |
| Omoyeni et al. (2014).    | All the major areas were discussed.  | High quality.     |
| Osime et al. (2008).      | All the major areas were discussed.  | High quality.     |
| Paquette et al. (2000).   | Protocol for accessing the   | Moderate quality  |

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|                        | data used was not discussed.   |                   |
| Poole et al. (2010).   | All the major areas were discussed.  | High quality.     |
| Pruitt et al. (2014).  | All the major areas were discussed.  | High quality.     |
| Sun et al. (2012).     | Protocol for accessing the used data was not discussed.<br>The issue of patient's consent was not discussed. | Moderate quality. |
| Thomas et al. (2002).  | Institutional approval was not discussed. Ethical consideration was not discussed.                           | Moderate quality. |
| Thomas et al. (2002).  | All the major areas were addressed.  | High quality.     |
| Todd et al. (2014).    | Ethical consideration was not discussed.   | Moderate quality. |
| Ukwenya et al. (2008). | Ethical consideration was not discussed.   | Moderate quality. |
| Vahabi (2010)          | All the major areas were discussed.  | High quality.     |
| Vahabi (2011).         | All the major areas were addressed.  | High quality.     |
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**Table 7 Summaries of Significant Findings**

| Author(s) and Year     | Title of journal and article   | Study Design   | Significant findings and recommendation   |
|------------------------|--|--|---|
| Ahmed et al. (2005).   | A tailored intervention to promote breast cancer screening among South Asian immigrant women.<br><br><i>Social Science &amp; Medicine, 60(3), 575-586.</i> | A Survey Study, using newspaper and the local language of the people/ community. | The results support the effectiveness of written socioculturally tailored language-specific health education materials in promoting breast cancer screening within the targeted population. Future research should test the intervention in other vulnerable populations.   |
| Akhigbe et al. (2006). | Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city.<br><br><i>BMC, 9, 203.</i>              | A Cross-sectional Descriptive study.   | These female health workers who are expected to act as role models and educate the public had inadequate knowledge of risk factors for breast cancer and practice of breast cancer Screening. There is a very urgent need for regular update courses for health workers concerning Breast cancer education including screening methods. |
| Anyananwu (2011).      | Breast cancer in eastern Nigeria: a ten-year review.<br><br><i>West African Journal of Medicine, 19 (2), 120-125.</i>                                      | A Qualitative Survey, using patients.  | Breast cancer in Eastern Nigeria follows a pattern similar to other parts of the third world with a late presentation in mainly multiparous premenopausal patients. Efforts at public health education to encourage earlier presentation should be encouraged.  |
| Bancy et al. (2003).   | Contribution of clinical breast examination to mammography screening in the early detection of   | A Survey Study, using Canadian Breast Cancer                                     | CBE in an organized program contributes minimally to early detection.   |

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|                      | breast cancer.<br><br><i>Journal of Medical Screening, 10(1), 16-21.</i>   | Screening Data.   |   |
| Bello (2012).        | Awareness is the first step in the battle against breast cancer.<br><br><i>The Bulletin of the World Health Organization, 90, 164-165.</i>                               | The Bulletin of the World Health Organization News.             | According to this author, what is needed now are funds and commitment to improving treatment for women once they are diagnosed. The lack of access to diagnostic and radiography equipment, particularly for rural women, is a serious problem. The mammography machine at UCH in the oncology unit does not even work at present nor are we able to do radiotherapy for now. So we have to refer patients to another hospital. With a population of almost 160 million people, a few functioning mammography machines are not just enough. |
| Bello et al. (2011). | Knowledge and practice of breast cancer screening among female nurses and laywomen in Oshogbo, Nigeria.<br><br><i>West African College of Medicine, 30 (4), 296-300.</i> | A Cross-sectional study, using self-administered questionnaire. | Good knowledge does not imply better screening rates in South-western Nigeria.  |
| Black et al. (2006). | Improving early detection of breast and cervical cancer in Chinese and Vietnamese immigrant  | A Qualitative. Interview and Focus Group discussion.            | Physician support and recommendations for screening are strong enablers for women to obtain   |



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|                            | women<br><i>Oncology Nursing Forum</i> ,<br>33(5), 873-876.  |   | screening  |
| Bottorff et al.<br>(1998). | Beliefs related to breast health practices: The perceptions of South Asian women living in Canada<br><br><i>Social Science and Medicine</i> , 47(12), 2075-2085. | A Qualitative. Ethno science using, open-ended interview. | Four central domains of beliefs related to breast health practices were identified: beliefs about a woman's calling, beliefs about cancer, beliefs about taking care of your breasts and beliefs about accessing services. These beliefs hold important implications for how health promotion strategies should be structured and offered. In particular, attention must be paid to the language that is used to talk about breast cancer. The importance of the role of the family in women's health decisions and traditions are shared. |
| Bryant et al.<br>(1992).   | Breast cancer screening attitudes and behaviors of rural and urban women.<br><br><i>Preventive medicine</i> , 12(4), 405-418.                                    | A Telephone Interview Survey.                             | Rural women were found to have the same basic knowledge of breast cancer or perceptions of barriers to mammography but had more negative attitudes about breast cancer itself. Despite their similar access to physician care, they were less likely to have had a recent clinical breast examination or mammogram ( $P < 0.001$ ). The results suggest particular program delivery strategies when planning for the provision of breast screening information and service to the large subgroup of rural women.                           |

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| Chirdan et al. (2006).   | The practice of breast self-examination among women attending primary health care centers in Jos North Local Government Area of Plateau State Nigeria.<br><br><i>Breast Journal, 12(4), 389-390.</i> | A Cross – sectional study, using structured interview. | It appears the education level helps in processing available health care information. It is recommended that health education in breast cancer and its risk factors, treatment, and prevention should be made available to all women. It should also be incorporated into routine health talks given in primary health care facilities.   |
| De et al. (2010).        | Breast cancer incidence and hormone replacement therapy in Canada.<br><br><i>Journal of National Cancer Institute, 102(19), 1489-1495.</i>   | A Random Telephone Survey.                             | During the period 2002-2004, there was a link between the declines in the use of hormone replacement therapy and breast cancer incidence among Canadian women aged 50-69 years, in the absence of any change in mammography rates.  |
| De Grasse et al. (1996). | Changes in women's breast cancer screening practices, knowledge, and attitudes in Ottawa-Carleton since 1991.<br><br><i>Canadian Journal of Public Health, 87 (5), 333-338.</i>                      | A Random Telephone Survey.                             | Professional breast examination rates were unchanged as were overall attitudes and concerns about screening. There were significant improvements in knowledge and encouragement to have a mammogram. As the focus on primary health care within our health care system grows, and as service delivery changes, we must continue to search for, and continually evaluate, innovative strategies to align practices with Canadian breast screening recommendations. |
| de Konning (2003).       | Mammographic screening: Evidence from  | A Randomized Breast Cancer                             | There seems to be no reason to change or halt the current   |

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|                            | <p>randomized controlled trials.</p> <p><i>Annals of Oncology, 14</i> (8), 1183-1189.</p>   | Screening Trials Review.  | nationwide population-based screening programs. Nor is there any justifiable reason for adverse reports towards women or professionals.  |
| Decker et al. (1999).      | <p>Satisfaction of women attending the Manitoba Breast Screening Program.</p> <p><i>Preventive Medicine, 29</i> (1), 22-27.</p>   | A Qualitative Study, using questionnaire                              | Satisfied women are more likely to use the facility again. Women with an abnormal result reported lower levels of satisfaction. Some women with an abnormal screening result were confused about what their results meant and why they were sent for additional diagnostic tests. This indicates the need for counseling and follow-up of patients.                              |
| Del Guidice et al. (2005). | <p>Breast self-examination: resistance to change.</p> <p><i>Canadian Family Physician, 51</i>, 698-699.</p>   | A cross-Sectional Survey, using self-administered questionnaire.      | This study, which assessed routine teaching of BSE, revealed poor adherence by Canadian family physicians to a well-publicized evidence-based guideline update. Resistance to change could in part be attributed to a lack of knowledge of the supporting evidence, a lack of confidence in the evidence to date, and personal experiences with patients within their practices. |
| Donnelly (2009).           | <p>The health-care practices of Vietnamese-Canadian women: Cultural influences on breast and cervical cancer screening.</p> <p><i>Canadian Journal of Nursing Research, 38</i> (1), 82-101.</p> | A Qualitative Exploratory study, using the semi-structured interview. | The study revealed that the following cultural factors influenced the women's level of participation in screening programs for breast and cervical cancer: cultural knowledge and values with regards to women's bodies, conceptualization of health   |

|                         |   |  |   |
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|                         |   |  | and illness, and beliefs and values concerning the patient/health-care provider relationship. The author offers recommendations for the promotion of screening for breast and cervical cancer among Vietnamese-Canadian women.  |
| Donnelly et al. (2007). | Socioeconomic influences on Vietnamese-Canadian women's breast and cervical cancer prevention practices: A social determinant's perspective.<br><br><i>Nursing Inquiry, 14(1), 2-12.</i>  | A Qualitative Study, using semi-structured interviews. | To provide quality and equitable health care for Vietnamese Canadian women (i.e., clients of different ethnocultural backgrounds), an alternative approach is needed that not only is culturally sensitive but also considers the socioeconomic factors that affect their lives. If health care professionals are to advocate for holistic health care, then health care services ought to examine how socioeconomic status at the intersection of race, gender, and class shapes an individual's multiple social positions and creates unequal social relations, which in turn affect health and health care behavior. |
| Donnelly et al. (2008). | Challenges in providing breast and cervical cancer screening services to Vietnamese Canadian women: the healthcare providers' perspective.<br><br><i>Nursing Inquiry, 15(2), 158-168.</i> | A Qualitative Study, using Semi-structured Interviews. | The insight gained from these healthcare providers' experiences are valuable and might be helpful to healthcare professionals caring for immigrant women of similar ethnocultural backgrounds.<br>Recommendations for the promotion of breast cancer  |

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|                      |   |                                     | and cervical cancer screening among Vietnamese women include: (i) effort should be made to recruit Vietnamese-speaking female healthcare professionals for breast and cervical health-promotion programmes; (ii) reduce woman-physicians hierarchical relationship and foster effective doctor-patient communication; (iii) healthcare providers must be aware of their own cultural beliefs, values and attitudes that they bring to their practice; and (iv) more institutional support and resources should be given to both Vietnamese Canadian women and their healthcare providers. |
| Gray (1997).         | One-stop care at breast center another sign of patients' increasing influence.<br><br><i>Canadian Medical Association Journal</i> , 157(10), 1419-1420. | A News Article                      | The Ottawa Regional Women's Breast Health Centre is an example of a new wave of Canadian clinics that are trying to offer improved quality of care for women with breast abnormalities. The new centers are a response to patients' requests for changes in the way care is provided.   |
| Hanson et al. (2009) | Factors influencing mammography participation in Canada. An integrative review of the literature.<br><br><i>Current Oncology</i> , 16(5), 65-75.        | An Integrative Review of Literature | The most common barriers to screening were membership in an ethnic minority and concerns about pain, radiation, and embarrassment. The recommendation of a health care provider for   |

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|                        |   |   | mammography was found to be the most common facilitator for the engagement of women in this health behavior. The targeting of specific strategies aimed at overcoming identified barriers and the enhancements of facilitators are essential to improving mammography participation rates throughout Canada.   |
| Ibrahim et al. (2009). | Knowledge of risk factors, beliefs, and practices of female healthcare professionals towards breast cancer in a tertiary institution in Lagos, Nigeria.<br><br><i>BMC, 9, 76.</i> | A Cross-Sectional Study, using self-administered questionnaire. | Significant proportion of participants in this study believed in the role of prayer and alternative medical therapy in the cure of cancer. This is a reflection of the high level of spirituality and belief in tradition among Nigerians. Programmes to educate religious leaders and alternative medical practitioners about breast cancer should be encouraged. The advantage of early presentation and treatment of patients suffering from breast cancer should be emphasized during such interactions. |
| Ibrahim et al. (2012). | Socio-demographic factors and reasons associated with a delay in breast cancer presentation: a study in Nigerian women.<br><br><i>Breast, 21(3), 416-418.</i>                     | A Survey Study, using the interview.                            | Ignorance of the nature of the illness, belief in spiritual healing, fear of mastectomy and belief in herbal treatment were the leading reasons for the delay. Women with higher risk of late presentation should be the target group during interventions aimed at raising breast cancer awareness. Reasons for patient delay should also be addressed.   |

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| <p>Iheanacho et al. (2013).</p> | <p>Awareness of breast cancer risk factors and practice of breast self-examination among female undergraduates in University of Nigeria Enugu Campus.</p> <p><i>Open Journal of Nursing, 3 (1), 147-152.</i></p> | <p>A Descriptive Survey, using structured questionnaire.</p>            | <p>The findings of this research work showed that there is low level of knowledge on breast cancer risk factors and BSE among the students of UNEC and that only few Students practice BSE monthly. This shows that there is need for more public enlightenment on breast cancer risk factors and importance of BSE especially among students These findings indicated that media continue to be one of the most important sources of information about breast cancer and BSE and highlighted the cooperation between public health educators and the media in dissemination of breast cancer information and BSE.</p> |
| <p>Irurhe et al. (2001).</p>    | <p>Knowledge and Awareness of Breast Cancer among Female Secondary School Students in Nigeria.</p> <p><i>Academic Journal of Cancer Research, 1(5), 1-5.</i></p>   | <p>A Cross-Sectional Survey, using self-administered questionnaire.</p> | <p>The majority of the patients present late in the hospital. It is, therefore, pertinent to assess the level of awareness and knowledge. The study finds out that the level of Knowledge and understanding of breast cancer were very low among the respondents. Only half of the population has heard about breast self-examination. It is, therefore, recommended that schools, parents, religious organizations, the media houses, government/non-government organizations are to improve on health education campaigns about</p>  |

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|                        |  |   | breast cancer  |
| Isara et al. (2011).   | <p>Knowledge of breast cancer and practice of breast self-examination among female senior secondary school students in Abuja, Nigeria</p> <p><i>Journal of Preventive Medicine &amp; Hygiene, 52(14), 186-190.</i></p> | A Descriptive Cross-sectional Study, using self-administered questionnaire. | <p>This study revealed that female secondary school students have poor knowledge of breast cancer. A good proportion of them knew that BSE could be used as a screening method for breast cancer, but only a few had practiced BSE. There is a need for adequate health education on breast cancer and BSE among adolescent females in Nigeria.</p>  |
| Johnson et al. (1999). | <p>South Asian women's views on the causes of breast cancer: images and explanations.</p> <p><i>Patient Education and Counseling, 37 (3), 254.</i></p>   | A Qualitative study, using the open-ended interview.                        | <p>Some women attributed breast cancer to the ways women could 'bring it upon yourself,' often linking a negative lifestyle with the development of cancer. Many women attributed cancer to being 'in the hands of others,' explaining the cancer was caused by careless words, curses or divine power. Finally, breast cancer was seen as something that could be passed down in the family. The taxonomy developed in this study provides a useful framework for understanding the explanations that might underlie women's health-seeking behaviors and for developing culturally suitable counseling strategies.</p> |
| Kadaovi et al. (2012). | <p>Breast cancer screening practices for women aged 35 to 49 and 70 and older.</p> <p><i>Canadian Family</i></p>   | A Postal Survey, using self-administered questionnaire.                     | <p>The primary determinants of participation in mammography screening are a favorable attitude to screening, screening skills,</p>   |



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|                          | <i>Physician, 58(1), 47-53.</i>   |  | peer support, belief in the efficacy of mammography, and sufficient knowledge. Improvements are needed in the practice of teaching breast self-examination to women aged 35 to 49 years and referring them to genetic counseling, as well as in prescribing mammography for women 70 years of age and older who are in good health. Public health actions to improve these practices should focus on physician attitudes and skills and on communicating clearer recommendations. |
| Kolahdooz et al. (2014). | Knowledge, attitudes, and behaviors towards cancer screening in Indigenous populations: A systematic review.<br><i>Lancet, 15, 504-516.</i> | A Systematic Review of Literature.                   | The most common factors affecting knowledge, attitudes, and behaviors towards cancer screening included access to screening, knowledge about cancer and screening, educational attainment, perceived necessity of screening, and age. Greater understanding of knowledge, attitudes, and behaviors towards cancer screening in diverse indigenous cultures is needed so that culturally appropriate cancer prevention programs can be provided.                                   |
| Maheu, (2009).           | Implications of living with a strong family history of breast cancer.<br><i>Canadian Journal of Nursing Research, 41(2), 100-102.</i>       | A Qualitative Study, using interpretive description. | For these women, having such a history had become a fact of life that could not be ignored. Three themes were identified in the data: expecting and dealing with a diagnosis of breast cancer   |

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|                         |  |                            | protecting oneself and others, and increasing exposure to cancer screening procedures. These themes address the underlying reality that having a personal and family history of breast cancer is not an isolated situation but part of one's journey in choosing to undergo genetic testing for inherited breast cancer susceptibility.  |
| Martin et al. (2006)    | Perception of risk and surveillance practices for women with a family history of breast cancer.<br><br><i>Cancer Nursing, 29(3), 227-235.</i>                  | A Retrospective Study.     | Perceived risk was not associated with screening; however, depression should be considered closely when dealing with women with a higher-than-average risk of breast cancer.   |
| McDonald et al. (2010). | Determinants of mammography use in rural and urban regions of Canada. (Original Article)(Report)<br><br><i>Canadian Journal of Rural Medicine, 15 (2), 52.</i> | A Community Health Survey. | Mammography use is significantly lower in rural and remote areas, even after a range of other demographic and socio-economic factors are accounted for. One Important factor underpinning this result appears to be differences in attitude about the importance of regular mammography screening for women residing in rural and urban areas. Information campaigns raising awareness about the importance of mammography screening should be targeted, in particular, at women residing in rural and remote areas. |
| Miller et al. (1999).   | The role of the nurse examiner in the National   | A National Screening       | The nurses' accomplishments were impressive: they taught   |

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|                              | <p>Breast Screening Study.</p> <p><i>Canadian Journal of Public Health</i>, 82(3), 162-167.</p>                                | <p>Exercise Study.</p>                            | <p>women how to perform breast self-examination and collected data evaluating BSE compliance, they alleviated anxiety in frightened women, they transmitted and explained clinical information to women who had abnormal screening examinations and they enhanced communication between the NBSS and the family physicians. Consequently, we recommend that in the future nurse-examiners should be employed in breast screening centers.</p>   |
| <p>Miller et al. (2011).</p> | <p>The role of clinical breast examination and breast self-examination.</p> <p><i>Preventive Medicine</i>, 53(3), 118-120.</p> | <p>Review of Randomized Control Trials Study.</p> | <p>The efficacy of screening by clinical breast examination (CBE) and/or breast self-examination (BSE) is reviewed using indirect evidence from randomized breast screening trials and that from observational studies. In countries where breast cancer is diagnosed at an advanced stage, screening by CBE with the teaching of BSE as an integral component will probably be effective in reducing breast cancer mortality. However, in technically advanced countries where adequate treatment is given, no screening modality is likely to be sufficiently beneficial to outweigh the harms of screening, especially false positives, and overdiagnosis.</p> |
| <p>Moorley et al.</p>        | <p>Breast cancer awareness</p>   | <p>A Cross-</p>                                   | <p>Results indicated that</p>   |

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| <p>(2014).</p>                 | <p>among an inner-city group of Nigerian women.</p> <p><i>Primary Health, 24 (3), 25-33.</i></p>   | <p>Sectional Descriptive Study.</p>                          | <p>educational levels, age, and traditional beliefs are among the main determinants of knowledge and health behavior among this group. Health promotion awareness programs should be designed and tailored in a culturally sensitive manner to dispel fear of breast cancer and meet the health literacy needs of Nigerian women.</p>  |
| <p>Ntekim et al. (2009).</p>   | <p>Breast cancer in young women in Ibadan, Nigeria.</p> <p><i>African Health Science, 9 (4), 242-246.</i></p>  | <p>A Survey Study, using the review of patient's records</p> | <p>This study shows that we have a higher proportion of young females with breast cancer in our environment than in developed countries. Most of them present late, and the majority of the patients have very low income. Physicians should pay serious attention to breast lumps. In young females and free health care services for these patients can promote early access to treatment.</p> |
| <p>O'Connor et al. (1995).</p> | <p>Importance of physician's role highlighted in a survey of women's breast screening practices.</p> <p><i>Canadian Journal of, Public Health 46 (1), 46-48.</i></p> | <p>A Telephone Survey</p>                                    | <p>Intentions to participate in screening were positively correlated with income, previous mammography, encouragement to have a mammogram, knowledge, knowing a person with breast cancer, an absence of negative attitudes (i.e., mammograms unnecessary), and low decisional conflict. Improvements in participation rates will be achieved only if women are</p>                              |

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|                         |   |  | convinced of the need for screening, and physicians encourage them to be screened.  |
| Obajimi et al. (2013).  | The level of awareness of mammography among women attending outpatient clinics in a teaching hospital in Ibadan, Southwest Nigeria.<br><br><i>BMC Public Health, 13</i> (40). | A Cross-Sectional Survey, using patient's records                  | The level of awareness of mammography is poor among women attending outpatient clinics in the studied population. Interventions promoting awareness of this screening procedure should give particular attention to the illiterate and older women while clinicians performing breast examinations should utilize the opportunity to inform women about the mammography procedure. Promotion of educational articles on breast cancer and its screening methods via media remains vital for the literate. |
| Odusanya (2001).        | Breast cancer: knowledge, attitudes, and practices of female schoolteachers in Lagos, Nigeria.<br><br><i>The Breast Journal, 7</i> (3), 171-175.                              | A Cross-Sectional Survey, using a self-administered questionnaire. | This study demonstrates that knowledge of breast cancer in a group of Nigerian women with at least an average level of education is very poor, as only 25% Possessed adequate knowledge on the subject. A suggestion for improving this poor level of knowledge is to provide health education to all women. We advocate that schoolteachers be considered as a special group that should receive information on breast cancer.   |
| Odusanya et al. (2001). | Breast Cancer Knowledge, Attitudes and Practice   | A Cross-Sectional  | The article concluded that though there are gaps in their   |

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|                              | <p>among Nurses in Lagos, Nigeria.</p> <p><i>Acta Oncological, 40(7), 847-848.</i></p>   | <p>Survey Study, using self-administered questionnaire.</p> | <p>knowledge, the nurses in this study are well informed about breast cancer and can play an expanded role in breast cancer care. This expanded role will be similar to that currently being undertaken in the developed world. It was recommended that institutional frameworks and policy guidelines be developed to empower nurses to play an expanded role in breast cancer care. Continuous education and training need to be provided, especially concerning risk factors and breast cancer risk estimation. Nurses should emphasize the importance of self-breast examination and clinical breast examination for all women.</p> |
| <p>Ohaeri et al. (1999).</p> | <p>The psychosocial burden of caring for some Nigerian women with breast cancer and cervical cancer.</p> <p><i>Social Science &amp; Medicine, 49 (1), 1541-1549.</i></p> | <p>A Qualitative Study, using questionnaire</p>             | <p>While the caregivers admitted high frequency of ‘objective’ burden, emotional ties at home and social relationships in the neighborhood seemed intact, indicating tolerance and lack of social stigma. The financial burden was more problematic than the effect of caring on family routines, and these two factors significantly predicted global rating of burden. The severity of patient's worries and psychopathological symptoms were not significantly correlated with global caregiver rating of burden. The tolerance shown</p>  |

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|                           |  |   | by this group of relatives implies that they have strong potentials for playing useful roles in community care of patients.   |
| Okobia et al. (2006).     | <p>Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study.</p> <p><i>World Journal of Oncology, 4, 11.</i></p>                  | A Cross-Sectional Survey, using interviewer administered questionnaire. | The results of this study suggest that community-dwelling women in Nigeria have poor knowledge of breast cancer and minority practice BSE and CBE. Also, education appears to be the major determinant of the level of knowledge and health behavior among the study participants. The establishment and sustenance of institutional framework and policy guidelines that will enhance adequate and urgent dissemination of information about breast cancer to all women in Nigeria is recommended. |
| Oluwatosin (2010).        | <p>Knowledge of breast cancer and its early detection measures among rural women in Akinyele Local Government Area, Ibadan, Nigeria.</p> <p><i>BMC Cancer, 6, 271.</i></p> | A Descriptive Study, using structured questionnaire.                    | This study revealed that respondents lacked knowledge of vital issues about breast cancer and early detection measures. It also revealed that health workers were not forthcoming with information to the public thereby constituting a challenge to community health nurses and other health workers, to provide vital information to the public.  |
| Oluwatosin et al. (2006). | Rural women's perception of breast cancer and its early detection measures   | A Descriptive Study, using questionnaire.                               | None of the respondents identified early detection as an advantage of breast self-  |

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|                                | <p>in Ibadan, Nigeria<br/><i>Cancer Nursing, 29(6),</i><br/>461-466.</p>   |  | <p>examination. Swelling was the most acknowledged early-warning sign. Findings of this study indicate that there is a need for an interventional study to enhance the awareness of breast cancer and its early detection measures among the rural population to influence early detection of breast cancer and subsequently reduce morbidity and mortality among them.</p> |
| <p>Omoyeni et al. (2014).</p>  | <p>Assessment of the Knowledge and Practice of Breast Self-Examination Among Female Cleaners in Obafemi Awolowo University Ile-Ife, Nigeria.<br/><br/><i>International Journal of Caring Science, 7(1), 239-251.</i></p> | <p>A Qualitative Survey, using semi-structured, self-administered questionnaire.</p> | <p>This revealed that 51% and 25% of the population respectively had average, and excellent knowledge of breast self-examination and majority of them had a positive attitude towards it. However, only 10.7% and 3.1% of those with positive attitude respectively demonstrated fair and good knowledge of its practice in the search for breast lumps.</p>                |
| <p>Paquette et al. (2000).</p> | <p>Performance of screening mammography in organized programs in Canada in 1996.<br/><br/><i>Canadian Medical Association Journal, 163 (9), 1133-1138.</i></p>   | <p>A Review of Randomized Control Trial Studies.</p>                                 | <p>The results of randomized trials show that breast cancer screening with mammography reduces breast cancer mortality by up to 40% in women aged 50-69 years. Because of these results, by 1998, 22 countries, including Canada, had established population-based organized screening programs. It is possible to translate the benefits of</p>                            |



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|                       |   |  | breast cancer screening by mammography, as demonstrated in randomized trials, into population-based community programs. Screening mammography through organized programs should increase to allow more comprehensive monitoring in Canada.   |
| Poole et al. (2010).  | Is Canadian women's breast cancer screening Behaviour associated with having a family doctor?<br><br><i>Canadian Family Physician, 56, 150-157.</i>                               | A Secondary Analysis of the 2006 Canadian Community Health Survey. | Despite declining numbers of family doctors, active interaction with a family doctor continues to be substantially associated with participation in breast cancer screening. Encouraging healthy women who do not have regular doctors to book their mammograms with organized screening programs might be a worthwhile endeavor to increase participation. As well, educating women about the importance of having family doctors whom they see regularly might not only encourage breast cancer screening but overall health outcomes. |
| Pruitt et al. (2014). | Social barriers to diagnosis and treatment of breast cancer in patients presenting at a teaching hospital in Ibadan, Nigeria.<br><br><i>Global Public Health, 10(3), 331-344.</i> | A Qualitative Study, using semi-structured interviews.             | The findings show that it is important to understand not only healthcare seeking behaviors but also institutional- and system-level barriers to finding critical points of contact with the healthcare system as targets for education. Making assumptions or  |

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|  |  |  | <p>generalizations about the patterns of care for a particular ailment may lead researchers away from productive avenues for education and improvement in care. While the use of alternative therapies may represent a significant delay that was not captured here, based on these data, understanding delays within the biomedical system appears to be more significant and easier to target for improvement. Community healthcare workers, such as pharmacists, play an important role in healthcare seeking behaviors. Understanding patterns of healthcare seeking behaviors in women more broadly is needed to understand better the areas in which healthcare education may be most effective. It is also necessary to understand the level of awareness and knowledge of breast cancer among community healthcare practitioners. This is a group of educated individuals who may be able to have a large impact on reaching multiple women for every healthcare worker educated. They could also refer women more quickly to hospital facilities with the resources to provide high-quality care.</p> |
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| <p>Sun et al. (2009).</p>    | <p>Breast cancer screening among Asian immigrant women in Canada.</p> <p><i>Cancer Epidemiology</i>, 34(1), 73-78.</p>                           | <p>A Qualitative Survey, using data from Canadian screening health survey and self-reported screening history.</p> | <p>The inability to speak one of the two official languages is an important barrier to mammography screening among Asian immigrant women. Conclusion: The findings show lower rates of mammography screening among Asian immigrant women in Canada. If breast screening is to remain a health policy objective in Canada, targeted efforts to increase the recruitment of Asian immigrant women need to be developed or strengthened.</p>  |
| <p>Thomas et al. (2002).</p> | <p>Breast health educational interventions: changes in beliefs and practices of working women.</p> <p><i>AAOHN Journal</i>, 50(10), 460-467.</p> | <p>A Quasi-Experimental Report.</p>  | <p>The findings suggest that although the mailed information produced some change in practices and intentions, the classes in combination with the mailed pamphlets produced greater change. Also, confidence in breast self-examination as a method of detecting an existing breast lump increased from pre-test to post-test across all age groups. The reported influences on the women's decisions related to breast health varied across the life span. The results of this study can be used to support the development of effective health promotion programs for use at workplaces to increase the likelihood of women engaging in healthy breast practices.</p> |

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| <p>Thomas et al. (2002).</p>  | <p>Using the internet to identify women's sources of breast health education and screening.</p> <p><i>Women Health, 36 (1), 33-40.</i></p>  | <p>A Survey Study, using the internet.</p>         | <p>Women in the older age group reported receiving more encouragement for breast screening activities from physicians, nurses and others than did younger women. American respondents reported perceiving more support from nurses for breast screening than did their Canadian counterparts. A high number of American respondents reported having been diagnosed with breast cancer while only a small number of Canadian respondents reported this diagnosis. The results from this study can be used in planning health promotion activities relevant to various populations of women. Benefits and limitations of using the Internet as a research medium are briefly discussed.</p> |
| <p>Todd et al. (2011).</p>    | <p>Predicting breast and colon cancer screening among English-as-a-second-language older Chinese immigrant women to Canada.</p> <p><i>Journal of Cancer Education, 26 (1), 161-169.</i></p> | <p>A Qualitative Study, using a questionnaire.</p> | <p>Important predictors of screening emerged that potentially informs interventions to increase cancer prevention among older Chinese immigrants. The essential role of physician recommendation was identified for both breast and colon cancer screening.</p>   |
| <p>Ukwenya et al. (2008).</p> | <p>Delayed treatment of symptomatic breast cancer: the experience from Kaduna, Nigeria.</p>   | <p>A Cross-Sectional Exploratory Survey using</p>  | <p>A significant number of patients referred from peripheral hospitals had inappropriate surgeries and</p>  |

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|                       | <p><i>South African Journal. Of Surgery, 46 (4), 106-110.</i></p>  | <p>interview and patient's record.</p>      | <p>biopsy management, which contributed to the advanced stage on admission. This study showed that delayed treatment of symptomatic breast cancer at this centre in Nigeria is as much related to the quality of medical care as it is to local beliefs, ignorance of the disease, and lack of acceptance of orthodox treatment.</p>   |
| <p>Vahabi (2010).</p> | <p>Knowledge of breast cancer and screening practices among Iranian immigrant women in Toronto.</p> <p><i>Health Care for Women International, 31(9), 817-830.</i></p> | <p>A Cross-Sectional Exploratory Study.</p> | <p>These findings highlighted the need to educate Iranian immigrants about the role of screening to promote early identification of breast cancer in the absence of symptoms. Culturally sensitive educational materials should be developed to address their specific needs. Healthcare providers should also be educated about how to communicate breast health information effectively to immigrant women. Opportunistic teaching during each health encounter should be encouraged and reinforced.</p> |
| <p>Vahabi (2011).</p> | <p>Knowledge of Breast Cancer and Screening Practices Among Iranian Immigrant Women in Toronto.</p> <p><i>Journal of Community Health, 36, 265-273.</i></p>            | <p>A Cross-Sectional Exploratory Study.</p> | <p>These findings highlight the need to educate Iranian immigrants about the role of screening to promote early identification of breast cancer in the absence of symptoms. Culturally sensitive educational materials should be developed to address their</p>  |

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|  |  |  | <p>specific needs. Healthcare providers should also be educated about how to communicate breast health information effectively to immigrant women. Opportunistic teaching during each health encounter should be encouraged and reinforced.</p> |
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**Table 8 Factors that Facilitate Participation in Breast Health Activities within the**

**Canadian Articles**

| Category  | References  |
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| Access to care such as physician recommendation and other health care delivery issues | Ahmed et al., 2005; Bancy et al. 2003; Decker et al. 1999; De Grasse et al. 2010; de Konning 2003; Donnelly et al. 2008; Gray 1997; Miller et al. 2011; Paquette et al., 2000; Poole et al. 2010; Thomas et al. 2002; Todd et al. 2011. |
| Personal factors such as knowledge and awareness.                                     | Ahmed et al. 2005; Bottoff et al. 1998; Kadaovi et al. 2012; O'Connor et al. 1995; Poole et al. 2014.   |
| Sociocultural factors, such as beliefs and attitudes                                  | Bottoff et al.1998; Donnelly et al. 2007; Maheu, 2009; Kadaovi et al. 2012; O'Connor et al. 1995; Vahabi 2010   |

**Table 9 Barriers to Participation in Breast Health Activities within the Canadian**

**Articles**

| Category   | References  |
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| Personal factors such as knowledge and awareness (Lack of awareness) | Ahmed et al. 2005; Vahabi 2010; Donnelly 2009; Johnson et al. 1999; Mc Donald et al. 2010; Vahabi, 2010; 2011.  |
| Sociocultural factors such as attitudes and beliefs.                 | Bottoff et al. 1998; Bryant et al. 1992; Donnelly et al. 2007; Hanson et al. 2009; Johnson et al.1999; Kalahdooz 2014; Mcdonald et al. 2010; Sun et al. 2009. |
| Ethnicity in a minority group  | Sun et al. 2009.  |
| Access to care and healthcare delivery issues.                       | Black et al. 2006; Decker et al. 1999; Kadaovi et al. 2012.   |



**Table 10 Barriers to Participation in Breast Health Activities within the Nigerian**

**Articles**

| Category   | References  |
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| Personal factors such as lack of awareness and knowledge   | Akhigbe et al. 2006; Anyanwu, 2011; Chirdin et al. 2006; Ibrahim et al. 2012; Ihenacho et al. 2013; Irurhe et al. 2001; Isara et al. 2011; Moorley et al. 2014; Obajimi et al. 2013; Odusanya, 2001; Okobia et al. 2006; Oluwatosin et al. 2006; Oluwatosin 2010. |
| Sociocultural factors such as attitudes and beliefs (spirituality, alternative care, perception) | Bello et al. 2011; Ibrahim et al. 2009; Ibrahim et al. 2012; Moorley et al. 2014; Omoyeni et al. 2014; Pruitt et al. 2014;.   |
| Access to care such as health care system/ Infrastrual inadequacy                                | Bello 2013; Pruitt et al. 2014; Ukwanya et al. 2008.  |
| Socioeconomic factors  | Ntekim et al. 2009; Ohaeri et al. 1999.   |
| Policy   | Odusanya et al. 2001; Okobia et al. 2006.   |

**CHAPTER FOUR-MANUSCRIPT TWO**

**BREAST CANCER EARLY DETECTION AND CARE STRATEGIES FOR  
SUBMISSION TO POLICY MAKERS**

#### 4.1-ABSTRACT

**Background and Aim:** Breast cancer is the most common cancer in women. Its incidence is rising especially in developing countries. The global burden of breast cancer in women, measured by incidence, mortality and economic costs, is substantial and on the increase. Worldwide, it is estimated that more than one million women are diagnosed with breast cancer every year, and more than 400,000 will die from the disease. Although the incidence of breast cancer is still highest in developed countries, women in developing countries are disproportionately dying as a result of the disease. In Canada, mortality from breast cancer is reducing. This reduction has been achieved through earlier diagnosis and improved treatment.

**Methods and Design:** This comparative integrative review of literature was carried to critically examine and compare the determinants of health outcomes of women living with breast cancer in Canada and Nigeria from 1990-2014. Specifically, it examined the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women in the two countries. Fifty-five studies meeting the inclusion criteria were identified from the following databases: CINAHL, MEDLINE, and EMBASE, as well as the grey literature of relevant organizations using Google Scholar.

**Results and Conclusion:** In Canada, clinical practice guidelines are the mechanism through which best care became available to patients. The findings also suggest that there is the need to produce, disseminate and adopt guidelines for breast cancer care in Nigeria. In Nigeria, presentation with an advanced stage of the disease made survival very low. This also compromises the quality of life of the patients. The major factors responsible for the late presentations were a lack of breast cancer awareness and education. Other social factors that militate against early presentations for medical care include misconceptions about breast cancer

treatment and outcomes.

**Conclusion and Recommendation:** Based on the findings of this study, it is recommended that guidelines and policy about breast cancer care and management be produced. The guidelines will assist practitioners and patients to make decisions about appropriate health care for specific clinical situations. The implementation of evidence-based guidelines can help not only to improve care processes, patient outcomes, and the quality of clinical decisions but also to empower patients to make informed health care choices.

**Key search words:** Breast cancer, breast neoplasm, diagnosis, prevention and control, health knowledge, evidence-based guidelines, breast self-examination, awareness, patient education as topic, mass screening, early detection of cancer, Nigeria, Canada.

## **4.2 Policy Paper on Breast Cancer in Women For Nigeria**

Globally, breast cancer is the most frequent malignancy in women and the stage of the disease at diagnosis is a core determinant of the outcome (Jemal et al., 2011; Yip et al., 2012). Since 2008, breast cancer incidence has increased by over 20% and breast cancer-related deaths have risen by 14% (GLOBOCAN, 2012). The cancer burden in low-middle-income countries is increasing, and the survival rates in low-middle-income countries are much poorer than those in high-income countries (Farmer et al., 2010). In low-middle-income countries like Nigeria, the advanced stage of the disease at diagnosis, and delayed treatment represent significant problems (Oluwatosin et al., 2006; Pruitt et al., 2014; Richard et al., 1999). The breast cancer burden in low to middle income countries predictably will continue to increase in coming years on the basis of increasing life expectancy and shifting reproductive and behavioral patterns associated with heightened breast cancer risk (Anderson et al., 2008). Even assuming conservatively that there will be no change in underlying age-specific rates, there could be a nearly 50% increase in global incidence and mortality between 2002 and 2020 due to demographic changes alone (Parkin et al., 2005). These increases will be disproportionately high in the developing world, with projected respective increases of 55% and 58% in incidence and mortality by 2020 in comparison to the known statistics (Parkin et al., 2005). These statistics most likely underestimate the actual rising breast cancer rates, because the few data available reveal increases in breast cancer age-specific incidence and mortality rates. This is particularly true among urban women and most likely is caused at least in part by the adoption of Western lifestyles, which tend to promote decreased parity, delayed childbirth, decreased physical exercise, and dietary habits associated with earlier menarche, all of which have been associated with increasing rates of postmenopausal breast cancer (Portal, 2008). According to Jedy-Agba et

al. (2012), the incidence of breast cancer in Nigeria is increasing.

This integrative review identified some challenges in breast cancer early detection, diagnosis and care in Nigeria. Some of those challenges include lack of knowledge and awareness about breast cancer and breast health issues, inadequate infrastructure, the influence of cultural beliefs, poverty, and various misconceptions about breast cancer. Fear of deformity and loss of a body part such as in the case of mastectomy are some of the concerns that women with breast cancer face. There is distrust of the medical system, leading women to rely on traditional and spiritual healers instead of health centers. Obstacles to improving breast cancer care arise from multiple sources, including a deficit in public knowledge and awareness about breast cancer, social and cultural barriers. As earlier noted, as a result of demographic changes and lack of access to early diagnosis and treatment in a developing country like Nigeria, there is the likelihood of continuous marked increases in the incidence of and mortality from breast cancer. In countries with limited resources, widespread introduction of culturally sensitive, linguistically appropriate, local education programs to teach breast health awareness is critical (Yip et al., 2008). Such education activities should initially target healthcare providers, trusted traditional leaders, governmental agencies, women, and the general public about breast health and breast cancer early detection, diagnosis and treatment (Ozmen et al., 2008).

To successfully implement breast cancer control strategies globally, three goals must be addressed: a) the development and dissemination of treatment guidelines with implementation strategies, b) education of healthcare providers and health system administrators for guideline adoption to be successfully sustained, and c) making available effective and affordable technology so that early detection, diagnosis, and treatment of breast cancer can be performed (Anderson et al., 2014; Shulman et al., 2010). Ragaz et al. (2009) highlighted that the

introduction of early diagnosis and treatment improved survival rates of women with breast cancer in Canadian provinces.

### **4.3 The Importance of Early Detection and Diagnosis of Breast Cancer**

Diagnosis of breast cancer in the earlier stages of the disease pathway has been positively associated with a decrease in breast cancer mortality and improved prognosis (Anderson et al., 2008). Breast cancer control programs should ensure diagnosis at the earliest possible stage, where treatment is more effective. The main objective of early detection or secondary prevention through screening is to detect early stage cancers. Early detection has been shown to be important due to the positive association between the disease stage at diagnosis and survival rates. Early detection of breast cancer takes into account factors including tumor size and whether the disease has spread to the lymph nodes. Screening advances the time of diagnosis and thus can improve patient progress (Yip et al., 2012). Although mammography screening is the most widely used tool for diagnosing breast cancer early, this screening method is not a plausible solution in every country, in the light of socio-economic constraints (Anderson et al., 2008; WHO, 2007; Yip et al., 2011). However, it is important that there exists a symptomatic care pathway in every healthcare system to detect breast cancer early, prevent metastasis and deliver adequate treatment services (WHO, 2007; Yip et al., 2012). The goal of earlier detection in low-resource regions is to treat the disease on time so as to prevent it from spreading. This can be done by reinforcing the importance of seeking timely examinations and treatments (Mitra, 2008; Yip et al., 2008).

Another significant benefit of detecting and diagnosing breast cancer early is so that the need for the use of more complex invasive interventions may be averted particularly that such technology is not available in low to middle income countries like Nigeria. Earlier detection,

followed by timely treatment, can increase the range of treatment options available to a patient, such as breast-conserving therapy. Subsequently, detection in the earlier phase of breast cancer can be positively associated with higher survival rates, which can provide comfort to those who receive a timely diagnosis early in the disease pathway (Anderson et al., 2008; Yip et al., 2012). An early diagnosis can also be important to patients at an emotional level because of the fear associated with the disease.

#### **4.4 Breast Health Global Initiative (BHGI) Treatment Guidelines**

Evidence-based guidelines, outlining optimal approaches to breast cancer detection, diagnosis, and treatment have been well developed and disseminated in several high-resourced countries (Anderson et al., 2008). However, these guidelines define optimal practice and, therefore, have limited utility in low-to-middle income countries. These optimal guidelines may be inappropriate for numerous reasons, including inadequate personal resources, limited health care infrastructure, lack of pharmaceuticals, and cultural barriers (Anderson et al., 2008). Therefore, there is a need to develop clinical practice guidelines oriented specifically towards low to middle-income countries, and these guidelines need to take into consideration existing health care resources.

Cosponsored by the Fred Hutchinson Cancer Research Center and Susan G Komen for the Cure, the Breast Health Global Initiative (BHGI) strived to develop evidence-based, economically feasible, and culturally appropriate guidelines that can be used in nations with limited health care resources, with the aim of improving breast cancer outcomes (Anderson et al., 2008; Anderson, 2010). The BHGI guidelines are intended to assist ministers of health, policymakers, administrators, and institutions in prioritizing resource allocation as breast cancer treatment programs are implemented in their resource-constrained countries (Anderson, 2010;



Yip et al., 2012). The BHGI has defined treatment guidelines for each stage of breast cancer presentation according to the resource level available. The BHGI has also stratified diagnostic resources according to a four-tiered system based on the availability of resources relevant to treatment (Anderson et al., 2008).

**4.4.1 The Basic Level of Resource Setting.** These are core resources or fundamental services that are absolutely necessary for any breast healthcare system to function. By definition, a health care system that lacks any basic level resource would be unable to provide cancer care to its population. Basic level services are typically applied in a single clinical interaction (Anderson et al., 2008; BHGI).

**4.4.2 The Limited Level of Resource Setting.** These are second-tier resources or services that produce major improvements in outcome, such as increased survival, but that are attainable with limited financial means. Modest infrastructure are considered limited-level services and may involve single or multiple clinical interactions (BHGI).

**4.4.3 Enhanced-Level of Resource Setting.** Third-tier resources or services at the enhanced level are optional but essential. Enhanced-level resources may produce minor improvements in the outcome but increase the number and quality of therapeutic options and patient choice (BHGI).

**4.4.4 Maximal Level of Resource Setting.** High-level resources or services at the maximal level may be used in some high-resource countries. They may be recommended by breast care guidelines that assume unlimited resources. They should be considered lower priority than those in the basic, limited, or enhanced categories on the basis of extreme cost and/or impracticality for broad use in a resource-limited environment. To be useful, maximal-level resources typically depend on the existence and functionality of all lower-level resources

(BHGI).

The required resources (surgery, radiation therapy, and systemic therapy), were also stratified based on the stage of the disease at presentation (stage 1, stage 2, locally advanced, or metastatic disease).

#### **4.4.5 Resource Allocation By Stage of Disease**

**4.4.5.1 Stage 1 Breast Cancer.** According to the breast health global initiative guideline, modified radical mastectomy is the mainstay of locoregional treatment at the basic level because access to radiation therapy usually is not available in this setting. Breast-conserving surgery, sentinel lymph node biopsy, and breast reconstruction may be added at higher levels of resource allocation. Similarly, oophorectomy in premenopausal patients and tamoxifen in both premenopausal and postmenopausal women is the recommended systemic therapy at the basic level, with the progressive addition of cytotoxic chemotherapy and other endocrine agents at higher levels of resource allocation. A process to establish estrogen receptor status should be in place at the basic level (for instance, by postal collaboration with a higher level institution) to allow the identification of patients who would benefit from endocrine treatment. Despite the documented benefits of adjuvant trastuzumab in patients with HER-2-positive breast cancer in disease-free and overall survival, the requirement for laboratory facilities for determining HER-2 status and the very high cost of trastuzumab limit its applicability to the enhanced level. When and if trastuzumab becomes substantially less costly, it will move appropriately into the limited or basic category of resources (BHGI).

**4.4.5.2 Stage 2 Breast Cancer.** Significant differences between treatment for stage 1 and stage 2 breast cancer include: the use of cytotoxic chemotherapy at the basic level for stage 2 disease because of the high risk of recurrence experienced by patients and the lymph node-positive

breast cancer. Another difference is the earlier incorporation of the chest wall and regional lymph node irradiation at lower resource levels because of the high risk of local recurrence. Again, process metrics is recommended to assist in determining when efforts should be made to move to the next higher level of resource allocation (BHGI).

**4.3.5.3 Locally Advanced Breast Cancer.** Locally advanced breast cancer is a heterogeneous clinical entity that includes patients with T3 (>5cm) primary breast tumors or T4 tumors (with chest wall involvement, skin edema or ulceration of the skin, satellite nodules, or inflammatory carcinoma) and /or extensive clinical lymph node involvement as defined by the N2 and N3 categories of the American Joint Committee on Cancer TNM classification system. It is also the most common form of presentation for breast cancer patients in countries with limited resources and, along with stage 4 disease, it represents from 60% to 80% of cases at presentation in these regions (Eniu et al., 2008). The standard care for patients with locally advanced breast cancer is primary systemic therapy with anthracycline-based chemotherapy. Neoadjuvant hormone therapy may be used in patients with estrogen receptor-positive disease who are not candidates for chemotherapy for medical reasons. Therefore, primary systemic therapy should be made available at the basic level. All patients with locally advanced breast cancer require postoperative radiotherapy; therefore, radiotherapy should also be made available at the basic level (BHGI).

**4.4.5.4 Metastatic (Stage 4) And Recurrent Breast Cancer.** The treatment of metastatic or recurrent breast cancer rarely is curative. However, the judicious application of surgery, radiation therapy, endocrine therapy, cytotoxic chemotherapy, biologic therapy, and supportive therapy may provide substantial benefits to quality of life, control of metastatic disease, and limited average prolongation in overall survival. The first recurrence of breast cancer in the ipsilateral breast after the use of breast-conserving therapy is a situation in which the intent of treatment for

the recurrent disease should be curative. In this situation, to perform a total mastectomy is cost-effective and often curative therapy. This therapy is allocated to the basic level of resources (BHGI).

In patients with estrogen and /or progesterone receptor-positive disease, a wide variety of endocrine therapies provide substantial palliation and often long-term disease control with modest toxicity. Cytotoxic chemotherapy may provide substantial, short-term palliation for women with metastatic or recurrent breast cancer. Either combination chemotherapy or single-agent chemotherapy may be used. When given with chemotherapy, trastuzumab is highly active against breast cancers with HER2 amplification or overexpression. When and if trastuzumab becomes more reasonably priced and affordable, it could be allocated at the basic level of resources for women with HER-2-positive, metastatic breast cancer. Control of pain, nausea and vomiting, dyspnea, and other symptoms associated with metastatic breast cancer are central to providing optimal care. Furthermore, many agents that control these symptoms are available widely. They do not require a specialist to administer. They are priced very cheaply (Eniu et al., 2008; BHGI).

Not every patient with breast cancer can receive the maximal level of care in countries with limited resources, which is the core reality on which the BHGI was founded (Anderson et al., 2008; Anderson, 2010). Most existing treatment guidelines are not applicable in countries with limited resources because many diagnostic or therapeutic interventions are simply not available. The World Health Organization has stated that the initial priority, particularly in developing countries, should be to develop national diagnostic and treatment guidelines that establish a minimum standard of care and to promote the rational use of existing resources and greater equity in access to treatment (WHO, 2008). Consistent with this statement, the objective

of the BHGI is to define reasonable priorities that ensure the evidence-based and equitable use of the available resources (Anderson et al., 2008; BHGI; Eniu et al., 2008).

#### **4.5 Palliative and Supportive Care**

Palliative care in breast cancer is usually prolonged because women with metastatic breast cancer can now survive longer because of the many treatment options available. However, without good palliative care, suffering is prolonged. Although palliative care is now a human right, it is patchy in low-middle income countries (Anderson et al., 2008). A country like Nigeria cannot boast of an excellent palliative care facility. In many low-middle income countries, religious bodies and non-governmental organizations usually start palliative care services. It is important to integrate palliative care services into the national health services (Eniu et al., 2008). Developing countries should be encouraged to develop palliative and supportive care for patients with advanced breast cancer because, at this stage, patients will no longer gain from antitumor interventions (Anderson et al., 2008). The WHO considers a country's annual consumption of morphine to be an indicator of access to opioids for the treatment of pain. In 2008, low-middle income countries accounted for 9% while high-income countries accounted for 83% of the world's consumption (Bosnjak et al., 2011). There is need for appropriate policies for drug availability, physician, and patient education with the objective of ensuring adequate access to pain control and improving the quality of end-of-life care (Bosnjak et al., 2011).

#### **4.6 Policy Developments for Nigeria**

The World Health Assembly Resolution on Cancer prevention and control in May 2005 called on member states to intensify action against cancer by developing cancer strategies. Breast Health Global Initiative developed resource specific and evidence-based guidelines for aspects of breast cancer management (Coughlin & Ekwueme, 2009). Nigeria is not exempt from the burden

of breast cancer in women. It is important that all interested stakeholders unite and work towards a common goal that is the reduction of breast cancer and breast cancer-related mortality in women. Therefore, it is imperative that a national policy on breast cancer in women be developed to address this illness in a coordinated way.

In high-resource countries, evidence-based guidelines outlining optimal approaches to the early detection, diagnosis, and treatment of breast cancer have been defined and disseminated (Carlson et al., 2005; Smith, 2000). According to these authors, these guidelines are resource neutral. They fail to consider variable resources distribution where overall standards of living are high, and they fail to recognize ubiquitous deficits in infrastructure and resources in low to middle-income countries (Anderson, 2010). Moreover, they do not consider implementation costs or provide guidance on how a suboptimal system can be improved incrementally towards an optimal system (Anderson et al., 2006). Such guidelines defining optimal breast cancer care and services, as pointed out by WHO (2005), have limited use in resource-constrained countries. There is a need for resource-based guidance related to strategies for reducing the burden of breast cancer for setting in which optimal care is not feasible.

The development and implementation of international, evidence-based breast healthcare guidelines oriented to countries or regions of the world with limited financial resources is a critical step toward improving breast health care and breast cancer care in these areas. Current evidence regarding the value of earlier detection and cost-effective diagnosis and treatment can be applied to define best practices with limited resources for breast cancer healthcare. Although healthcare strategies may differ measurably, improvement in breast cancer outcomes can be achieved using the best standard of care that is practical in a given situation (Anderson et al., 2008).

The World Health Organization resolution on cancer prevention and control (WHA58.22), at the 58<sup>th</sup> World Health Assembly in 2005, urged member states to collaborate with WHO in the development of cancer control programs aimed at reducing cancer mortality and improving the quality of life of cancer patients and their families (WHO, 2005). This resolution calls on low to middle-income countries to integrate cancer control programs within existing health systems, to identify evidence-based, sustainable actions across the continuum of cancer care, and to make the best use of resources to benefit their populations afflicted with cancer. Low to middle-income countries are also urged to support research translating knowledge into effective public health measures for cancer prevention and treatment, to improve access to appropriate technologies for the early diagnosis and treatment of cancer, and to promote research evaluating low-cost intervention that are affordable and sustainable (Anderson et al., 2008). In alignment with WHO and the findings of this integrative review of the literature, the following recommendations are proposed for Nigeria.

#### **4.7 Recommendations**

The BHGI has developed evidence-based clinical practice guidelines on early detection, diagnosis and treatment of breast cancer (Anderson et al., 2008; Anderson, 2010). The guideline is stratified into a stepwise, systematic approach to healthcare improvements using a tiered system of resource allotment into four levels (basic, limited, enhanced and maximal). It is based on the resources available in the country. This will ensure that even in the lowest resource setting, women will have some basic access to breast cancer care. Nigeria has not yet fully adopted the BHGI guidelines. The following should be done without delay:

- ❖ Establishment of more centralized breast cancer centers with multidisciplinary expertise, advanced pathology laboratories, radiotherapy and surgical support are needed to help avoid

fragmentation of care. Existing centers need to develop methodologies for outreach into surrounding rural areas. Training and quality assurance need to be incorporated into breast cancer control programs.

- ❖ The systemic treatment represents one of the significant challenges in breast cancer control efforts. Barriers to cancer drugs are especially striking in light of the many research advances of recent years (Bosniak et al., 2011), which have significantly expanded the role of chemotherapy, hormone therapy, and targeted therapies in the management of breast cancer. Continued effort is needed to reduce the cost of these drugs. This is particularly crucial for patients with metastatic cancer, for whom very few treatment options are available.
- ❖ Socio-cultural barriers that contribute to a delay in seeking medical care for suspected breast cancer should be identified and addressed.
- ❖ A lack of health coverage or financial support can prevent women from seeking early diagnosis or obtaining timely or optimal treatment. Focused and sustained government health care financing is needed to improve early detection and treatment of breast cancer in women.
- ❖ Creation of a comprehensive national health insurance policy and /or a special fund to assist breast cancer patients to get necessary treatment will encourage women with breast cancer to seek timely medical care. The creation of such fund is an urgent necessity.
- ❖ The development of guidelines for the implementation of community breast health awareness education programs, specific to individual local community needs is urgent. Priority is to be given to public health knowledge and strategies that encourage breast self-examination.
- ❖ Health policymakers need to understand that early-stage breast cancer is more cost-effective to treat than late-stage breast cancer, and, therefore, detecting the disease by early detection strategies is economical (Eniu et al., 2008). The value of early detection will be an



important element of the early presentation. Thus, community education to increase breast cancer awareness may contribute to the earlier presentation of symptomatic breast cancer.

❖ Clinical breast examination is a basic and necessary resource for breast cancer diagnosis and surgical treatment. Training of nurses, midwives and community health workers to provide clinical breast examination and the best approach to extending these services to rural areas is urgent.

❖ Just establishing a public policy for breast health and or clinical breast examination screening programs is unlikely to be adequate. Active recruitment through awareness programs needs to be linked to screening to garner participation.

❖ Clinical guidelines, outlining a symptomatic care pathway, which provides a clear point of contact for patients, followed by a timely diagnosis and treatment should be developed. The guidelines should emphasize the importance of recognizing symptoms, and seeking timely interventions.

❖ Palliative care has to be integrated into the existing health services with appropriate policies for drug availability, physician and patient education programs with the objective of ensuring adequate access to pain control and improving the quality of end-of-life care.

❖ There is the need to incorporate traditional health institutions into a comprehensive health care plan. The regulation of these systems will ensure patient's safety.

❖ Government investment allocated to the implementation of sufficient infrastructure and facilities to provide a foundation for early detection programs needs to be improved.

❖ There is the need for the establishment of viable cancer registries and strengthening of existing ones. This will enable the government to ascertain the magnitude of the disease prevalence and gather vital statistical information. It will also contribute to ensuring that the

extent of the disease is recognized. This will enable governments to allocate resources according to actual need, rather than general, anticipated healthcare needs.

- ❖ Analysis of cost would provide useful information to policymakers and non-governmental organization, to develop specific strategies to address the disease. The extent of the disease burden will be clearer, providing a foundation for addressing this global economic issue.
- ❖ Research is needed to determine if early detection methods and treatments are effective. This should be encouraged.
- ❖ Studies are needed to understand better the impact of existing services and interventions, healthcare outcomes, and quality of life issues.
- ❖ Advocacy and support groups are needed to help health authorities recognize the need to provide survivor care for women with breast cancer. Rehabilitation programs, which are a practically non-existent need to be developed to support breast cancer survivors. Programs that provide reconstructive services, free prosthesis, informational services, and lymphedema therapy centers are needed for this growing number of women.
- ❖ Networking with other low to middle income and high-income countries about best practices and available resources will help to address the burden of breast cancer in women.

#### **4.8 Conclusion**

There is little doubt that because of demographic changes and lack of access to early diagnosis and treatment in a developing country like Nigeria, there may be continuous increase in the incidence of and mortality from breast cancer. It is crucial that there is a widespread increase in educational programs to increase awareness and early presentation. Such education programs should be culturally sensitive and linguistically appropriate. Nigeria like many other

low-income countries faces many challenges. Socio-cultural barriers to seeking early detection and treatment continue to exist. Early detection programs need to continue to address socio-cultural barriers to seeking timely medical care and participation in breast health activities. Nigeria should also address health system and health financing barriers. Health system barriers identified in Nigeria include lack of adequate infrastructure, limited access to breast care, timely diagnosis and treatment within the health care system (delay in diagnosis and treatment), all of which depend on the efficiency of the health services available.

Coordinated screening programs, cooperative drug acquisition strategies, quality assurance, and in-country accreditation and training programs should be developed cooperatively with universities, health ministries, and community advocates. Low to middle-income countries share similar economic challenges in the area of breast cancer control in women. Sharing examples of successful efforts to improve care through research, consensus reviews, building networks, and collaborations will continue to help improve breast cancer care and outcome.

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This study has been explained in the manuscripts presented. However, further discussion of the study is necessary to address some relevant areas not discussed. The criteria for scientific rigor are explained. Additional literature that were not incorporated into the manuscript are presented. Significant lessons from Canada that can be imported to Nigeria to reduce the mortality from breast cancer in women are also submitted with a summary of the review.

### **5.1 Additional Literature**

**5.1.1 Breast Cancer Prevention Through Quality Health Data.** In most developing countries, the available information reveals that cancer care is underrated because of issues such as poor recording system and problems related to diagnostics (Igene, 2008). Therefore, priority is placed on the control of communicable diseases and improving environmental sanitation. Usually, cancer registration is seen as a luxury when set against slim financial resources. However, breast cancer is becoming a significant public health problem in developing countries and there's prediction that it will increase in the future (Ferlay et al., 2008; IARC 5-year prevalence breast cancer prediction, GLOBOCAN, 2002; Igene, 2008). These basic information deficiencies directly or indirectly increase the health inequality between developed and developing countries. To effectively tackle this problem, an adequate information system is essential for any breast cancer control strategy (Parkin et al., 1991).

In many developing countries, little is known regarding capacity for treatment with chemotherapy and surgery, capacity for cancer prevention, early detection, and other services, due to limited data (Kangolle & Hanna, 2010). It could be assumed that the human capacity for these activities is extremely limited given the global shortage of human resources for health care in developing countries (Kangolle & Hanna, 2010).



Narcotics such as morphine are irreplaceable for controlling severe pain from cancer and other serious medical conditions. Global morphine consumption trends provide evidence of gross under-utilization of narcotics for pain control in many low-income countries (WHO, 2008). For example, in 2004, Canada reported 64.180 mg morphine consumed per capita compared to 0.420 mg per capita for Peru, 0.020 mg per capita for Indonesia and 0.001 mg per capita for Mozambique. The data for Nigeria was not available (WHO, 2009). A 2001 country-level survey by the World Health Organization found only 22% of African countries reported the availability of anti-cancer drugs (Alwan et al., 2001). This is compared to 91% in high socioeconomic countries like Canada.

Population-based cancer registries collect information on the occurrence of different types of cancer in a population. The population-based information on cancer can be linked to other population-based and hospital-based health data sources to provide a rich tapestry of information on the structure, process and outcomes of cancer prevention, screening, treatment, palliation and other vital statistics. Cancer registries provide the backbone of information needed to perform a broad range of oncology health services research (Curado et al., 2007). There are still many developing countries without a cancer registry of sufficient quality. For instance, the population coverage by cancer registries for inclusion in the International Agency for Research (IARC, 2007) report on the global cancer incidence was 1% for Africa, 4% from Asia, and 4% for South and Central America. This compares to 33% in Europe and 80% in North America (Curado et al., 2007).

The information in cancer registries and health related data serve many irreplaceable functions in terms of improving the structure of cancer control. This information contributes to cancer system planning that fits well to local needs (Jensen et al., 1991; Reich et al., 2008).

Resource constraints in high-income country's cancer systems have given rise to methodologies using health information to estimate the need for cancer services and factors affecting access to these services. These methods provide a means for minimizing the dual problems of over-provision (unnecessary care) and under-provision (insufficient care) of cancer control resources (Delaney et al., 2005). These methodologies can assist developing countries in ensuring accessible and equitable cancer control.

Regularly collected health data also allows cancer control planning to be flexible and iterative. Continuous data collection can reveal needs in the development of critical health issues (Abed et al., 2000). By monitoring these needs, the health care system can more efficiently change to match the needed development. This is an important element in ensuring sustainability of the health care system. Continuous data collection also allows for adjustment of the scale of programs to current capacity and need (Adeb et al., 2000).

There are often many local and international health agencies involved in health interventions in any given developing country. Effective collaboration is needed to ensure success. Health data on cancer provides a means of harmonizing the efforts of all groups (Frenk, 2010). A collection of national health data can also be helpful in determining how appropriate successful models from other countries would be to national conditions (Frenk, 2012).

Collection and evaluation of health information promote transparency. For instance, this information can allow greater participation of the public and other parties in national and regional advocacy for changes to health policy. It also enables national, regional and international agencies effectively advocate for needed resources for national breast cancer control by building a clear picture of local needs. It allows for accountability of parties involved in the provision of cancer control to the public and funding agencies (Reich et al., 2008). Cancer

registry data and health data are crucial for supporting national and regional research structure. They can help define cancer research priorities, for instance, focusing research on cancers with the greatest burden of disease in the population or exploring the potential cost-effectiveness of a new cancer treatment or cancer control strategy to be studied (Defransisco, 2002). Cancer registry data may serve as the basis for epidemiological studies of cancer causation in developing countries. They can help to identify patients with cancer for other forms of cancer research. For instance, population-based cancer registries can facilitate studies of access to care.

Cancer registries and their linked data also serve as aids to educating health professionals such as by shaping medical curricula to local problems. They can serve as valuable tools in the local training of individuals in health policy, graduate-level epidemiology and health services research. This can ultimately support an evidence-based, research informed culture of medical practice in developing countries. This can also ensure a sustainable supply of workers who can utilize health data in-country to improve the quality of national breast cancer control.

Health data can be useful in auditing the technical process of cancer control for patient's safety and quality control. A high level of technical expertise is required to perform breast cancer surgery, palliate breast cancer symptoms effectively, treat with radiation accurately and safely administer chemotherapy. Rates of medical errors and factors associated with medical errors in breast cancer treatment in developing countries are mostly unknown (Barton, 2008). One audit of a new radiotherapy centre in a developing country in Asia found 52% of audited patients received suboptimal radiation treatment, potentially leading to compromised cure or palliation or severe treatment toxicity (Shakespeare et al., 2006). Inadequate skills and knowledge, lack of a formal quality assurance process or peer review process, and heavy workload were identified as barriers to quality. One approach to ameliorating deficiencies is a regular treatment audit. This

can be enabling for oncology staff and allow targeted continuing medical education (Shakespeare et al., 2006).

A collection of health care data allows outcomes assessment of breast cancer control programs. This includes trending changes in breast cancer incidences or survival over time or following geographic variations in the incidence of breast cancer. Health data can help assess effectiveness, access to care, sustainability and economic efficiency. Health data can assist in understanding the medical decision-making process that can help identify opportunities for knowledge translation. For instance, the study of radiation use for bone metastasis in Africa suggests an opportunity to reduce the number of daily radiation treatments per patient. This would increase capacity to treat many more patients while still offering substantial benefit to all, with little added structural costs. Health data can be used to evaluate promising knowledge translation initiatives (Kangolle & Hanna, 2010).

Developing cancer registries and health databases do have their significant costs. Stansfield et al. (2006) estimated annual per capita costs of a comprehensive health information system in low-income countries to be US \$ 0.53. This may represent significant health expenditure for many low-income countries though there is evidence that this investment can be cost-effective. However, investment in breast cancer control paired with the use of quality health data to guide and optimize investment holds the promise of improved breast cancer outcomes in developing countries (Igene, 2008).

### **5.1.2. Health Inequality and Breast Cancer**

Health inequalities take different forms within and across societies and are rooted in the material and social factors that directly affect the health system and health outcomes (Mueller, 1986; Wilkinson, 1997). Epidemiological transition explains the health inequality between

developed and developing societies. The gradual reduction in infectious diseases in poorer countries meant that degenerative diseases become the leading cause of death (Wilkinson, 1997). The increasing burden of breast cancer was acknowledged in the resolution on cancer prevention and control adopted by the 58<sup>th</sup> World Health Assembly in May 2005 (WHO, 2005). It was agreed that all member states should develop and reinforce comprehensive breast cancer control programs to reduce breast cancer mortality rates. However, the unanswered question according to Igene (2010) is how global health inequality could be addressed.

Dealing with increasing breast cancer poses a challenge to developing countries because of their low per capita income, inadequate health care resources, and the perception that developing countries face bigger problems with infectious diseases such as AIDS (Igene, 2010; McInytyre, 2005). Conversely, more than half of all cancer cases occur in the developing countries, and it is predicted that by 2020, 60% of 12.7 million new cases of cancer globally, would be in developing countries (Ferlay et al., 2008; GLOBOCAN, 2008). These new challenges would potentially worsen regional and national health inequalities (Howel, 2010). The WHO (2008) technical report (No 804) reported that over 50% of cancer patients live in poorer nations of the world which accounts for less than 10% of cancer control and care expenditure. Developing countries consume only 5% of cytotoxic drugs, the remaining 90% being sold in the richer nations that account for only 39% of all cancer cases (Durosinmi, 2006). Countries with higher income revealed higher incidences of breast cancer while countries with lower income confirmed a lower rate, especially Sub-Sahara Africa. Inaccuracy in data collection is a major concern in developing countries (Oguntoke, 1998). The extremely low level of incidence reported in some developing countries may be related to the effect of data inaccuracy, even though it is recognized that other genuine factors contribute to these trends. The unreliable

qualities of some records reflect the level of technological advancement and the lower attention paid to non-communicable diseases (Bonita et al., 2003).

Breast cancer incidence in low-income countries might be less, but the resources, and other contributing factors for handling the lower incidence are not available, thus, a higher mortality rate. This could be attributed to both a lack of resources and the lesser emphasis placed on a non-communicable disease like breast cancer (Wilkinson, 1997). Some low-income countries that spend income on health care showed very high mortality, for instance, Cameroon, Pakistan, and Nigeria. The emphasis, therefore, should be placed on how and where the budget is spent. According to Igene (2010), in some developing countries where corruption prevails, the budget assigned to a particular program may not be spent on it or, where it is spent, it produces substandard results as a result of mismanagement.

The major problem with low-income countries is that resources for treatment are unavailable or unaffordable to the majority of citizens, and technology is out-dated (Bello, 2012; Fregene 2005). Affordability is one of the leading causes of the delay in presentation of breast cancer symptoms especially advanced stages 3 and 4. In Nigeria, there is no specific breast cancer-screening program in the health system (Durosinmi, 2006). There are only two hospitals with tertiary treatment (radiotherapy and chemotherapy) and fewer than 100 oncologists for a population of about 140 million people. (Bonita et al., 2003; Durosinmi, 2006; McInytyre, 2005; Okobia, 2003).

In the light of all these challenges, developing countries like Nigeria should be encouraged to build technological capacity for breast cancer services so as to change the trend that gives breast cancer diagnosis and treatment a low priority. International guidelines developed in Western institutions should encourage developing countries to focus on pertinent

long-term problems, not just infectious epidemics. At the same time, clinical researchers should be encouraged to carry out research activities on local issues. They should not be totally dependent on the findings of research activities carried out in Western countries. This is because there are genetic and lifestyle differences between countries (Igene, 2008).

### **5.1.3 Advocacy, Self-Help, and Women Empowerment**

Advocacy and support groups are part of a broader social trend toward the empowerment of individuals and groups who have been marginalized because of illness. Some breast cancer groups define their primary mission as patient advocacy; others view their advocacy activities as secondary to patient support (Gray et al., 1990). All see education as the first step toward self-help and empowerment of women living with breast cancer. Support groups emphasize the benefits to health that derive from the acquisition of coping skills and the catharsis of painful emotions. They tend to focus on the psychological dimensions of the experience of breast cancer. By providing opportunities for the expression of grief and anger, they may alleviate the need for psychological support. By sharing information and discovering that they have had similar experiences, support group members become informed consumers who may subsequently seek a more active role in their treatment.

Support groups emphasize the public dimensions of issues previously seen as personal and private. Such groups publicly express their dissatisfaction and seek to contribute to institutional policies on treatment and research. They promote the interest of breast cancer patients and seek greater representation of survivor's perspective (Gray et al., 1990). Women need to be encouraged through advocacy to take responsibility for their health. Advocacy movements are well developed in high-income countries. They have proven to be a powerful force for the advancement of breast cancer control. Advocacy movements are less well

developed in low to middle-income societies, but they are gaining momentum. Patient advocates could play significant roles in communicating effectively with health care providers and policymakers to develop and implement early detection programs in the community, and also advocate for timely and efficient treatment. Patient support and advocacy should go hand-in-hand (Anderson et al., 2008; Yip et al., 2011). In planning women empowerment and advocacy initiatives, men should be carried along so that they can support the women. This will help in preventing any unforeseen outcomes from the approaches being used to addressing this problem.

## **5.2 Why Is Breast Cancer-Mortality Rate Declining in The Developed Countries Like Canada?**

Population statistics indicated that age-adjusted breast cancer mortality rates are declining in many more developed countries (Miller et al., 2003). A sudden decline was first reported during the early 1990s. Between 1990-1996, the UK, Netherlands, Canada, USA, Sweden, and Finland reported reductions of 5-17% in breast cancer mortality. Before 1990, breast cancer mortality rates in these countries had been either increasing or stable for the past few decades. The authors believed that the decline was due to improvements in treatment and earlier detection of palpable cancers. According to the authors, in the 1980s, there was a heightened awareness of breast cancer by both physicians and the public. The number of patients with small, palpable tumors referred for treatment increased. The authors stated that the declining breast cancer mortality reported in numerous developed countries could not be ascribed to mammography screening. They believed that the decline was due largely to the effects of adjuvant therapy and the detection of smaller, palpable tumors (Miller et al., 2003).

According to Razag (2011), in the last decade on breast cancer care, a substantial reduction in mortality from breast cancer had been reported across the Western world. As a



result, many hundreds of thousands of lives have been saved. However, the mortality reduction materialized only when diagnostic and systemic therapies were delivered in a timely, evidence-based manner. The incremental steps towards improving breast cancer mortality involved multiple research initiatives, a great deal of funding, invaluable assistance from a large number of patients who participated in the original randomized controlled trials, and incorporation of research findings into practice guidelines. The changes in breast cancer management responsible for improved outcomes started in the 1970s, with the approval of systemic treatments following primary surgery, including adjuvant chemotherapy and the hormone tamoxifen. This was followed by improved chemotherapy regimens including anthracyclines, then taxanes and aromatase inhibitors and most recently, biologicals (Ragaz, 2011).

According to Razag et al. (2009), researchers have attempted to quantify the contribution each of these developments had made to breast cancer mortality reduction. The antiestrogen tamoxifen brought an almost 30% mortality reduction if it is used consistently. Chemotherapy brought an additional 28% mortality reduction. Screening mammography and education, which lead to early diagnosis and earlier use of therapies, played a significant role in mortality reduction, contributing an additional 25% to 30% mortality reduction. Along with this progress, Canada also witnessed the emergence of tumor biology research, where genes responsible for specific types of tumor growth were identified, thereby enabling the development of monoclonal antibodies to inactivate a particular gene. In breast cancer, the identification of the human epidermal growth factor (HER2) gene enabled the production of Herceptin (Trastuzumab), a monoclonal antibody against HER2. The magnitude of benefit that emerged with Herceptin in the adjuvant setting was unexpected and will probably contribute another level of mortality reduction from breast cancer.

According to Razag (2011) what was seen in Canada between 1980 and 1990 was a significant variation in the adoption and use of the contributors to mortality mentioned above. Clinical guidelines are the mechanisms through which best care became available to patients. In British Columbia, for instance, mortality began to fall significantly once guidelines for the use of systemic therapies were implemented throughout the province.

### **5.2.1 Variations in Guideline Adoption**

There were significant differences in the adoption of clinical guidelines both within and between provinces. These variations had a substantial impact on mortality reduction in breast cancer. Historically, guidelines had been more readily adopted in urban than rural areas. Breast cancer mortality had also been observed to be over twice as high in rural areas because of this failure to incorporate practice guidelines. In British Columbia, a profound mortality reduction was already becoming apparent in the 1980s, soon after systemic therapies became available. In contrast, the mortality reduction in Ontario, and for Canada as a whole, only became evident much later between 1990-2000. In the Atlantic provinces, the mortality reduction only started to catch up in about 2007. The outcome differences between British Columbia, Ontario and the Atlantic provinces were in line with their levels of uniformity of breast cancer care. It reflected variable access to guideline-recommended therapies. Also, poor access to optimum care in breast cancer also meant more mastectomies, more advanced tumors and need for more chemotherapies (Ragaz, 2011).

### **5.2.3 Accessibility Beyond Wait Times**

In breast cancer and some other diseases, advanced diagnostics, genetic tests, and pharmaceuticals have become critical and interdependent components of care. Delays in the approval and reimbursement of new tests and drugs present challenges to accessibility and have

significant consequences on the health outcomes and lives of Canadians. Delays in the implementation of optimum breast cancer care cost money and lives. Thus, when looked at through the lens of breast cancer care, there is a need to ensure that advances in care are applied quickly and evenly in every part of the country (Ragaz, 2011).

### **5.3 Gaps in Literature**

The data available on breast cancer in women is enormous. The data documenting that the high mortality from breast cancer in the low to middle-income countries like Nigeria is the result of a combination of late presentation and inadequate access to optimum treatment and care abound. However, studies exploring the factors that impact seeking medical care after breast cancer symptom discovery in women, which results in the late presentation have not been well documented in the literature. Some of the authors of the articles studied (Adisa et al., 2010; Pruitt et al., 2014) have also recommended further research studies to explore the factors that impact seeking medical care after breast cancer symptom discovery in women.

### **5.4 Scientific Rigor In this Integrative Review**

The integrative review can be considered as the research of research and, therefore, it should meet the same standards as primary research in rigor (Cooper, 1998; Ganong, 1987). According to Russell, (2005), there are four questions that the reviewer answers when a body of knowledge is evaluated using integrative review technique: what is known about this issue?; what is the quality of what is known?; what should be known?; and what is the next step for research and practice. Thus, this study involved a literature search of theoretical, empirical research work, and grey literature to identify what is known about the factors that impact seeking medical care by women with breast cancer in Canada and Nigeria from 1990-2014; an evaluation of identified studies in this area in women in these countries from 1990-2014 was carried out;

research gaps were identified and suggestions for future directions for research studies and care in the area of breast cancer in women were presented.

Maintaining scientific integrity while conducting integrative review involves paying attention to threats to validity at each stage of the review process (Cooper, 1998). According to Crossetti (2012), if an integrative review is properly conducted, it should be characterized by the criticality peculiar to primary research in terms of replication, clarity, and scientific rigor. Thus, one of the key aspects to be considered is the size of the sample in the literature search. It has to be exhaustive. In an integrative review, the accessible population is all published reports relating to a topic. The threats to validity here is inadequate sampling. In this study, efforts were made to conduct a literature search that was as comprehensive as possible with the assistance of an experienced University Librarian. To ensure the representativeness of the sample, an exhaustive data collection strategy was created. The study also clearly delineated information about data collection such as the keywords used in the literature search, the sources, years of the research study, and the variables used in the search.

In the data evaluation phase, the threat to validity is the tendency to positively evaluate those studies that are congruent with the reviewer's own beliefs and negatively evaluate those studies that are not (Russell, 2005). In this study, evaluating each study's methodology to determine whether the findings are valid enhanced objectivity. No study was excluded as a result of the quality assessment. The discussions were on the information derived from the articles analyzed on the fundamental question of this study. This way, this study represents a resource for building knowledge in nursing.

### **5.5 Relevance of this Study**

The results of this integrative review have assisted in exposing some of the factors that

impact later stage of disease presentation and the factors that impact seeking medical care after breast cancer symptom discovery. It also revealed the factors that impact participation in breast health activities. This new understanding can provide the foundation for innovative health research, evidence-informed policy, and clinical guidelines to support health care systems. Thereby, improving the health outcomes of women afflicted with this disease particularly in a developing country like Nigeria.

Given the lack of research in this area, the understanding of the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women may result in clinically useful knowledge, translatable into improving care outcomes. The results of this integrative review may have immediate application to practice and policy making in the areas of early diagnosis and care given to women having breast cancer in Nigeria. These findings have contributed to an in-depth understanding of the determinants of health outcomes in women having breast cancer. The findings can be an important health promotion strategy that can improve the quality of life of breast cancer patients.

Synthesising countrywide evidence-base is a significant step in knowledge translation and the design of new research. An integrative review of the literature to explore the factors that impact seeking medical care on time after the breast cancer symptom discovery and the factors that impact participation in breast health activities have not been previously completed. If these factors are not known, women will continue to present with late stages of the disease, and the mortality rate will continue to rise.

An integrative review is an important scientific approach to identifying and summarizing the evidence-informed knowledge. It brings together the experiences of researchers in the care of

a phenomenon to converge targeted interventions, appropriate policies, and evidence-informed guidelines for health promotion and prevention of deleterious health outcomes. This integrated review has brought together the results of many studies to increase their combined contribution to the advancement of more formalized knowledge in the area of breast cancer health outcomes in women.

This study has addressed a substantial gap in the literature concerning the personal and institutional determinants of late presentation of breast cancer in women in Nigeria. It has also exposed some of the factors that impact seeking medical after breast cancer symptom discovery and the some of the factors that impact participation in breast health activities by women in Canada and Nigeria from 1990-2014. In these ways, the determinants of the health outcome of women living with breast cancer in the two countries. It is imperative that health care providers and health care systems have a better understanding of the needs of this population of patients. The results of this integrative review can offer practical ways to translate the findings into clinically relevant knowledge for ongoing improvements in health care systems and research that can improve the clinical outcomes of women suffering from breast cancer. The results have added new information to the larger existing body of knowledge on the topic. It has provided significant indicators for policy and clinical guidelines development. The results have also offered a foundation for future research.

## **5.6 Assumptions**

Methodological assumptions of this integrative literature review include the following: The search of existing literature would provide a summary of relevant data that will facilitate a better understanding of the factors that impact seeking medical care after breast cancer symptom discovery and the factors that impact participation in breast health activities by women. The aim

of this inquiry was to reduce the high mortality rate related to breast cancer in women in Nigeria. The mortality rate of breast cancer in women is higher in Nigeria than in Canada. What has been successfully applied in Canada to reduce breast cancer-related mortality in women can hopefully be implemented in Nigeria so as to save lives.

## **5.7 Summary of Findings**

### **5.7.1 Lack of Knowledge and Awareness**

Lack of awareness and knowledge were the major reasons women present with the late stage of the disease in Nigeria. Public education is mandatory to improve breast health outcome. It is the first step in implementing breast health programs. The approach and scope of the public education program will determine the success of early detection as measured by the stage of disease at diagnosis. The effects of psychosocial and cultural variables on the personal representations of illness that guide health behavior vary. These representations underlie and influence women's response to prevention and screening campaigns as well as the likelihood of initiating and complying with treatment and follow up. Breast health outcomes cannot improve unless women understand the benefits of early detection and are willing to undergo timely diagnosis and treatment. Therefore, practical evidence-based strategies are needed for effective communication to the public to promote early detection of breast cancer, enhance breast cancer diagnosis, improve the quality of breast cancer treatment, and support the information needs of breast cancer survivors. Public education programs must include health education messages that convey the idea that breast cancer is curable in the majority of women when it is detected early, diagnosed accurately, and treated appropriately. To optimize success, communication methods need to be adapted to the cultural boundaries and taboos that surround breast cancer diagnosis.

## **5.8 Study Strengths and Limitations**

The strength of this study was that this specific topic had not been the focus of previous research found in the literature. The methodology used in this study brought together data from diverse origin to create a new understanding of an important women health issue. The findings of this study could be generalized to other developing countries. This integrative review provided an understanding of the factors that impact seeking medical care after breast cancer discovery and the factors that impact participation in breast health activities by women in Canada and Nigeria from 1990-2014. Another strength of the study was its fidelity to the methodological principles of the integrative review as proffered by Cooper (1998) and modified by Whitemore and Knafl, (2005). A limitation of this study was the researcher's lack of expertise in the conduct of integrative review of the literature. This was however made up for by the researcher's supervisor, who was always available to answer questions and give clarifications on issues.

### **5.9 Ethical Consideration**

Before any research study could be carried out, the study must be submitted by the researcher to the Research Ethics Review Board of the University of Saskatchewan for review and subsequent approval. The design of this study was an integrative review of published literature. Independent ethical review and approval is not required for the use of previously published manuscripts. Review exemption letter was obtained from the University of Saskatchewan Research Ethics Review Board or Committee. However, every attempt was made to conduct an ethical study and stay true to the intent of each of the primary study's findings.

### **5.10 Recommendation For Research, Practice, and Education**

Socio-cultural barriers that contribute to delays in seeking medical care for suspected breast cancer should be identified and addressed. Designing culturally sensitive breast health education programs that target beliefs and fears related to breast cancer in women are needed.



Financial difficulties can prevent women from seeking early diagnosis and obtaining timely or optimum treatment. Therefore, research into how women can have some form of government assistance will improve early detection and treatment options.

Nurses and midwives could be taught to perform clinical breast examination effectively. They should be encouraged to develop culturally sensitive, linguistically appropriate local education programs, to teach breast health awareness. They should be encouraged to incorporate breast health activities into women's clinic programs.

The results of this integrative review should encourage nurses involved in professional education to strengthen nursing curricula by including knowledge and skills in breast health. This will prepare future nurses to provide sensitive, effective, and quality nursing care to women in this area of study.

### **5.11 Personal Reflection**

Reflecting back to the beginning of this thesis research project, many lessons have been learned. These lessons relate to the importance of reflection, passion, and determination. These lessons can be transferred to future projects to strengthen a novice researcher in future endeavors.

My motivation for engaging in this study was as a result of the passion I have to alleviate suffering in women. I feel a curiosity to learn more about issues affecting women and then apply the knowledge I might have acquired to make a significant contribution towards improving our society and community. Passion for women issues and optimism about my pursuits come from within. The more I read and reflect, the more I want to get involved with women issues. I kept on thinking about how to incorporate this type of research work and findings into my future work. The project has deepened an existing interest and it has motivated me think more broadly about

issues affecting women. My interest in this topic has also sparked a mystery about me, which was not known to me before now. Not that I can make conclusions at this time. I however have some unanswered question relating to my self-knowledge. Right from the start of this project, my passion for women issues and desire to relief suffering in women have surprised me. I however need time to process this mystery.

Reflection is a paramount skill in any endeavor. Reflection allowed for the lessons from the research process to be better understood and internalized. Reflection on the experience of a research project is important to improve research skills and avoid past challenges. This lesson will be applied to future studies.

## **5.12 Conclusion**

In low-middle income countries like Nigeria, the outcome of breast cancer has a high correlation with the stage of disease at presentation. The late stage of disease at presentation for medical care leads to the particularly poor outcome when coupled with limited diagnostic and treatment capacity. Early breast cancer detection is a core area of focus because early cancers have better prognosis with treatments that are more affordable and less resource intensive to provide. Barriers to seeking medical care promptly identified are a lack of awareness and knowledge, financial constraints, and cultural misconceptions about the effectiveness of treatment.

In Canada, women are well informed about breast cancer and breast health activities. Exposure to screening messages using the media, literature, pamphlets, internet as well as using multiple promotional sources to relay breast health messages as it is being done in Canada will assist in improving the level of awareness of the Nigerian citizen. Other strategies to be adopted are adequate screening services that are sensitive to a women's health needs, in combination with

courteous, competent, and prompt service that include teaching, the use of patient reminders, mass screening programs and a tailored curriculum directed at physicians and other healthcare providers. These will assist in reducing the mortality from breast cancer in women in Nigeria.

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**Figure 3: Methodology Checklist for Systematic Reviews**

|  |  |  |   |
|--|--|--|---|
|   |  | <b>Methodology Checklist 1: Systematic Reviews and Meta-analyses</b>   |   |
| <b>SIGN</b>  |  | SIGN gratefully acknowledges the permission received from the authors of the AMSTAR tool to base this checklist on their work: <i>Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Medical Research Methodology 2007, 7:10 doi:10.1186/1471-2288-7-10. Available from <a href="http://www.biomedcentral.com/1471-2288/7/10">http://www.biomedcentral.com/1471-2288/7/10</a> [cited 10 Sep 2012]</i> |   |
| Study identification (Include author, title, year of publication, journal title, pages)  |  |  |   |
| Guideline topic:   |  | Key Question No:   |   |
| <b>Before</b> completing this checklist, consider:   |  |  |   |
| <ol style="list-style-type: none"> <li>1. Is the paper a systematic review or meta-analysis? IF NO reject. IF YES continue.</li> <li>2. Is the paper relevant to key question? Analyze using PICO (Patient or Population Intervention Comparison Outcome). IF NO reject. IF YES complete the checklist.</li> </ol> |  |  |   |
| Checklist completed by:  |  |  |   |
| <b>Section 1: Internal validity</b>  |  |  |   |
| <i><b>In a well conducted systematic review:</b></i>   |  | <i><b>Does this study do it?</b></i>   |   |
| 1.1  | The study addresses a clearly defined research question. <sup>i</sup>                            | Yes <input type="checkbox"/>   | No <input type="checkbox"/>             |
|  |  | Can't say <input type="checkbox"/>   |   |
| 1.2  | At least two people should select studies and extract data. <sup>ii</sup>                        | Yes <input type="checkbox"/>   | No <input type="checkbox"/>             |
|  |  | Can't say <input type="checkbox"/>   |   |
| 1.3  | A comprehensive literature search is carried out. <sup>iii</sup>                                 | Yes <input type="checkbox"/>   | No <input type="checkbox"/>             |
|  |  | Can't say <input type="checkbox"/>   | Does not apply <input type="checkbox"/> |
| 1.4  | The authors clearly state if or how they limited their review by publication type. <sup>iv</sup> | Yes <input type="checkbox"/>   | No <input type="checkbox"/>             |
| 1.5  | The included, and excluded studies are listed. <sup>v</sup>                                      | Yes <input type="checkbox"/>   | No <input type="checkbox"/>             |



|      |  |  |                             |
|------|--|--|-----------------------------|
| 1.6  | The characteristics of the included studies are provided. <sup>vi</sup>                    | Yes <input type="checkbox"/>                                       | No <input type="checkbox"/> |
| 1.7  | The scientific quality of the included studies is assessed and documented. <sup>vii</sup>  | Yes <input type="checkbox"/>                                       | No <input type="checkbox"/> |
| 1.8  | The scientific quality of the included studies was assessed appropriately. <sup>viii</sup> | Yes <input type="checkbox"/><br>Can't say <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.9  | Appropriate methods are used to combine the individual study findings. <sup>ix</sup>       | Yes <input type="checkbox"/><br>Can't say <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.10 | The likelihood of publication bias is assessed. <sup>x</sup>                               | Yes <input type="checkbox"/><br>Can't say <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.11 | Conflicts of interest are declared. <sup>xi</sup>  | Yes <input type="checkbox"/>                                       | No <input type="checkbox"/> |

## SECTION 2: OVERALL ASSESSMENT OF THE STUDY

|     |  |   |
|-----|--|---|
| 2.1 | What is your overall assessment of the methodological quality of this review? <sup>xii</sup>       | High quality (++) <input type="checkbox"/><br>Acceptable (+) <input type="checkbox"/><br>Low quality (-) <input type="checkbox"/><br>Irrelevant/ wrong type - reject (0) <input type="checkbox"/> |
| 2.2 | Are the results of this study directly applicable to the patient group targeted by this guideline? | Yes <input type="checkbox"/> No <input type="checkbox"/>  |
| 2.3 | <b>Notes:</b> <sup>xiii</sup>  |   |

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- <sup>i</sup> The research question and inclusion criteria should be established before the review is conducted. To score a 'yes' for this factor there must be reference to a protocol, ethics approval, or pre-determined/a priori published research objectives.
- <sup>ii</sup> At least two people should select papers and extract data. There should be a consensus procedure to resolve any differences.
- <sup>iii</sup> At least two major electronic databases should be searched. The report must include years and databases searched (e.g., Central, EMBASE, MEDLINE, Open Grey, 1999-2009). Key words and/or MESH terms must be stated and where feasible the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialized registers, or experts in the particular field of study, and by reviewing the references in the studies found. In rare cases this may not apply where authors have carried out a meta analysis focusing on a specified range of major trials in their field.
- <sup>iv</sup> The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status or language. If searching sources that contain both grey and non-grey literature, must specify that they were searching for both.
- <sup>v</sup> A list of included and excluded studies should be provided. Limiting the excluded studies to references is acceptable.
- <sup>vi</sup> In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions and outcomes. The ranges of characteristics in all the studies analyzed e.g., age, race, sex, relevant socioeconomic data, disease status, duration, severity, or other diseases should be reported. (**Note** that a format other than a table is acceptable, as long as the information noted here is provided).
- <sup>vii</sup> This relates to the scientific quality of the studies included in the review. It can include use of a quality scoring tool or checklist, e.g., Jadad scale, risk of bias, sensitivity analysis, or a description of quality items, with some kind of result for EACH study ("low" or "high" is fine, as long as it is clear which studies scored "low" and which scored "high"; a summary score/range for all studies is not acceptable).
- <sup>viii</sup> The methodological rigor and scientific quality should be considered in the analysis and the conclusions of the review, and explicitly stated in formulating recommendations. (**Note**: The review might say something like "the results should be interpreted with caution due to poor quality of included studies." Cannot score "yes" for this question if scored "no" for question 7).
- <sup>ix</sup> For the pooled results, a test should be done to ensure the studies were combinable, to assess their homogeneity (i.e., Chi-squared test for homogeneity,  $\chi^2$ ). If heterogeneity exists a random effects model should be used and/or the clinical appropriateness of combining should be taken into consideration (i.e., is it sensible to combine?). Indicate "yes" where the authors mention or describe heterogeneity or variability between results and discuss the consequences (eg where authors declare they cannot pool results because of heterogeneity).
- <sup>x</sup> An assessment of publication bias should include a combination of graphical aids (e.g., funnel plot, other available tests) and/or statistical tests (e.g., Egger regression test, Hedges-Olken). (**Note**: Score "Can't say" if there were fewer than 10 included studies).
- <sup>xi</sup> Potential sources of support should be clearly acknowledged in both the systematic review and the included studies.
- <sup>xii</sup> Rate the overall methodological quality of the study, using the following as a guide: **High quality** (++) : Majority of criteria met. Little or no risk of bias.. **Acceptable** (+): Most criteria met. Some flaws in the

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study with an associated risk of bias. **Low quality** (-): Either most criteria not met, or significant flaws relating to key aspects of study design. **Reject** (0): Study is irrelevant to KQ or wrong study type.

<sup>xiii</sup> Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above. This is a very important part of the evaluation and will feature in the evidence table. PLEASE FILL IN.