

## **Narrative literature review Title: Breast cancer and prevention: A narrative review of the literature**

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**Abstract:** Globally, cancer affecting the breast is the most occurring cancer among women. The impact of the disease is much greater because most women delay presentation and are diagnosed with advanced stage disease, which is known to be associated with poor quality of life, reduced chance of survival and poor prognostic outcomes. Breast cancer detection and prevention are significant issues in public health and clinical practice. To achieve early detection of the disease in resource-challenged settings, integration of prevention interventions in standard medical care across all levels of cancer prevention including palliative context is paramount. A narrative review on the background information on these subjects is provided to inform future research on the phenomenon. This review was conducted as part of a study seeking to integrate breast cancer prevention into cancer palliative care in a tertiary hospital in Ghana.

**Keywords:** Breast cancer, delay presentation, symptom appraisal and recognition, perception, attitude and belief, breast cancer prevention and control, breast screening practices, early detection practices, palliative care, women.

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### **I. Introduction**

This article presents a narrative review of the breast cancer literature examining the following: brief overview of breast cancer (BC), delayed presentation of BC symptoms, appraisal and recognition of BC symptoms, knowledge, beliefs, and attitudes towards BC, breast screening and practices, BC prevention and control and lastly, palliative care and BC prevention and early detection.

#### **Overview of breast cancer**

Breast cancer (BC) is an abnormal uncontrollable growth of breast cells which has no known cause. However, gender, increasing age, genetics and hormonal changes are considered as the significant non-modifiable risk factors influencing the occurrence of the disease [1]. Genetic/hereditary and family history (FH) are known to account for about 10-30% of all BC cases, with the risk increasing in younger women and those with first degree relative (FDR) of the disease [1-4]. Other modifiable factors considered as risk for BC include physical inactivity, obesity, unhealthy diets, heavy consumption of alcohol, smoking, exposure to ionizing radiations, chemicals and some drugs [5-13].

Breast cancer is asymptomatic in its early stage. However, a painless breast lump is a common noticeable symptom with disease progress. Other vague or warning signs of importance include: skin dimpling, abnormal nipple discharge, nipple inversion or retraction, change in the size of the breast, change in skin texture or color, peau d'orange, and lymphadenopathy [14-16]. Features of advanced stage BC include tender or painful breast with/without a lump, malignant fungating breast wounds and lymphedema [17, 18]. The gold standard of identifying breast lump is through mammography screening [19]. Regular breast examinations have also been shown to facilitate early discovery of a breast lump and other related breast symptoms [20, 21]. Biopsy for histopathology and sometimes, fine needle aspiration and cytology (FNAC) provide accurate confirmation result of BC [22].

Results from clinical assessment, radiological imaging and pathology are used to stage BC. Tumor-Node-Metastasis (TNM) is an alternative of staging proposed by the American Joint committee on cancer (AJCC) and the National Institute of cancer (NCI) and describes the extent of spread in relation to tumor size (T), lymph nodes involvement (N) and distant metastasis (M). Two broad stages described in relation of BC are: (1) early stage (0, I and II) and (2) advanced/late stage BC (II and III) [23]. The aim of treatment of BC could be curative or palliation and is dependent on the stage of diagnosis. Early stage disease is hoped for cure with

possible breast conservation and  $\geq 80\%$  five-years overall survival [24, 25]. In contrast, advanced disease is managed palliatively for symptom control, relief of patients' suffering, family's support and it is linked to reduced chance of survival (20%) with poor prognostic outcomes [26-28]. Among the essential support given to the family is informational support which seeks to address the knowledge gap of the family on the disease as well as their emotional, and psycho-social concerns [29-31]. Previous authors have reported that informational needs are among the main concerns of individuals experiencing advanced disease in the families [32, 33].

An important concern to highlight is that majority of Ghanaians are diagnosed with advanced stage disease due to delay presentation with breast symptoms. This stage offers limited treatment option; hence patients are managed palliatively.

### **Delayed presentation of breast cancer symptom**

Delayed presentation has been defined as the period of waiting during diagnosis and treatment process of BC [34]. In the text, delay is defined in five stages: appraisal delay, illness delay, behavioral delay, scheduling delay and treatment delay [34]. These stages have been broadly categorized into two: patient and health system (provider) delay. Patient delay is determined as an interval of  $\geq 3$  months between symptom recognition and presentation to a health provider, and it accounts for about 60% of patient total delay [34, 35]. Health system-related (provider) delay is described as the time between first medical consultation and the commencement of first treatment

Differences exist between developed and developing countries in relation to patient delay [36]. For instance,  $\leq 30\%$  participants in O'Mahony's study delayed for at least 3 months following a discovery of a breast symptom [37]. On the contrary, evidence from Ghanaian studies have reported higher percentage of delay among women [38, 39]. For instance, Ohene-Yeboah found over 80% of women with breast cancer symptoms delaying for an average of 14 months in seeking for medical consultation for a breast symptom [38]. Consequently, presentation with advanced disease (stage III or IV) occurred. Previous reports have shown a significant association between an advanced presentation and reduced chance of survival [40] and this has directed researchers to examine the possible factors of delays [41, 42].

Attributing factors for delay reflected in the literature since the 1930s and described delay from several approaches [43]. A study by Moodley and colleagues in South Africa explained delay around women's cognitive factors without considering the influence of health system, social and cultural elements on the delay [44]. A qualitative study by Kohler and colleagues [45] among Malawians demonstrated factors underpinning the description of delay: socio-contextual at the patient, interpersonal health system and societal level influencing decisions, behaviors, access to BC diagnosis and appropriate treatment. In Iran, Khakbazan and colleague [41] highlighted that an entangled cognitive emotional and socio-cultural responses influenced symptom understanding, label and decision making. Mexicans delay has been described as an interaction between women's personal characteristics, socio-cultural factors and health-related factors influencing symptom definition, and decision making process [42]. Within the Ghanaian context, delay has been quantitatively theorized around women's socio-economic characteristics, socio-cultural, and cognitive factors as well as health system related factors [38, 39]. All the evidence from previous studies identified both consistent and inconsistent factors contributing to delay [41, 44, 46]. To facilitate comprehensive insight into attributing factors of delay, the Model of Pathways to Treatment revealed five basic events with four main intervals [47]. Among them is the patient's interval which describes appraisal and help-seeking as significant components of the illness course.

### **Appraisal and recognition of breast cancer symptom**

Appraisal is described as the period from noticing and labelling bodily changes, to making an attempt to discuss the changes with a health professional [34]. This interval may constitute a series of events such as symptom interpretation by self, influence by the local health system and the decision process [34]. Several studies focusing on symptom appraisal have reported on various factors that may influence symptom identification and label. These include awareness and knowledge of BC and its symptoms, breast screening practices, emotional reactions to the self-discovered symptoms, cultural beliefs and disease representations, social network and confidence in the healthcare system [44, 45, 48]. The cardinal symptom commonly identified is a painless breast lump, and majority of women self-identify it outside structured screening [44, 45, 48, 49]. In the text, a delay of 3 months or more have been reported [41, 44, 50]. Within the Ghanaian context, the evidence on this phenomenon reflecting in the literature reported a delay interval between 8 and 14 months [38, 49].

### **Knowledge, Perception, Attitude and Belief towards Breast Cancer**

According to Obrist and colleagues [51], much difference exist in high and low income countries regarding knowledge, beliefs and attitude towards BC. Low BC awareness coupled with cultural beliefs and barriers, low literacy, lack of active and sustained BC educational programs, and low political commitment

towards the disease exist in many developing countries [52]. From the view of Asobayire and colleagues[53], health literacy is significant for good health as it influences one's ability to seek, understand and use health information. However, knowledge of BC, its influencing factors and complications appears to have eluded many people on the African continent. Consequently, majority of BC cases in this community is diagnosed at an advanced stage [54]. For instance, evidence suggests that most of Ghanaian women lack awareness on BC, have no in-depth information, have negative attitude and fear towards BC.Hence, leading them to present late with BC with poor prognostic outcomes [55-58]. Other studies have further confirmed poor knowledge of BC risk factors, signs and symptoms and method of diagnosis in other African communities [52, 59]. Evidence suggests that belief and culture impact on BC tend to be more common in countries where resources for promotion of BC awareness and education are scant [51]. Data suggest that in most developing countries, women hide the realities of BC from their communities and family due to cultural factors to avoid social isolation, rejection and BC related stigma [60-62]. In these cultures, it is believed that BC is linked with a 'bad gene' in the family which may be transmitted to others through communal sharing of clothing and eating utensil. It is further believed that the marriage of affected women's daughters may be hindered; hence, women hide BC until late stage where the realities of the disease can no more be hidden [60-62]. Knowledge, beliefs and attitude towards BC are known to positively influence the control and prevention of the disease.

### **Breast screening and practices**

Several studies conducted on BC in LMICs are focused on knowledge of women on BC screening and its screening practices. Findings from these studies revealed consistently that most women in these communities lacked knowledge on breast screening measures and did not practice or obtained recommended breast screening measures such as BSE and CBE [58, 63].In India, 48% of the 222 women in Dehiya and colleagues [64] study knew that BSE and mammography screening had a role in early detection of BC, however, only 41 affirmed that they practiced regular BSE. In Pakistan, it was revealed that 71.4% of 1000 students who participated in Ahmed and colleagues [65] study were aware of BSE. However, about 60% and 87% of the participants had adequate knowledge and positive attitude towards breast screening respectively. Also, only 33.1% had practiced BSE. In Ghana, all the studies conducted on the subject reported knowledge deficit on breast screening measures. Also, the self-reported rate for breast screening practices was poor among the women who participated in the studies. Breast screening rates reported ranged between 27-32% for BSE[58, 63, 66]. Among the Ghanaian studies, 12% and 2% of the 474 women who participated in Opoku and colleague [58] study obtained CBE and mammography screening respectively.However, a significant association was observed between higher education of participants and BC screening practices.

Factors that were reported as barriers to breast screening practices across the studies included lack of awareness and knowledge of breast screening methods and practicing techniques, lack of breast screening facilities for women, financial challenges and other socio-cultural characteristics [58, 67, 68]. However, higher educational level, adequate knowledge of breast screening and practicing skills, positive attitude, knowing someone who had the disease, perceived susceptibility and severity of BC and perceived benefit of breast screening practices positively influenced women's breast screening practices [21, 69-71].

### **Breast Cancer Prevention and control**

According to the World Health Organization [72], about 40% of cancer-related deaths can be prevented if cancer prevention is made an integral component of cancer control plans. In developed countries, early detection of BC, declined death rates and higher percentage of survival are being observed and these have been credited to well-structured mammography screening programs in the context of adequate resources devoted to fighting the disease [73, 74].

Currently, primary prevention of the disease is limited to only prophylactic therapy due to the lack of evidence on the main cause of the disease. However, strategic control of the known modifiable risk factors associated with BC have been noted as beneficial[72]. Yet, using lifestyle modification alone may not be very effective due to challenges to adherence and possible influence by some known non-modifiable factors [72, 75]. Hence, secondary prevention strategies aimed at early detection, timely diagnosis and appropriate treatment have been proposed as important focus in the control of BC [52, 76, 77]. Several studies done among women across LMICs recommended that symptom recognition and prompt action toward self-discovered breast symptoms are essential components to early detection of the disease [41, 44, 45, 48, 78]. Achievement of early detection needs women to practice and obtain relevant BC screening measures coupled with timely diagnosis and prompt treatment for abnormal findings.

In the UK, a three-yearly mammography screening is recommended for asymptomatic women aged 50 to 70 years, and majority of these women receive their first mammography screening by age 50 years. In fact, age extensions to include 47 to 49 years old have been proposed and this is being piloted [79]. In the context of

the United States (US), yearly mammography screening is recommended for asymptomatic women aged  $\geq 40$  years, and three-yearly CBE for 29 to 39 years women [80].

Previous authors have hypothesized that, the adoption and implementation of high technology recommendations such as mammography screening seems impossible for Ghana due to existing challenges and an unsupportive health care system [81, 82]. For now, Ghana lacks a population-based BC registry, control and prevention policies as well as standardized treatment protocols [73, 82]. Hence, except occasional secondary prevention modalities offered to women by private organizations, NGOs and meaningful social groups, coverage of the general public on BC and its related issues is limited [56, 81]. Further, there is no structured CBE generally for women in the public health care facilities and Ghanaian women do not practice regular BSE.

Mammographic screening, BSE, and CBE, have all been used to identify BC mass prior to histopathology confirmation [39]. However, evidence suggest that mammographic screening is not very useful in the less denser breast tissues of premenopausal women [83, 84]. Hence, using mammographic screening in an African context where BC tends to affect younger women ( $\leq 49$  years) may not be the most suitable method of detecting BC. Therefore BSE and CBE are strongly recommended for women within this context [85-87]. Although these screening modalities appear essential tools for early detection in Ghana, the challenge that remains is how to utilize these important tools in the absence of country-wide guidelines to achieve early detection in Ghana.

### **Palliative care and breast cancer prevention and early detection**

Presentation with ABC among women in developing countries is considered as a global health concern due to its impact on mortality [72, 88]. Previous researches around this concept have recommended contextual awareness and early detection programs aimed at promoting early detection and enhancing women's chance of survival. Yet, in LMICs including Ghana, majority of newly diagnosed BC cases are still not detected through breast screening [41, 44, 89]. Therefore, health seeking for these patients will be a step towards self-discovered breast changes which most often may not be labeled as BC. In fact, in previous studies, women experienced delayed presentation because they did not perceive their breast symptoms as dangerous or serious, hence, it was not seen as BC [44, 45, 49, 90].

Several attributing factors for delayed presentation have been reported in the literature and these include socio-economic and demographical characteristics such as but not limited to age, educational level, marital status, geographical location, racial status and income level [91, 92]. Further, some social-related stigma experiences such as mockery, anticipated fear and disrespect in health seeking have also been reported as leading to delay presentation [42, 78]. Prior exposure to, and experiences of the suffering and poor prognostic outcomes of BC have been known to create a sense of social norm of doom and ineffectiveness in modern treatment, as well as fatalistic beliefs, hence, individuals are attracted to pursue alternative therapies that possibly meet their spiritual, psychological and emotional need, thereby increasing the likelihood of delay [78]. For instance, in previous studies, it was reported that the sense of fear developed from prior experience of BC in someone has led patients to delay in presenting with BC symptoms [48, 93]. In addition, mistrust in the health system due to contradicting information from health providers have also been linked to delay presentation with BC symptom [48]. These experiences could influence the perceptions, attitudes and beliefs of women and the community at large towards BC, and hence, the health behaviors of the public towards BC as a disease. However, Lamptey and colleague [39], noted that addressing the patients and families' concerns relating to emotional, social function, and on the disease condition may likely prevent delay.

The researcher through her clinical practice as a nurse in cancer care has commonly observed that addressing patients and families' negative concerns about BC and the health care system can potentially influence health behaviors of women towards BC. At KATH, the biology of tumors seen are aggressive with poor differentiation and triple negative hormone status [38, 94] and these characteristics have been associated with poor disease progression and poor prognostic outcomes [51]. Further, in the context of the researcher's clinical practice, BC poses physical, economical, and psycho-social challenges to the patient and the family [95]. Therefore, to effectively influence women's behavior towards BC, these burdens should be addressed not only with terminal diseases but also during the early management phase of the disease. This could potentially change the cultural narrative around BC and affect future health seeking behavior of women towards the disease.

In their definition, the WHO described palliative care as improving the quality of life of patients and families diagnosed with an incurable disease such as ABC, through prevention and provision of comfort by early identification, assessment and management of pain and other distressing physical, psychosocial, emotional and spiritual sufferings [29, 96]. However, clinically, palliative care has been reserved for patients at the terminal phase of the disease who are obviously dying [97, 98], because, clinicians perceive it as life-prolonging care and not an adjuvant therapy to curative care. This model of limiting PC to only end of life care and projection of life expectancy must change. Palliative care can, and must be initiated across the cancer continuum

and integrated into the trajectory of cancer care, alongside standard medicine [99-101], and must include awareness, preventive and early detection services for patients' families and other social networks. According to RB Parikh, RA Kirch, TJ Smith and JS Temel [101], the strength of supportive care delivered over time should be attuned to the needs and concerns of patients and families irrespective of their disease outcomes. From the clinical view of the researcher, palliative care could be provided to include family counselling, health education, BSE teaching and to offer CBE to patient's families and other social networks. This could possibly modify the perceptions, attitudes, health beliefs and behaviors of patients and families around BC if delivered alongside supportive care, during clinicians' interactions with the patient and the family. From the suggestions of Parikh and colleagues [101] relating to the provision of calibrated palliative care, opportunities to initiate prevention and early detection services to patients' family in the course of delivering supportive care services is practically feasible. This may present a preventive and early detection approach to suffering as it is a definite purpose of palliative care.

In the literature, there seems to be limited studies on the integration of prevention into hospital-based services for diseases with genetic predisposition within the LMICs, especially, in the context of BC where we know that about 30% of BC cases are linked to genetic and family history predisposition. Such a study is crucial, as it will afford a scientific insight into the phenomenon and offer the best opportunity for the integration of prevention and early detection of BC programs within a palliative care context for family members of ABC patients in a resource-challenged context.

### Translation of knowledge

Knowledge translation is a vital component of literature review, as this enables stakeholders to be informed of research findings which may be implemented to influence clinical practice and policies within the health care system [102]. However, evidence suggests that majority of evidenced-based research from clinical settings are not employed to amend practice and policies within the clinical context, especially, within the LMICs [103]. Knowledge synthesis though challenging, but very essential for improving clinical practice, research and health-related policies. This will facilitate the provision of quality health care to patients and their family.

## II. Conclusions

The association between BC and genetic/FH is well-established with scientific evidence. This evidence maybe a valuable tool to advance the awareness, prevention and early detection of the disease among women. The literature reviewed so far demonstrated that majority of women from LMICs are still not aware and lack knowledge about BC and its related practices. This, coupled with maladaptive beliefs, culture, psycho-social, and emotional factors influence health seeking behaviors negatively. Hence, delayed presentation with BC symptom occurs. Early detection, prevention and control of the disease within LMICs can be achieved if women become aware of the disease and its early detection practices. This can be advanced if BC prevention and early detection programs are well-developed and integrated into standard medical practices at all levels of prevention, especially within a palliative care context. It is therefore essential to know whether there is evidence of studies conducted on integration of hospital-based interventions or models for BC prevention and early detection in the context of LMICs, especially, within a palliative care setting. Future research should focus on this subject to close integration gap.

### Conflict of interest statement

None

### Ethical Consideration

Not applicable

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