

Evaluation of the Interventions for the Management of Breast Cancer Among Women in Nigeria: A Narrative Review

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ABSTRACT

Background: Breast cancer is one of the commonest cancers in women is responsible for a good number of cancer deaths worldwide. In high-income countries, the mortality rate from this disease has strongly reduced due to the availability of efficient screening programs and profound management interventions. However, in low and middle-income countries like Nigeria, the lack of effective screening programs means that majority of the affected women present late, causing an increase in the mortality rate. In addition, the inherent governmental and healthcare challenges of Nigeria as a low and middle-income country mean that the available interventions may not be as robust and holistic as is obtainable elsewhere. This could negatively impact on the outcomes of these interventions.

Objectives: The study aims to evaluate the available interventions for the management of breast cancer among women in Nigeria. It also explores the impacts of these interventions and the several possible solutions to these impacts.

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Methods: This study adopted a desktop or conceptual research approach that involves collating and analyzing an already-existing body of information on the research topic Using several search strategies. The study is therefore an empirical research study that is based on several studies. The databases were searched in a similar manner using both Medical Subject Headings (MeSH) and non-MeSH terms broadly related to breast cancer management interventions in Nigerian women and their impacts.

Results: Breast removal surgery (mastectomy), chemotherapy and radiotherapy are the commonest interventions for breast cancer among women in Nigeria. Also, hormonal therapy using tamoxifen and HER2-positive breast cancer therapy using trastuzumab are other relatively common treatments. The commonest impacts of these interventions include financial challenges, sexual and marital challenges, and psychosocial challenges such as negative body image and fear of social stigma. Some of the solutions to these impacts are improved health insurance scheme, subsidization of chemotherapy, provision of psychosocial support for women and their affected male partners.

Conclusion: The main interventions for breast cancer in Nigeria, which are surgery, chemotherapy, and radiotherapy, are like those obtainable in high-income countries. However, the inherent governmental and healthcare challenges in Nigeria mean that these interventions are not optimal and therefore have huge, long-lasting impacts on the affected women and their families. The Nigerian government has a huge role to play in ameliorating these negative impacts through establishment of a deep and all-encompassing health insurance scheme as well as support networks, which will cushion these impacts and help these women live as near-normal lives as possible.

Keywords: Breast Cancer; Interventions; Mastectomy; Chemotherapy; Radiotherapy; Impacts; Solutions

Introduction

Around the world, breast cancer is recognized as the single biggest cause of cancer deaths in women [1]. Even more so, there is an established correlation between the breast cancer outcomes in women from richer countries and those from poorer countries, referred to as 'lower and middle-income countries' (LMICs), with more than half of the breast cancer cases and two-third of the deaths occurring in this LMICs [1-3]. According to Agha et al, there were 266,120 new cases of breast cancer among women in the United States and 41,400 breast cancer deaths reported by the American Cancer Society in 2018 [4]. However, by comparison, Chidebe et al reported that new cancer cases among women in Nigeria per year stood at 102,000 with 72,000 deaths in the same period [5]. In LMICs like Nigeria, the burden of breast cancer is higher because of late presentation of most cases and the reasons for this include misconceptions about the disease from personal, cultural, or religious ideologies, fear of breast removal, poverty [6]. In addition, other social determinants of late presentation of breast cancer in women of sub-Saharan African countries such as Nigeria include poor access to healthcare, lower levels of education, and lack of health insurance [7]. There are several risk factors associated with breast cancer and they can be categorized as demographic factors such as gender and age; reproductive factors that include late menopause; hormonal factors such as use of oral contraceptives; hereditary factors which include genetics and history of breast cancer within family [8].

Cancer Research UK added a few more risk factors such as being overweight, consumption of alcohol, smoking and being inactive. In addition, however, there are a few unpopular risk factors associated

with breast cancer, the likes of air pollution, diabetes, night work, and socio-economic status [9]. The interventions for women with breast cancer in Nigeria can depend on the histological characteristics of the cancer such as the grade of the tumour using Nottingham Grading System, pathological diagnosis, as well as immunohistochemistry (IHC) [10]. Other factors that determine interventions are oestrogen and progesterone receptor status, human epidermal growth factor receptor II (HER 2) expression, triple negativity, etc. [8]. Interestingly, several interventions for breast cancer among women in Nigeria include surgical intervention; or systemic treatments like chemotherapy, targeted therapy, hormonal treatment, and in some rare cases, radiotherapy [7,10]. In addition to the already mentioned above, there are a few other factors that can determine the choice of these interventions for Nigerian women with breast cancer, and they include: availability of relevant skills (especially in case of surgery), cost and accessibility to the intervention (in cases of systemic therapy and radiotherapy), and compliance to therapy [8].

Breast cancer among Nigerian women is as unique as the available interventions, from late presentations to financial challenges, cultural, personal, and even marital doubts, as well as limited available professional know-how. Therefore, it will be very interesting to critically research the latest available interventions, how they have improved the grim public health outcomes of this breast cancer in Nigeria, and what options there are for improvement. The overall aim of this work is to critically evaluate the available interventions for breast cancer among women in Nigeria to assess their suitability, impacts, challenges, and how best they can be improved to increase chances of better outcomes and reduce breast cancer mortality.

Methods

Research Philosophy

The research was based on interpretivism, also known as the interpretivist, research philosophy. This philosophy consists of interpretation of elements of a study by the researcher, thereby incorporating a human element to the study [11,12].

Research Approach and Conceptual Research Design

This research was done using the narrative review method design. Interestingly, due to lingering effects of the Covid-19 pandemic, the research adopted a secondary or desktop research approach, whereby no new or raw data was collected in the process [13, 14]. According to Aven, secondary or desktop research is a research methodology that involves collating and analyzing already-existing bodies of information on the research topic, and therefore no form of experimentation is required [15]. This is opposed to empirical research that involves experimentation then gathering, analysis and interpretation of raw data from the field [16].

Literature Search Strategy

According to Aromatases and Rianto, constructing an effective search strategy is a significant but repetitive component of research, involving regular modifications and re-evaluation [17]. The basis of an excellent search strategy is in a review protocol which has succinct review questions and inclusion criteria [17]. An effective search strat-

egy should exhibit sensitivity, which is, being able to pick up relevant information; as well as specificity, which is the ability to exclude irrelevant information [18]. The study utilized a keyword search using research databases such as Medline, Summons, CINAHL, EMBASE, PubMed, and Cochrane Central Register as well as Google Scholar sources to identify appropriate articles. The categories of articles reviewed included full text published articles and even abstracts, in so far as a minimum of one outcome of interest such as 'interventions', 'breast cancer', 'women', or 'Nigeria', were mentioned in the abstract. Afterwards, these search strings were modified to incorporate combinations of these keywords such as 'evaluation' OR 'assessment' AND 'management' OR 'treatment' AND 'breast carcinoma' OR 'breast malignancy' AND 'women' OR 'girls' AND 'Nigeria' OR 'West Africa'.

Therefore, with these search strings, articles that evaluated the interventions for breast cancer among women in Nigeria were identified. In addition to the electronic database searches, the search strategy involved a manual review of the appropriate references and studies. Importantly, the electronic database searches were limited to a twenty-year study period, which span from April 2002 to April 2022, to easily distinguish articles with appropriate and up-to-date information published within the stipulated interval. Moreover, other search strings such as 'breast cancer policies' OR 'breast cancer statistics' were used to identify grey literature which could be published from government website or other reputable organizations such as the World Health Organization, etc (Table 1).

Table 1: Search keywords.

Evaluation	OR	Assessment	OR	Appraisal	OR	Review
AND		AND		AND		AND
Interventions	OR	Management	OR	Treatment	OR	Remedy
AND		AND		AND		AND
Breast cancer	OR	Breast malignancy	OR	Breast tumour	OR	Breast carcinoma
AND		AND		AND		AND
Women	OR	Girls	OR	Mothers	OR	Ladies
AND		AND		AND		AND
Nigeria	OR	West Africa	OR	Sub-Saharan Africa	OR	Africa

Inclusion and Exclusion Criteria

In this research, the articles which were selected for the study included peer-reviewed, qualitative, and quantitative journals on the interventions for breast cancer among women in Nigeria or Africa. Conversely, the study excluded journal publications on breast cancer interventions for women outside of sub-Saharan Africa. In addition, any sub-Saharan African studies on breast cancer which did not include interventions or management were excluded. In the same vein, the government or WHO publications that explored management of

breast cancer among women in Nigeria were considered. Notably, the study also rejected any research publications that did not discuss the various intervention options for breast cancer among Nigerian women. However, the exclusion criteria, interestingly, also included research publications not published in English. To this end, a series of electronic original literature searches produced 1261 papers from seven databases. A total of about 634 articles were recovered then filtered through the inclusion and exclusion criteria. Subsequently, 7 research articles were accepted as having met the set standards.

Reliability and Validity

To ensure the reliability and validity of the data, the discussion was written as a narrative review of relevant research on breast cancer conducted no more than twenty five years old. Like earlier stated in the course of the work, the research utilized the narrative review method design. Importantly, as earlier stated, this was desktop/conceptual research, with no new or raw data collected in the process, and the literature strategy utilized was as documented in the Methodology segment.

Ethical Approval

Ethical approval was not required for this systematic review as the research was based on information retrieved from published studies.

Results

Among other databases, the PubMed searches yielded 95 papers. The results were reported using the following themes.

Common Interventions for Breast Cancer Management in Nigeria

Mastectomy: Found to be one of the primary interventions for breast cancer management in Nigeria. This surgical procedure involves the removal of one or both breasts and is often employed in cases where the cancer has spread extensively within the breast tissue.

Chemotherapy: Identified as a common treatment modality, chemotherapy involves the administration of drugs to kill cancer cells. It is often used in conjunction with other treatments such as surgery or radiation therapy.

Radiotherapy: Another prevalent intervention, radiotherapy utilizes high-energy radiation to target and destroy cancer cells. It is typically employed post-surgery to eradicate any remaining cancer cells and reduce the risk of recurrence.

Hormonal Therapy (Tamoxifen): Hormonal therapy, particularly using drugs like tamoxifen, is recognized as an effective approach for certain types of breast cancer. It works by blocking the effects of estrogen in breast tissue, thereby inhibiting the growth of hormone-sensitive tumors.

HER2-Positive Breast Cancer Therapy (Trastuzumab): HER2-positive breast cancer, characterized by the overexpression of the HER2 protein, is often treated with targeted therapies such as trastuzumab. This medication specifically targets HER2-positive cancer cells, impeding their growth and proliferation.

Impacts of Interventions

Financial Challenges: Many women in Nigeria face significant financial burdens associated with breast cancer treatment, including the cost of surgery, chemotherapy, and medications. These expenses

can place a considerable strain on individuals and families, often leading to financial distress and even bankruptcy.

Sexual and Marital Challenges: Breast cancer and its treatments can have profound effects on women's sexual health and intimate relationships. Physical changes resulting from surgery or chemotherapy may affect body image and self-esteem, leading to challenges in sexual intimacy and marital relationships.

Psychosocial Challenges: Women with breast cancer often experience psychosocial difficulties, including negative body image, anxiety, depression, and fear of social stigma. These challenges can significantly impact quality of life and overall well-being, affecting not only the patients themselves but also their families and caregivers.

Potential Solutions to Address Impacts

Improved Health Insurance Scheme: Enhancing access to comprehensive health insurance coverage can help alleviate the financial burden associated with breast cancer treatment. By covering the costs of surgeries, medications, and supportive care services, individuals can receive timely and adequate treatment without incurring exorbitant out-of-pocket expenses.

Subsidization of Chemotherapy: Implementing subsidies or cost-sharing programs for chemotherapy and other essential treatments can make them more affordable and accessible to women from diverse socioeconomic backgrounds.

Provision of Psychosocial Support: Establishing psychosocial support programs and counseling services can assist women and their families in coping with the emotional and psychological challenges of breast cancer. These initiatives can provide a safe space for individuals to express their feelings, share experiences, and receive guidance and support from trained professionals.

Support for Affected Male Partners: Recognizing the impact of breast cancer on intimate relationships, efforts should also be made to support male partners and caregivers. Providing education, counseling, and resources tailored to their needs can help strengthen familial support networks and improve overall coping mechanisms.

Discussion

The motivation for this study was that breast cancer presents a significant public health concern across Africa, comprising 34% of new cancer diagnoses and contributing to 22% of cancer-related fatalities among women in 2020. Over the last two decades, the region has experienced a nearly twofold increase in new breast cancer cases annually. While healthcare systems grapple with the rising number of patients, there exists a unique opportunity to improve patient care, thereby extending survival rates and fostering recovery prospects. Regrettably, a substantial proportion of individuals in Africa lack access to adequate healthcare services, placing them at a disadvantage compared to patients in more developed regions like Europe or North America. This disparity in access significantly impacts their chances

of survival. To confront this escalating challenge, the World Health Organization (WHO) launched the Global Breast Cancer Initiative (GBCI) in 2021. This initiative aims to provide strategic guidance and coordination to enhance breast cancer care, particularly in low- and middle-income nations. The GBCI sets forth the ambitious goal of annually reducing breast cancer mortality rates by 2.5%, potentially saving 2.5 million lives by 2040. As per a retrospective qualitative cohort study conducted by Olasehinde et al., titled "Contemporary Management of Breast Cancer in Nigeria: Insights from an Institutional Database," an examination of interventions for breast cancer was undertaken among 607 women in a hospital situated in southwestern Nigeria spanning the years 2010 to 2018 [10].

The study analyzed data extracted from a six-year electronic database covering the period from 2010 to 2016. The findings revealed that 70.2% of the participants underwent chemotherapy, with only approximately 40% completing the regimen. Notably, 14% of the cohort received Trastuzumab for HER2-positive breast cancer. Furthermore, half of the patients underwent surgery, with 92% opting for radical mastectomy, 3.3% undergoing simple mastectomy, and 0.2% undergoing lumpectomy or breast conservation surgery. The proportion of patients receiving radiotherapy was 7.9%. This study, akin to a retrospective cohort investigation conducted by Knapp et al., examined the correlation between geographical accessibility and cancer stage at diagnosis, as well as outcomes for individuals with breast cancer in southwest Nigeria [19]. The research spanned from 2009 to 2019 and relied on data extracted from an electronic database of a single government hospital within the region. The findings indicated that the interventions administered to breast cancer patients encompassed chemotherapy (70.8%), surgery (46.5%), and radiotherapy (8.5%). However, there was limited documentation regarding the hormone receptor status of the patients, which was not incorporated into the analysis. Additionally, individuals receiving treatment at other healthcare facilities within the catchment area were excluded from the study, thereby constituting a limitation. Regarding the effects of these treatments on the holistic health and welfare of Nigerian women, several studies were pertinent.

For instance, Olasehinde et al. conducted an additional investigation delving into the quality of life and challenges experienced by young Nigerian women who underwent mastectomy following a breast cancer diagnosis [10]. The study methodology involved conducting one-on-one, in-depth narrative interviews with 15 post-mastectomy patients under the age of 45. Analytical frameworks and codes were developed utilizing ATLAS.ti7 software. The findings revealed that mastectomy had various impacts on these women, including alterations in body image, decreased libido, strained marital relationships, and concerns about social stigma. The study also highlighted depression as the primary psychosocial consequence of both the disease and its treatments. Notably, the study faced limitations due to its small sample size of 15 and the exclusion of post-mastectomy patients older than 45 years [10]. Interestingly, the results align

with those of a study conducted by Maleki et al [20]. The researchers undertook qualitative inquiry to assess the sexual relationships of breast cancer survivors of reproductive age in Iran. Their approach involved conducting in-depth semi-structured interviews with 21 female survivors who had undergone various interventions including chemotherapy, mastectomy, and radiotherapy. Data analysis was carried out utilizing the content analysis method. The findings revealed that the interventions predominantly impacted these women in terms of sexual and psychosocial aspects, such as decreased frequency of sexual activity with their partners, difficulties achieving orgasm, emotional disturbances, and negative body image perceptions.

However, the study was constrained by its small sample size and the exclusive recruitment of patients from urban centers, thus presenting an unbalanced representation by neglecting rural communities [20]. These two observations regarding the impacts of breast cancer interventions on Nigerian women are consistent with the findings of a study conducted by Adetunji, et al. [21]. The researchers investigated the relevance of body image, physical attractiveness, sexual satisfaction, and self-esteem in influencing the psychological adjustment of patients undergoing mastectomy in southwestern Nigeria. Their study employed descriptive quantitative research methods with a sample size of 120 participants. Patients were surveyed using a structured questionnaire. The results revealed that mastectomy had adverse effects on the body image, sexual desire, and physical attractiveness of the women, subsequently impacting their psychosocial adjustment within society. However, the study faced limitations due to its small sample size and the homogeneity of the study population, which comprised individuals solely from southwestern Nigeria. Consequently, these findings may not fully represent the experiences of women from diverse regions across Nigeria. [21] Regarding the strategies to address the significant impacts of breast cancer interventions among Nigerian women, several studies offer valuable insights. Olaogun, et al. conducted research aimed at evaluating the socio-demographic patterns of presentation, management outcomes, and potential solutions for breast cancer challenges among women in Nigeria [22].

Their study adopted a descriptive retrospective approach, analyzing data from 82 histologically confirmed breast cancer patients treated at a hospital in southwestern Nigeria between 2011 and 2015, along with pertinent solutions to their challenges. The findings indicated that major challenges included late presentation and inadequate diagnostic facilities, which impeded timely interventions. Consequently, proposed solutions encompassed initiatives such as raising awareness about breast cancer and promoting breast self-examination (BSE) to enhance early diagnosis. Additionally, there was a pressing need for government intervention to provide sufficient human and equipment resources for early diagnosis, including CT scanners and MRI machines, as well as affordable chemotherapy medications. However, it is important to note that this study had limitations, particularly in its exclusion criteria, which omitted histologically confirmed

breast cancer patients who defaulted in follow-up [22]. The above findings were corroborated by the outcomes of a study conducted by Adejoh et al. focusing on "Social Role Performance and Self-Identity among Breast Cancer Patients in Lagos, Nigeria [23]." The researchers utilized a qualitative approach, conducting face-to-face, semi-structured interviews with 15 women diagnosed with breast cancer and treated with surgery, chemotherapy, or radiotherapy. Their aim was to explore the impact of the disease on the patients' social lives and to identify potential solutions.

The findings revealed that recommended solutions to mitigate the effects of the disease included enhanced moral support from religious leaders and the broader religious community, as well as improved marital support from husbands who often grapple with the burden of the illness. Additionally, the study proposed better governmental support, particularly for female civil servants diagnosed with the disease, in the form of extended sick leave and improved financial assistance packages. Furthermore, the study underscored the necessity for the government to establish well-funded breast cancer support networks nationwide, aimed at providing psychotherapy and mutual emotional support to affected patients. These networks would serve as crucial platforms for addressing the psychosocial needs of breast cancer patients across the country [23]. Evaluation of interventions for the management of breast cancer among women in Nigeria highlights the importance of addressing not only the medical aspects of treatment but also the broader socio-economic and psychosocial challenges faced by patients and their families. By implementing comprehensive strategies that encompass financial support, psychosocial care, and community engagement, it is possible to enhance the quality of life and well-being of individuals affected by breast cancer in Nigeria. As a theoretical or literature-based investigation devoid of experimentation and direct observation, this study has limitations since it relies solely on existing literature findings, like previous systematic reviews in Nigeria [24-28]. Consequently, it may not have accessed the most dependable information typically derived from primary research studies.

Conclusion

The first key finding from the study is that women with breast cancer in Nigeria present very late to the hospital with advanced disease and this thereby means that surgical removal of the breast (mastectomy), as unwelcome as it is, becomes the most likely intervention. Regarding the impacts of these breast cancer interventions on Nigerian women, key findings from the study were mostly financial constraints and psychosocial challenges such as social stigma, poor body image, reduced sexual libido, and depression. The main interventions for breast cancer in Nigeria, which are surgery, chemotherapy, and radiotherapy, are similar to those obtainable in high-income countries. However, the inherent governmental and healthcare challenges in Nigeria mean that these interventions are not optimal and therefore have huge, long-lasting impacts on the affected women and

their families. The Nigerian government has a huge role to play in ameliorating these negative impacts through establishment of a deep and all-encompassing health insurance scheme as well as support networks, which will cushion these impacts and help these women live as near-normal lives as possible. Also, beyond a discovery of the main three already-mentioned interventions for breast cancer in Nigeria, the study uncovered that hormonal therapy with Tamoxifen, and HER2-positive therapy with trastuzumab, were equally very common forms of breast cancer chemotherapy interventions in Nigeria, depending on the immunochemical properties of the cancer.

In like manner, the study found out, rather unfortunately, that radiotherapy interventions in Nigeria are still rudimentary with very few centres and poorly functioning equipment. Interestingly, this research uncovered several viable solutions to these impacts such as an establishment of better and more robust health insurance scheme by the government; subsidization of chemotherapy medications; establishment and equipment of more radiotherapy centres across the country, as well as improving the diverse categories of support for breast cancer patients such as support groups, religious and family support. More frequent breast cancer awareness programs and increased publicity on breast self-examination can go a long way in preventing late presentations and improve chances of life-saving interventions. From the above discussions, it has become apparent that the inherent challenges and the impacts of the several interventions available for breast cancer among women in Nigeria should reshape the approach of all stakeholders involved in the care of breast cancer patients, including the doctors, care professionals, policy makers, non-governmental organizations and ultimately, the Nigerian government at all levels. This research has a number of policy and practice implications. Firstly, there needs to be a change in government policy towards improving the scope and depth of health insurance in Nigeria to ameliorate the financial strain from breast cancer treatment.

The present scheme, the National Health Insurance Scheme (NHIS), is not well-funded and as such covers less than 5% of the over 200 million Nigerians, according to Alawode and Adewole [29]. Secondly, due to the paucity of functional radiotherapy centres, the Nigerian government needs to establish new centres, refurbish the few existing ones, and hire more skilled labour in to meet the radiotherapy needs of breast cancer patients in Nigeria. Also, the current government policies and system of healthcare practice in Nigeria do not provide enough psychosocial and emotional support for breast cancer patients in Nigeria [10]. This needs to change. The government, through the ministry of health – and non-governmental organizations – should establish more breast cancer support groups, networks, and forums across Nigeria. This will provide the much-needed psychosocial support to these women and enable them to adapt to life afterwards. In addition, there is a huge gap in health practice in Nigeria that utterly neglects the emotional stress of men whose partners undergo mastectomy [30-32]. Therefore, a key part of future breast cancer management guidelines should be to tackle this and establish

viable systems that provide emotional support for these affected male partners and the need for prophylactic surgeries [33].

Conflict of Interest Statement

The authors report no conflicts of interest concerning this work.

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Ethical Approval

Ethical approval was not required for this systematic review as the research was based on information retrieved from published studies.

Data Sharing

All datasets generated and analysed, including the study protocol, search strategy, list of included and excluded studies, and data extracted, are available in the article and upon request from the corresponding author.

Author Contributions

Design: KCA, OJA, CFM and VCN. Analyses: AUW and STE. Writing: CIO, AAO, THE, OCE, NGU, and ESE. Supervision: GRM, GUE, EDT and AAO. OCE, ESE, ECI, CME, CTE, SMA, OKN, OMO, THE, NGU, KCN, EAE, JEM, KCE and GUE contributed to the interpretation of the analyses and writing of the manuscript. All authors approved the final manuscript.

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