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# Socioecological Factors Influencing the Anticipated Medical Help-Seeking Time for Breast Cancer Among Women in Togo, a Sub-Saharan Country

Komi Blewussi Aheto  
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# Walden University

College of Health Sciences and Public Policy

This is to certify that the doctoral dissertation by

Komi Blewussi Aheto

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the review committee have been made.

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Walden University  
2024

Abstract

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by

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MPH, Walden University, 2020

BS, University of Maryland, 2013

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health: Epidemiology

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November 2024

## Abstract

Breast cancer remains a leading cause of death in sub-Saharan Africa (SSA). The burden of the disease in the region is partly attributed to delayed health-seeking, resulting in advanced disease presentation, delayed diagnosis, poor outcomes, and low survival. This quantitative cross-sectional study was conducted to investigate the socioecological factors that influence the anticipated medical health-seeking time for women in SSA experiencing breast cancer symptoms. The socioecological model (SEM) theoretical framework guided this study. A questionnaire was used to collect data from randomly selected ( $N = 343$ ) women aged 18 years and older with no personal or familial history of breast cancer. Descriptive and logistic regression analyses were conducted to characterize the study sample and examine associations between participants' anticipated medical care-seeking time and their breast cancer literacy, social support, trust in the healthcare system, and breast cancer stigma. The results revealed that strong social support and trust in the healthcare system were associated with shorter anticipated medical care-seeking time, while weak social support and lack of trust were associated with longer anticipated medical care-seeking time. The findings suggest that positive and strong social support and trust in the healthcare system can empower Togolese women to seek medical help at the earliest onset of breast cancer symptoms. Therefore, public health efforts promoting social support and trust in the healthcare system could be effective in reducing anticipated breast cancer care-seeking time, reducing breast cancer mortality, and increasing breast cancer survival among Togolese women, thereby alleviating some of the socioeconomic burden associated with breast cancer in Togo.

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## Table of Contents

List of Tables .....	v
List of Figures .....	vi
Chapter 1: Introduction to the Study.....	1
Introduction.....	1
Background of the Problem .....	4
Togo: Country Overview and Breast Cancer Profile .....	10
Statement of the Problem.....	12
Purpose of the Study .....	14
Research Questions and Hypotheses .....	16
Theoretical Foundation .....	17
Theoretical Foundation of the Socio-Ecological Model.....	17
Nature of the Study .....	18
Definitions of Terms .....	20
Assumptions.....	22
Limitations .....	23
Scope and Delimitations .....	25
Significance of the Study .....	25
Summary .....	27
Chapter 2: Literature Review .....	29
Introduction.....	29
Literature Search Strategy.....	31

Theoretical Framework .....	32
Socioecological Model.....	32
Application of Theories Used in Previous Studies .....	35
Rationale of the SEM Theoretical Framework for the Study .....	37
Literature Review.....	40
Breast Cancer Pathophysiology, Risk Factors, Prevention, Diagnosis, and Treatment .....	40
Descriptive Epidemiology .....	52
Scope and Characteristics of Existing Studies .....	57
Existing Breast Cancer Studies in SSA and Togo .....	58
Medical Help-Seeking for Breast Cancer Symptoms .....	63
Disparities in Breast Cancer Health-Seeking in SSA .....	64
Breast Cancer Literacy: Knowledge and Awareness .....	66
Summary and Discussion.....	99
Literature Gaps.....	104
Chapter 3: Research Method.....	107
Introduction.....	107
Research Design and Rationale .....	107
Population .....	108
Setting and Sample .....	109
Research Questions and Hypotheses .....	110
Recruitment Strategy .....	112

Eligibility Criteria to Participate in the Study.....	114
Role of the Researcher .....	114
Methodology .....	114
Data Collection .....	114
Constructs/Variables Conceptualization and Operationalization .....	120
Threats to Validity .....	128
External Validity .....	128
Internal Validity .....	129
Ethical Procedures .....	131
Pilot Testing .....	131
Preliminary Data Cleaning and Screening .....	132
Data Analysis .....	133
Summary .....	134
Chapter 4: Results .....	136
Introduction.....	136
Ethical Considerations .....	138
Validity and Reliability of Data Collection Instrument .....	139
Results.....	140
Descriptive Statistics.....	140
Inferential Statistics .....	145
Summary .....	164
Chapter 5: Discussion, Conclusions, and Recommendations .....	166

Introduction.....	166
Interpretation of the Findings.....	166
Breast Self-Examination .....	166
Anticipated Medical Help-Seeking Behavior .....	168
Relationship Between Breast Literacy and Medical Help-Seeking .....	170
Relationship Between Social Support and Medical Help-Seeking .....	173
Relationship Between Breast Cancer Stigma and Anticipated Time to Seek Medical Help.....	177
Relationship Between Trust in the Healthcare System and Anticipated Time to Seek Medical Help .....	179
Anticipated Time to Seek Medical Help and Sociodemographics .....	181
Limitations of the Study.....	183
Implications.....	185
Public Health.....	185
Positive Social Change .....	187
Recommendations.....	189
Summary .....	190
References.....	192
Appendix A : Study Questionnaire .....	232
Appendix B: Validity and Reliability of Data Collection Instruments.....	245

## List of Tables

Table 1. Summary of the Alignment Between the Study’s Theoretical Framework and Variables .....	39
Table 2. Scoring of the OSSS-3’s items .....	117
Table 3. Cross-Reference Between Study Variables, RQs, and Survey Instruments and/or Questions.....	126
Table 4. Summary of Participant demographics .....	141
Table 5. Frequencies .....	142
Table 6. Frequency Distribution of Self-Breast Examination .....	143
Table 7. Breast Health-Seeking Behavior Frequency Distribution .....	144
Table 8. Perceived Social Support Frequency Distribution .....	144
Table 9. Breast cancer stigma frequency distribution.....	145
Table 10. Trust in the Healthcare System.....	145
Table 11. Logistic Regression Assumptions Tests .....	146
Table 12. Model 1 (RQ1) summary .....	148
Table 13. Model 2 (RQ2) Summary, Omnibus Tests of Model Coefficients.....	150
Table 14. Model 3 (RQ3) Summary .....	152
Table 15. Model 4 (RQ4) Summary .....	154
Table 16. Model 5 (All Predictors) Summary .....	157
Table 17. Model 6 (Only Significant Predictors) Summary .....	159

## List of Figures

Figure 1. Visual Illustration of the SEM Theoretical Framework .....	40
Figure 2. Anatomy of a Normal Breast Tissue Showing the Lobules and Milk Ducts ....	42
Figure 3. Breast Cancer Staging With Pictures Showing the Location, Spread, and Size of Breast Cancer Cells.....	51
Figure 4. Breast Cancer Vicious Circle in SSA.....	104
Figure 5. G*Power Plots.....	110
Figure 6. Directed Acyclic Graph Showing the Connection Between the Study Variables .....	127
Figure 7. Trend in Delayed Medical Help-Seeking Time as a Function of Level of Social Support.....	151
Figure 8. Trend in the Delayed Medical Help-Seeking Time as a Function of Trust in the Healthcare System .....	153
Figure 9. Trend in Delayed Seeking Medical Help Relative to Age of Participants .....	162
Figure 10. Trend in Delayed Seeking Medical Help Relative to Participants' Residence (Urban vs. Rural) .....	163
Figure 11. Trend in Delayed Seeking Medical Help Relative to Participants' Income..	164

## Chapter 1: Introduction to the Study

### **Introduction**

Breast cancer is a global public health challenge and the most diagnosed cancer globally, accounting for 1 in 8 of all cancers in both women and men (Arnold et al., 2022; Sung et al., 2021; World Health Organization [WHO], 2022a). Globally, over 2.3 million women had confirmed breast cancer diagnoses in 2020 (Arnold et al., 2022; WHO, 2021, 2022a; Wilkinson et al., 2022; World Cancer Research Fund International [WCRFI], n.d.). Over the same year, more than half a million breast cancer deaths were reported (WHO, 2021, 2022a). Even though preventable and treatable through early screening, diagnosis, and treatment, breast cancer remains the most common prevalent cancer, a leading cause of death, and accounts for more disability-adjusted life years loss than any other type of cancer (Arnold et al., 2022; WHO, 2021). In 2020 alone, about 7.8 million women were living with breast cancer (WHO, 2021). At the current rate, unless urgent and aggressive public health initiatives are taken, the global incidence and mortality rates of breast cancer are projected to increase by 40% and more than 50%, respectively, by 2040, translating into more than 3 million additional new cases and more than 1 million additional deaths in the year 2040 (Adeoye, 2023; Arnold et al., 2022; WHO, 2022a).

Breast cancer disproportionately affects developing, low- and middle-income countries, including sub-Saharan Africa (SSA). Despite the region's low disease incidence, the SSA region bears a sizable portion of the global breast cancer health and socioeconomic burden. Currently, breast cancer is the second leading cause of death in SSA, behind cervical cancer (Bahnassy et al., 2020; Giaquinto et al., 2022), accounting



for more than 85,000 lives, mostly young, lost prematurely in 2020 (Anyigba et al., 2021). The 5-year breast cancer survival among SSA women is less than 40%, compared to 86% in developed countries like the United States of America (Anyigba et al., 2021; Vanderpuye et al., 2021; WHO, 2022b). This disparity in survival translates into disparity in mortality and reflects the disparity in breast cancer challenges and burdens. According to Global Cancer Observatory (GCO, 2020) data, breast cancer mortality in Western Africa (a sub-SSA region) was 22.3 per 100,000 women, compared to 12.5 in Northern America and 9.8 in Eastern Asia (Sung et al., 2021). This disparity in breast cancer burden (high mortality and low survival) in SSA is mainly due to the late presentation (advanced-stage disease) at diagnosis (Dos Santos et al., 2017; Forester et al., 2019; Ogodirin et al., 2021; Togawa et al., 2021), reducing the effectiveness of treatment and survival significantly (McCormack et al., 2020). Ample studies in the SSA region have attributed this late presentation of breast cancer at diagnosis to the lack of systemic breast cancer screening and delay in seeking health care (Akuoko et al., 2017; Balhi, 2023; Black & Richmond, 2019; Grosse Frie et al., 2018; Martins et al., 2020; Pierz et al., 2020; Sakafu et al., 2022; Scheel et al., 2018).

Addressing this disproportionately high breast cancer burden and disparity among SSA populations is an urgent public health priority, requiring evidence-based health promotion initiatives promoting breast cancer screening (for early detection), timely conventional medical help-seeking (for early diagnosis), and comprehensive breast cancer treatment management (Harries et al., 2020; WHO, 2021).

Unfortunately, not only do many SSA countries, including Togo, lack these initiatives, but there is also, and more importantly, a dearth of evidence-based data or information to guide them. That is, the effectiveness of these initiatives intensely relies on scientific data on factors (barriers and promoters) that influence breast cancer screening, health-seeking, diagnosis and treatment, and management to design evidence-based, socioculturally practical (accessible, affordable, and acceptable) breast cancer interventions in these resource-limited countries. Many studies in these low- and middle-income countries have demonstrated a significant correlation between the observed poor breast cancer screening and health-seeking behaviors and several factors, including low or lack of breast cancer knowledge and awareness of breast cancer (its risk factors, screening, and treatment), individual negative beliefs and attitudes toward the disease, the socio-cultural stigma associated with breast cancer, the fragile and limited-capacity health care system, and the lack of breast cancer policies in these countries (David et al., 2022; Igiraneza et al., 2021; Nnaji et al., 2022; Osei-Afriyie et al., 2021; Sobri et al., 2021; Srinath et al., 2023).

Studies also revealed significant variations in breast cancer outcomes within and across SSA countries, with a higher breast cancer burden in some SSA populations and countries than others. Similarly, disparities in breast cancer attitudes and behaviors (screening, health-seeking, diagnosis, and treatment uptake) and associated factors (knowledge and awareness, beliefs, healthcare system) were reported. These variations in breast cancer burden, outcomes, and associated factors suggest the need for more population-specific studies in SSA to capture the actual breast cancer reality and burden

of SSA population groups and develop more targeted population-level breast cancer interventions that promote breast cancer screening and early health-seeking behaviors, improve survival and reduce the existing breast cancer disparities. Despite the plethora of literature on breast cancer in SSA, there are no studies on the anticipated health-seeking time and associated factors among the Togolese women's general population. The few published studies on breast cancer among this population focused primarily on the clinical aspects (immuno-histochemistry and pathological description of cases), healthcare professionals, and services. Even though these studies provide valuable clinical perspectives of breast cancer in this population, they provide little information on factors that explain the country's breast cancer epidemiological profile and guide effective public health interventions, creating a gap this study aims to fill. This study, the first of its kind among the target population, aimed to (a) assess the current level (prevalence) of breast cancer screening and health-seeking behaviors and (b) identify factors (barriers and facilitators) associated with Togolese women's anticipated time to seeking medical help, from a socio-ecological perspective.

### **Background of the Problem**

With significant health and socioeconomic burden, breast cancer remains an urgent public health challenge in SSA (Anyigba et al., 2021; Azubuike et al., 2018; WHO, 2022b). Much evidence exists about the disparities in breast cancer burden between developed nations, developing countries, and the SSA region. Contrasting with developed nations, which are experiencing a decrease in breast cancer burden (due to national and regional efforts), there are rising incidence and declining survival rates of

breast cancer among SSA women, including Togolese women. Breast cancer is currently the second leading cause of death among SSA women (Bahnassy et al., 2020; Giaquinto et al., 2022), affecting more than 1 in 10 women (Sharma, 2019; Yedjou et al., 2019). Despite having the lowest incidence rate, SSA has the lowest breast cancer survival rate, less than 40% compared to more than 86% in developed nations (Anyigba et al., 2021; Vanderpuye et al., 2021; WHO, 2022b). This low survival rate is attributed to late-stage diagnosis due to a lack of screening (Sharma, 2021; Vanderpuye et al., 2021) and delays in seeking conventional medical help (patient delay), coupled with health system-related delay. Early diagnosis through screening and early help-seeking is vital to the better control and management of breast cancer (WHO, 2020) and survival improvement efforts (Khrouf et al., 2020; White et al., 2020). A longitudinal population-based study from Taiwan showed that prompt treatment following early detection, health-seeking, and diagnosis significantly increased breast cancer 5-year survival by 40% (Chen et al., 2015).

In SSA and Togo, most breast cancer cases (about 65%) are aggressive and are diagnosed at advanced stages: Stages III and IV (Darre et al., 2023; Joko-Fru et al., 2019; Vanderpuye et al., 2021), making treatment more expensive and less effective, translating to the observed poor breast cancer outcomes. Studies revealed significantly low levels of breast cancer screening and poor health-seeking behaviors (delayed health-seeking), resulting in late diagnosis and treatment among SSA populations. This lack of breast cancer screening and delayed health-seeking remain the main contributing factors to the high breast cancer burden in SSA. Studies revealed a significant delay in health-seeking

among SSA women, with most women seeking medical care an average of 4–24 months from the time they detect a change in their breast(s) (Agbeko et al., 2020; Ogunkorode et al., 2021).

Despite the significance of timely healthcare-seeking (following symptom detection either by routine screening or accidental) in the early diagnosis, treatment effectiveness, and improving survival rates, many SSA women face mounting challenges impeding their breast cancer health-seeking behaviors and ultimately their timely access and use of breast cancer diagnostic and treatment services (Gbenonsi et al., 2021; Moodley et al., 2021; Twahir et al., 2021). Identifying these challenges and how they influence timely access to breast cancer care services will help guide effective breast cancer interventions in the region and Togo. Inopportunately, in many SSA countries, including Togo, most existing breast cancer initiatives to promote access to breast cancer screening, diagnosis, treatment, and management and improved survival are either lacking or based on regional estimates or data from a few SSA nations.

Even though these regional estimates provide valuable comparative insights into the global and regional breast cancer profiles, they are less representative of SSA country-level and population-level profiles (due to the lack of adequate reporting systems in most SSA countries), ignoring the sociocultural, political, and demographical variations within and across SSA countries. For example, according to the WHO's 2020 cancer regional profile report, only 15% of SSA countries have a population-based cancer registry (Kagee, 2022). As a result, these regional estimates often inaccurately depict the breast cancer burden and outcomes in many SSA countries, resulting in ineffective breast

cancer interventions among many populations in this resource-limited region (Anyigba et al., 2021). Also, according to volume IX of the WHO publication on the global incidence of breast cancer, data submitted by 64.3% (9 out of 14) of African countries were unacceptable (poor quality and incomplete) (Azubuike et al., 2018). In addition to the regional estimates' inaccuracy (due to lack of or inadequate surveillance, reporting systems, and practices) reported in the literature, findings from country and population-specific studies further demonstrate these regional estimates' non-representativeness of national and community-level breast cancer burden and realities (Anyigba et al., 2021).

The wide gap between these estimates and country or population-specific data highlights the non-representativeness of these regional estimates. For example, drawing from institutional-based records and breast cancer registries (lacking in many SSA countries) across SSA in 2018, the age-standardized breast cancer incidence in SSA region was estimated at 17.3 per 100,000 women per year, one of the lowest globally (Adeoye, 2022; Sharma, 2021). This regional estimate sharply contrasts with country-specific incidence rates ranging from as low as 6.9 per 100,000 in Gambia to as high as 69.6 per 100,000 in Mauritius (Sharma, 2021).

Similarly, there is a wide gap between regional and country or population-specific 5-year survival rates. The SSA regional 5-year survival rate was estimated at 66% (between 2014 and 2017) compared to country-specific rates as low as 5% in Uganda and as high as 93.7% in Mauritius during the same period (Adeoye, 2022). Also, several multinational and comparative studies revealed significant disparities in breast cancer screening and health-seeking behaviors, as well as incidence and survival within and

across SSA countries. For example, in a multicounty, population-based registry study (using data from 12 SSA countries), Joko-Fru et al. (2020) reported a significant variation in population-level breast cancer survival rates within and across the study countries, with 5-year breast cancer relative survival ranging from as low as 11.1% in Uganda to 43.5% in Zimbabwe and 73.2% in Mauritius. Allemani et al. (2018) reported similar variability in breast cancer survival in a three-SSA countries study, with the age-standardized 5-year survival breast cancer estimates ranging from nearly 0% in Mali to 40.1 % in South Africa between 2010 and 2014. McCormack et al. (2020) also reported similar disparities in breast cancer survival rates, with 3-year survival ranging from 90% among Whites to 56% among Black Namibian women, 47% among Blacks in Uganda, and 36% among Blacks in Nigeria. These findings suggest geographical, social/ethnic, and contextual variations in risk factors and challenges these populations face (Joko-Fru et al., 2020a; Twahir et al., 2021).

Like breast cancer outcomes, disparities in breast cancer behaviors are reported by several studies. For example, a study by Moodley et al. (2021) reported a disparity in help-seeking among participants from South Africa and Uganda, with South African participants living in urban areas less likely to disclose their breast cancer symptoms to someone close (80.7%) but more likely to seek medical help earlier (in less than a week) (90.6%) than their counterparts in Uganda (vs. 86.2% and 83.0%).

Unfortunately, these observed inter- and intra-country disparities in breast cancer behaviors and outcomes in SSA have not been explored or assessed in many SSA countries, including Togo, at the population level (Joko-Fru et al., 2020b). Given the

geographical, socio-cultural, and genetic diversity of the SSA population, in addition to the unique health system and political context of each country, exploring these diverse factors at the population level and the extent to which they influence breast cancer behaviors, including anticipated time to help-seeking, is imperative to address the existing breast cancer disparities and curb the associated breast cancer burden in SSA countries and the SSA region at large.

Adequately identifying the unique challenges faced by the SSA population through breast cancer population-specific studies is vital to guide the design and implementation of appropriate and targeted interventions to improve timely access to breast cancer services (screening, health-seeking, diagnosis, and treatment) and survival rates, as well as to alleviate the socioeconomic burden associated with breast cancer among SSA women in general and Togolese women in particular. Several studies have identified demographics, sociocultural/ethnic, economic, geographical, health system, and policy factors as significant predictors of breast cancer behaviors in developed and developing nations. These factors include knowledge and awareness of breast cancer and its risk factors, knowledge and awareness of breast cancer screening, diagnosis, and treatment, attitudes and beliefs, financial hardship, residence, social network, breast cancer stigma, health care quality, and breast cancer policy (Caplan, 2019; Gbenonsi et al., 2021; Moodley et al., 2021; Twahir et al., 2021). These studies have shown a strong correlation between these factors and breast cancer behaviors (medical help-seeking and treatment uptake) and outcomes (incidence, prevalence, and survival). For example, higher breast cancer literacy (knowledge and awareness), positive attitudes toward breast



cancer (and screening for it), living in an urban residence, supportive social networks, and national breast cancer policies/programs (such as free screening and treatment in Namibia) are associated with higher rates of breast cancer screening, early diagnosis, and treatment uptake and completion (Forester et al., 2019; Ramathebane et al., 2022; Sakafu et al., 2022), whereas the lack of breast cancer literacy, negative attitudes and beliefs, poor quality of care, stigma and fear, living in a rural area, and lack of national breast cancer policies/programs (screening programs and investment) are associated with poor breast cancer care-seeking behaviors and outcomes (Darre et al., 2023; Frie et al., 2018; Meacham et al., 2016; Sakafu et al., 2022; Sharp et al., 2019). However, the variations in breast cancer care-seeking behaviors and outcomes seen in studies across populations suggest that differences exist regarding the significance of the impacts of these factors on breast cancer behaviors and outcomes, highlighting the need for population-specific studies to identify each population's unique set of factors that better explain its breast cancer care-seeking behaviors.

### **Togo: Country Overview and Breast Cancer Profile**

Togo is one of the 16 West African countries. It was a German protectorate until 1914 and a French colony from 1916 to 1960 (Britannica, 2023). Historically, the country has been tainted by more than two decades of political and economic instability since its independence in 1967. These political and economic instabilities have profoundly affected the country's health sector, which is marked by weak health systems and poor health outcomes across many health conditions, most notably breast cancer. Togo is a culturally, religiously, demographically, socioeconomically, and geographically diverse

country with about three dozen ethnic groups, each with unique social values and norms (Central Intelligence Agency [CIA], 2023). About 56% of its population lives in rural areas (USAID, n.d.), with limited access to health facilities, often unequipped or staffed with scientifically and culturally less knowledgeable and competent workforces, resulting in poor quality health care services. Despite the adoption of its mandatory health insurance scheme in 2011, the scheme is far from being materialized, leaving many without health coverage, resulting in extremely high out-of-pocket health expenses (Djahini-Afawoubo & Aguey, 2022), preventing many from seeking and accessing care when needed. Within the context of breast cancer, the country has one of the worst incidences of aggressive breast cancer and survival rates in the region, with most cases diagnosed at stage three (55.10 to 69.4%) and four (30.6%) (Darre et al., 2021, 2023) and an age-standardized mortality rate of 16 deaths per 100,000 population in 2020 (International Agency for Research on Cancer [IARC], 2020). Due to limited access to health care for many women (those who are socioeconomically deprived and living in rural areas) and the healthcare system's lack of diagnosis and surveillance capacity, these estimates are probably lower than this population's actual breast cancer burden. Nonetheless, these estimates provide some insight into the Togolese women's breast cancer burden and call for the need for more population-level studies to assess better and address the breast cancer-associated challenges these women are facing.

Despite this population's alarming breast cancer burden, there is a significant knowledge gap regarding the factors explaining the country's breast cancer profile. This study sought to fill this gap, elucidate the country's breast cancer profile, and improve

breast cancer survival (through early screening and timely health-seeking) by identifying factors associated with the anticipated time to medical help-seeking behaviors among Togolese women 18 years and older. Breast cancer screening and timely health-seeking (shorter patient delay) are crucial to improving survival and reducing breast cancer burden in this population. The findings of this study have the potential to guide the design and implementation of culturally acceptable and socioeconomically effective breast cancer prevention, diagnosis, and treatment programs and policies in Togo aimed at increasing early detection of the disease and timely access to breast cancer care services.

### **Statement of the Problem**

Breast cancer is currently the most diagnosed cancer (15.3% of all cancers) and the second leading cause of death (10.5% of all cancer deaths) among SSA and Togolese women (WHO Cancer Regional Profile, 2020). Despite the low incidence of breast cancer among SSA women, they have the highest mortality and the lowest survival rates (Azubuike et al., 2018), with SSA women two times more likely to die from breast cancer than their counterparts in developed nations (Meacham et al., 2016). Also, there has been a rise in breast cancer in SSA in recent years (Azubuike et al., 2018; Joko-Fru et al., 2020), as has been the case with socioeconomic burden, with a significant part of this burden being endured by families and local communities whose cases, in most instances, rarely catch the attention of national and international policymakers and stakeholders (Azubuike et al., 2018). Togolese women are one of the SSA populations significantly affected by breast cancer, with age-standardized breast cancer incidence, prevalence, and mortality rates of 30.7, 38.4, and 16 per 100,000 women in 2020, respectively

(International Agency for Research on Cancer, 2020). The actual breast cancer burden is probably more alarming than reported due to the lack of a breast cancer registry and inadequate breast cancer diagnosis and reporting practices.

This disproportionately high breast cancer burden in SSA and Togo is attributed in part to the delay in seeking medical help, explaining the late diagnosis of the disease at advanced stage and the poor prognosis (Akuoko et al., 2017; Darre et al., 2023, Foerster et al., 2019), with most women waiting on average 4 to 24 months from the initial identification of symptoms to seek medical help (Sakafu et al., 2022). This delayed medical help-seeking among SSA women is, in turn, attributed to various socioeconomic, geographic, healthcare system, cultural, and political barriers (Gbenonsi et al., 2021; Moodley et al., 2021; Twahir et al., 2021). Like the disparities in breast cancer behaviors and outcomes in SSA, studies also revealed disparities in these factors across other populations and countries (Bauer et al., 2023; Moodley et al., 2020). Considering these disparities, researchers have recommended further population-specific studies to assess the actual breast cancer challenges of SSA populations, guide effective breast cancer interventions, and address the observed disparities. Also, despite many studies that have extensively explored the above barriers across the SSA region, little or no research has been conducted regarding medical help-seeking behaviors and the anticipated time to seek medical help among the general population of women in Togo. Most published studies in this population focused on clinical (pathological) descriptions of breast cancer cases and were conducted either among women living with breast cancer or healthcare workers (HCWs) and failed to provide a more comprehensive socio-ecological

perspective on the several factors that might prevent those at risk from adopting healthy breast cancer health-seeking behavior.

The increase in breast cancer burden in SSA and Togo, coupled with the lack of population-specific research on factors explaining health-seeking behaviors (which resulted in advanced-stage presentation and delayed diagnosis and treatment), triggered the need for this study, which aimed to explore factors affecting Togolese women's anticipated time to medical help-seeking from a socio-ecological perspective. The findings from this study can potentially help guide effective breast cancer prevention and management interventions and policies to improve breast cancer care uptake, reduce its incidence, improve its survival, and avert breast cancer-related premature death among Togolese women.

### **Purpose of the Study**

Despite the considerable number of studies on breast cancer screening and treatment in SSA, the literature review revealed the lack of population-level data, not only breast cancer statistics but, more importantly, data on factors impeding SSA women's willingness to seek medical help early for breast cancer symptoms in many SSA countries, including Togo. To the researcher's knowledge, there is little to no research investigating Togolese women's anticipated time to seek medical help for breast cancer symptoms.

Considering this literature gap, this quantitative study aimed to examine the socio-ecological factors that impact the anticipated time to seek medical help among Togolese women aged 18 years and older at the time of the study. The study (a) assessed the

current level of breast cancer knowledge and screening, (b) assessed the participants' anticipated time to seek medical help for a potential breast cancer symptom, from symptom detection to the first medical consultation attempt, and (c) determined the relationship between anticipated time to help-seeking behaviors and several socio-ecological factors. The dependent variables were current breast cancer screening behavior, breast self-examination (BSE), and the anticipated time to seek medical help. The independent variables were sociodemographics (age, educational attainment, income, marital status, employment, religion, ethnicity, residence), breast cancer literacy (knowledge and awareness), social support, breast cancer stigma, and the healthcare system's trustworthiness. Identifying factors that impede Togolese women's early health-seeking behavior (and consequently early breast cancer diagnosis and treatment) could potentially help inform and guide effective and socioculturally acceptable public health interventions targeting primary, secondary, and tertiary breast cancer prevention and ultimately improve survival among Togolese women. These public health breast cancer prevention initiatives could then target breast cancer literacy improvement and lifestyle behavior changes (primary prevention), breast cancer screening and prompt access to healthcare services (secondary prevention), timely diagnosis and treatment, and patient support systems (tertiary prevention). Additionally, the findings from this study could generate relevant contextual breast cancer knowledge, which could potentially guide and inform policymakers in their efforts to develop and implement breast cancer policies to promote early access to healthcare services, such as incorporating breast health and breast

cancer services into routine primary care services, investing in breast cancer training for HCWs, and increasing healthcare infrastructure capacity building.

### **Research Questions and Hypotheses**

Considering the correlation between breast cancer's rising incidence, declining survival, and delayed diagnosis in SSA, including Togo, this study aimed to assess factors contributing to Togolese women's anticipated time to medical help-seeking behaviors, using the socio-ecological model (SEM) as the theoretical framework. The following research questions (RQs) and hypotheses helped guide this study and achieve its aim.

RQ1: Is there an association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women?

*H<sub>01</sub>*: There is no statistically significant association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women.

*H<sub>11</sub>*: There is a statistically significant association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women.

RQ2: Is there an association between social support and the anticipated time to medical help-seeking among Togolese women?

*H<sub>02</sub>*: There is no statistically significant association between social support and the anticipated time to medical help-seeking among Togolese women.

*H<sub>12</sub>*: There is a statistically significant association between social support and the anticipated time to medical help-seeking among Togolese women.

RQ3: Is there an association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women?

*H<sub>03</sub>*: There is no statistically significant association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women.

*H<sub>13</sub>*: There is a statistically significant association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women.

RQ4: Is there an association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women?

*H<sub>04</sub>*: There is no statistically significant association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women.

*H<sub>14</sub>*: There is a statistically significant association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women.

A detailed conceptualization and operationalization of these variables, which were measured as categorical variables for analytic simplicity, is provided in Chapter 3.

### **Theoretical Foundation**

Considering the complex context of the factors impacting health behavior, I used the SEM as the theoretical framework for this study. Unlike the health belief model (HBM), which focuses on individual factors, the SEM framework provides a more comprehensive and broader scope of the complex and multifaceted nature of factors influencing breast cancer behaviors, including anticipated health-seeking time.

### **Theoretical Foundation of the Socio-Ecological Model**

Considering the multifaceted nature of breast cancer health-seeking behaviors, the SEM provides the best-fitting theoretical (as well as practical) framework to understand



better these behaviors from micro-, macro-, and chronosystem contexts. It is one of the most widely used health behavior theories. Urie Bronfenbrenner initially developed SEM in the 1970s to explain and understand human development (Kilanowski, 2017). It was later used to explain the interactive multiple-level influences of the various systems (microsystem, macrosystem, and chronosystem) on health behaviors (Kilanowski, 2017). It is a multi-level conceptualization of health resulting from the interaction between intrapersonal, interpersonal, organizational, environmental, and public policy factors (Scarneo et al., 2019).

This multilevel conceptualization supports the multidimensionality and multi-contextuality of health behaviors (Scarneo et al., 2019). According to the SEM, an individual's health is significantly influenced by the complex interaction between features of the individual, the community, and the physical, social, and political environments (Centers for Disease Control and Prevention [CDC], 2022; Kilanowski, 2017), with factors at each level having different degrees of influence from one individual to another. Utilizing this SEM framework provided more comprehensive knowledge about how the diverse micro- and macrolevel factors and their interaction impact breast cancer screening, diagnosis, and treatment uptake. Details of how the SEM framework applies to this study are explained in Chapter 2.

### **Nature of the Study**

To achieve the aim of the current study, a descriptive, quantitative, cross-sectional survey was conducted. A cross-sectional design was preferred over a longitudinal design due to the time and resource constraints. Unlike a qualitative design (which offers

participants' subjective views on the matter), a quantitative design provides an objective statistical assessment of the relationship between the dependent and independent variables. Also, a quantitative design helped assess the prevalence of breast cancer knowledge and practices (e.g., anticipated health-seeking interval) and detect patterns and differences in these factors between various groups within the study population.

Considering the study objectives, a quantitative design was a better-fitting design than a qualitative design, which would have been preferred if the focus were on understanding how these factors contribute to health-seeking time among the target population. A mixed design would have given a complete picture of the study population's breast cancer screening and health-seeking profiles and its challenges. However, given this design's time and resource constraints, it was decided not to pursue this route. Also, the study was correlational and not causal; therefore, a cross-sectional design aligned better with this study's objective to assess breast cancer screening (BSE) behavior and factors associated with the anticipated time to medical help-seeking among the target population.

Primary data were collected using a questionnaire from at least 243 Togolese women 18 years and older, randomly selected from five conveniently chosen major cities in Togo. Data were analyzed using multiple logistic regression to objectively assess participants' anticipated time to seek medical help as a function of the various independent variables: socio-demographics (age, educational attainment, income, marital status, employment, religion, ethnicity, and residence), breast cancer literacy (knowledge and awareness), social support, breast cancer stigma, and the healthcare system trust.

### **Definitions of Terms**

The following are the definitions of terms used throughout this study:

*Anticipated help-seeking behavior:* This outcome variable refers to an individual's willingness to seek medical or alternative (traditional) help and the anticipated time it will take participants to seek conventional medical help from the moment they notice or suspect the first symptom of breast cancer. Anticipated time to medical help-seeking is the time interval from when an individual detects a change in her breast(s) (a potential breast cancer symptom) to her first attempt to seek a consultation with a conventional health care professional or health facility for the symptom.

*Breast cancer awareness:* Consciousness, perception, or knowledge of breast cancer, its risk factors, screening types, purpose, diagnosis, and treatments.

*Breast cancer literacy:* At the individual/intrapersonal level, breast cancer literacy refers to participants' knowledge and awareness of breast cancer, its risk factors, and its symptoms. It will assess participants' ability to recognize/identify breast cancer risk factors and signs.

*Breast cancer screening:* The preventive means of assessing a woman's breast for cancer before signs or symptoms appear. It can be done by self-examination, clinical breast examination, mammography, or magnetic resonance imaging (MRI).

*Breast cancer stigma:* Health stigma is a multidimensional and socio-cultural/ethnic phenomenon that relates to the negative attitude individuals and the society at large display toward a health condition and/or those suffering from a health condition.

*Breast imaging:* The type of diagnostic radiology that uses either x-ray technology to produce 2D (mammography) or 3D (tomosynthesis) images of the breast; ultrasound waves (breast ultrasound) to create images of the breast; or low-dose radioactive compound (molecular breast imaging or breast-specific gamma imaging) to examine the physiology of the breast tissue (Iranmakani et al., 2020). It is used for screening and diagnostic purposes.

*Chemotherapy:* A type of treatment that uses drugs to stop the growth of cancer cells by either killing or stopping them from dividing (NCI, n.d.).

*Healthcare system trust (or trustworthiness):* An organizational quality referring to the healthcare system or institution's professional and ethical competence, reliability, credibility, and dependability in delivering care as expected by patients and the public (Katapodi et al., 2009).

*Hormone therapy:* A type of breast cancer treatment that slows or inactivates the growth of hormone-sensitive (having hormone receptors) cancer cells by blocking or interfering with the organism's ability to produce hormones or the effects of the hormones on cancer cells (National Cancer Institute [NCI], 2022).

*Internalized stigma or self-stigma:* When a person with a stigmatized disease applies the negative public stigma associated with the disease to him/herself (Corrigan & Watson, 2002).

*Invasive ductal carcinoma:* The most common type of breast cancer that starts in the milk ducts that carry milk from the lobules to the nipple and spreads to the surrounding breast tissue (Breastcancer.org, n.d.).

*Mastectomy*: a type of breast cancer treatment that involves surgically removing part or all the breast (NCI, n.d.2.).

*Social support*: A broad multidimensional construct that defines any process through which the various interpersonal social relationships enhance health and well-being by providing tangible and informational assistance or emotional comfort (Leahy-Warren, 2014; Haugan & Erikson, 2021).

*Socio-ecological model (SEM)*: A theoretical framework that recognizes individuals' health behavior as being influenced not by a single but by a complex range of interactive social and environmental factors.

*Spiritual healing*: An alternative and complementary medicine that uses the power of faith and prayer to heal (Rafii et al., 2020).

*Traditional/herbal medicine*: Culture-specific health practices, approaches, knowledge, and beliefs that use plant, animal, and mineral-based medicines, spiritual rituals, manual techniques, and exercises (either alone or in combination with conventional medicine) to prevent, diagnose, and treat disease (Fokunang et al., 2011).

*Triple-negative (breast cancer)*: A type of breast cancer where the malignant cells lack the three receptors (Human epidermal growth factor receptor- HER2, estrogen receptors- ER, and the progesterone receptors- PR) commonly found in breast cancer, making them less responsive to treatment (CDC, 2022; Yin et al., 2020).

### **Assumptions**

Given the study's cross-sectional, self-reported survey scope, it was assumed that the self-reported data on the variables of interest were valid and reliable (bias-free). It

was also assumed that the data collection instrument captured the variables of interest as intended.

The recognition of changes in the breasts as breast cancer symptoms and the perceived severity of these symptoms of breast cancer are assessed and proven by several studies to impact health-seeking behavior among breast cancer patients significantly (Agbokey et al., 2019; Bonsu & Ncama, 2019; Kisiangani et al., 2018). Since the current study only assessed the interval of time participants anticipated seeking medical help from the time they discovered change(s) in their breasts without evaluating the influence of the recognition of changes in the breast as breast cancer symptoms and perceived severity, it was assumed that all participants would recognize the changes in their breasts as possible breast cancer symptoms severe enough to trigger health-seeking decision-making.

### **Limitations**

This was a cross-sectional study based on self-reported data; therefore, there was a possibility of recall and social desirability biases as a result of participants perhaps not remembering previous events or providing invalid answers (ones that society expects rather than their actual views/behaviors) to questions on socially sensitive topics or behaviors; potentially undermining the validity and reliability of the findings. To minimize self-reporting data-associated bias, the data collection will be validated before implementing it for data collection, and a shorter or stratified recall period will be used when evaluating participants' recall of time-related variables. Additionally, avoiding

using emotionally charged language, mixing up different topic questions, and avoiding double-barreled questions can help minimize information bias.

Also, the quantitative cross-sectional design of the study limits any inference of a causal relationship between the dependent variable(s) and the independent variables. In other words, if such a relationship exists, this study's cross-sectional design does not enable the study to explain the relationship between the identified factors and participants' anticipated medical help-seeking interval. Therefore, a qualitative approach will be recommended for future studies.

Another potential limitation was the possible multilevel conceptualization of some of the study variables of interest. Assessing only one of the multiple levels of conceptual definitions may have excluded unmeasured relevant construct dimensions with a potentially significant effect on the outcome variable(s), potentially undermining the reliability and validity of the study findings. This limitation is also addressed in the discussion section, where the findings are placed within the study's specific context and interest that guided the unique conceptualization of each variable or construct.

Additionally, due to the significant ethnic diversity of the Togolese population with about 37 ethnic groups (The World Factbook, 2023), it was challenging to recruit a sample representative of all these ethnic groups, therefore limiting the external validity of the study findings to the entire Togolese population. Moreover, the study aimed to assess non-breast cancer patient (healthy or presumably asymptomatic) participants' self-predicted (or anticipated) future behavior (anticipated time to seek medical care) following the detection of breast cancer symptoms. There is a possibility that when the

symptoms (changes in the breasts) occur (with other unforeseeable circumstances), participants' actual behavior might not be the same as anticipated; therefore, it might limit the credibility of the findings. To address this limitation, future studies exploring the anticipated breast cancer health-seeking behaviors should consider a retrospective case-control study design or a prospective cohort design to capture participants' reactions/behaviors to breast cancer symptoms as they occur.

### **Scope and Delimitations**

The study was limited to Togolese women aged 18 years and older living either in urban or rural areas from five major regions of the country. To avoid potential outliers, HCWs (who might be sensitized by their professional knowledge and practices on breast cancer and have access to care) were excluded. Also, those with a history of breast cancer were excluded.

The findings of this study can shed light on factors influencing breast cancer screening and anticipated health-seeking behaviors among Togolese women and guide the design and implementation of effective and culturally acceptable evidence-based interventions to increase breast cancer prevention and timely diagnosis and treatment to reduce breast cancer- associated health and socioeconomic burden among this population.

### **Significance of the Study**

Findings from the study will be used to design and implement effective and targeted public health interventions and policies to reduce the breast cancer burden and improve the health of women in Togo. It aligned with the objectives of Millennium



Development Goals 4 and 5, which are to reduce child mortality and improve maternal health.

This study also has the potential to impact positive social change by assessing the barriers to breast cancer screening and guiding effective population-specific public health interventions and policies to promote breast cancer screening and improve Togolese women's health and that of their children, families, and communities. Women and their health play a pivotal role in the socioeconomic well-being of their families, communities, and nations. Improving the uptake of breast cancer screening can save many lives that are lost prematurely. Doing so can contribute to economic development and social stability, lacking in many SSA families, communities, and nations.

Additionally, this study has the potential to promote health equity and social justice by helping address the breast cancer disparity affecting SSA women, with some population groups not having equal access to breast cancer screening.

Moreover, breast cancer constitutes a barrier to female education in SSA as many young girls are obliged to abandon school and care for their ill mother or take on household roles and responsibilities their sick mother can no longer assume or in case of death (Azubuiké et al., 2018). Therefore, by informing early health-seeking public health initiatives to promote early diagnosis and prevent poor outcomes (morbidity and mortality), this study can help address the gender gap in education and associated gender inequality in Togo and SSA. In brief, the findings of this study will help advance public health knowledge and practice regarding breast cancer screening, diagnosis, and

treatment, reducing the breast cancer burden among Togolese women by enabling effective population-based breast cancer interventions.

### **Summary**

Breast cancer remains a pressing global public health challenge in SSA, mainly due to its rapidly increasing incidence and mortality rates in the region. However, evidence from developed nations showed that early detection through screening coupled with early diagnosis and adequate treatment regimens can significantly reduce the disease burden and improve survival. Unfortunately, in SSA (including Togo), there is a significant lack of breast cancer screening and delay in seeking medical help, resulting in late-stage and more invasive disease at diagnosis, poor outcomes, and premature deaths. While these breast cancer behaviors (poor screening uptake and delayed health-seeking) in SSA are attributed to the various demographic, sociocultural, and health system challenges, several studies revealed not only disparities in breast cancer burden but also and, more importantly, pertinent variations in breast challenges (barriers) within and across SSA countries, suggesting the need for population-specific studies to assess the breast cancer reality of SSA populations and guide socioculturally acceptable and effective evidence-based breast cancer prevention, diagnostic, treatment and management efforts.

Considering this literature evidence, using a SEM as a framework, this quantitative cross-sectional study aimed to examine the relationship between the various micro- and macrosystem factors and breast cancer screening uptake and anticipated time to seeking medical health for suspected breast cancer symptom(s) among Togolese

women. Details of the existing literature on factors driving breast cancer behaviors, practices, and burden among SSA countries, as well as a comprehensive description of the SEM framework, are provided in Chapter 2. Chapter 3 will discuss the research methodology used to collect and analyze the data. Chapter 4 will discuss the data collection technique/process, data analysis, and results. Chapter 5 will conclude the study with the interpretation of the results of the data analysis, a discussion of the findings, the practical social change implications, and the conclusions drawn from the study's findings.

## Chapter 2: Literature Review

### **Introduction**

This study was conducted to explore the numerous factors that influence breast cancer screening and the anticipated medical help-seeking behaviors among Togolese women from a socio-ecological perspective. Achieving this aim required a review of the existing bodies of knowledge about breast cancer and these factors to better understand the scope and context of such knowledge and identify potential gap(s) that this study could attempt to fill and inform evidence-based breast cancer prevention and management strategies in Togo and SSA.

As the most diagnosed cancer globally, breast cancer remains a significant public health challenge and priority for middle and low-income countries and SSA countries, which bear the highest portion of the global breast cancer burden. Despite having the lowest incidence of breast cancer, SSA, including Togo, had the lowest breast cancer survival compared to developed nations. SSA women are 50% more likely to die from breast cancer than those in developed countries (Vanderpuye et al., 2021). Prevention (through systematic screening), diagnostic, and treatment efforts have improved survival rates in developed nations. Nevertheless, developing countries, and SSA in particular, are experiencing an alarmingly lower survival rate due to delayed presentation, diagnosis, and treatment of the disease, consequent of lack of effective screening, timely health-seeking, and diagnostic and treatment promotion initiatives, respectively.

Early screening and timely health-seeking are the most effective ways to improve breast cancer survival. The earlier the breast cancer is detected, the easier, cheaper, and

more effective it is to treat it. Once the cancer cells expand to more tissues and metastasize to other organs, treatment and management become more complex, ineffective, and costly, drastically reducing survival from 90% (5-year survival rate among non-metastatic breast cancer) to 28% (5-year survival of metastatic breast cancer (American Cancer Society [ACS], 2023)). This explains the observed correlation between advanced disease, poor prognosis, and high breast cancer mortality among SSA women. Despite the significance of early screening and health-seeking for managing breast cancer, studies revealed significantly lower breast cancer screening and delayed healthcare-seeking among SSA populations (Akuoko et al., 2017; Black & Richmond, 2019; Espina et al., 2017; Kohler et al., 2017; Lombe et al., 2023; Scheel et al., 2018; Togawa et al., 2021). This lack of breast cancer screening and delayed healthcare-seeking and delayed diagnosis, resulting in advanced-stage diagnosis, remain the main contributing factors to the high breast cancer burden in SSA and the disparity in survival between developing and developed nations (Black & Richmond, 2019; Pace & Shulman, 2016). The challenge generated by the systemic lack of breast cancer screening and delayed health-seeking among these SSA population is further compounded by the low availability and uptake of breast cancer management and treatment modalities (Foerster et al., 2019; Vanderpuye et al., 2017). Also, many multinational and comparative studies revealed significant disparities in breast cancer care (screening, health-seeking, and treatment) behaviors and breast cancer outcomes (morbidity, mortality, and survival) within and across SSA nations (Anyigba et al., 2021; Akuoko et al., 2017; Chasimpha et al., 2022; McCormack et al., 2020; McKenzie et al., 2016). Additionally, studies have

revealed variations in factors contributing to these breast cancer behaviors (screening, health-seeking, and treatment uptake) and outcome disparities. These observed disparities suggest the need for population-specific breast cancer data to assess population-level breast needs and challenges. Identifying and understanding these various population-level factors (needs and challenges) impacting breast cancer screening and timely health seeking is imperative to better understanding the breast cancer burden SSA women face and guiding practical and effective breast cancer prevention, management, and treatment initiatives and policies, at local, community, and national levels.

This literature review highlights current knowledge about breast cancer prevention practices, notably screening and timely health-seeking. The literature review also aims to compile evidence on the broader sociocultural, environmental, and structural factors or challenges that influence SSA women's breast cancer behaviors.

### **Literature Search Strategy**

A comprehensive review of the literature was conducted using keywords to retrieve relevant peer-reviewed publications from recent years (preferably the past 5 years from the time of this study) and other health and public health reports (reviews, factsheets, summaries) from several databases, including Google Scholar, PubMed, Medline, CINAHL EBSCO, and the Walden University Library. The keywords used to locate the relevant articles included *breast cancer burden in SSA, breast cancer screening among SSA and/or Togolese women, breast cancer screening and/or health-seeking practices in SSA and/or Togo, breast cancer epidemiology in SSA and/or Togo, delayed presentation of breast cancer, advanced breast cancer, patient interval in breast cancer,*

*breast cancer care pathway, and breast cancer disparities in SSA and/or Togo.* In addition to the peer-reviewed and the publication time (within the last 5 years), the inclusion criteria also expanded to studies or publications related to breast cancer (knowledge, screening, health-seeking, diagnostic, and treatment) among the target population (African, SSA or Togolese women) that were published in English.

Publications that did not meet the inclusion criteria—were published in non-English language, conducted in non-SSA populations, not related to breast cancer, nor the target population (Togolese women)—were excluded from this review.

This literature review includes the study's theoretical framework, an elaborate description of breast cancer screening and health-seeking behaviors and practices in the SSA and Togo, and associated factors and disparities across and within SSA countries. This comprehensive review of the literature about breast cancer in SSA will shed light on the region's breast cancer profile and factors associated with health-seeking among SSA and Togolese women and demonstrate the literature gap that prompts this study's need.

## **Theoretical Framework**

### **Socioecological Model**

Like many other health behaviors, breast cancer screening and health-seeking behaviors are complex and multifaceted constructs that expand beyond the individual's context. Considering this multifaceted nature of breast cancer screening and help-seeking behaviors (and practices), the SEM provides the best-fitting theoretical (as well as practical) framework to understand better these behaviors from micro-, macro-, and chronosystem contexts. It is one of the most widely used health behavior theories. Urie

Bronfenbrenner initially developed SEM in the 1970s to explain and understand human development (Kilanowski, 2017). It was later used to explain the multiple levels of interactive influences of the various systems (microsystem, macrosystem, and chronosystem) on health behaviors (Kilanowski, 2017). It is a multilevel conceptualization of health resulting from the interaction between intrapersonal, interpersonal, organizational, environmental, and public policy factors (CDC, 2022e; Rural Health Information Hub, n.d.; Scarneo et al., 2019). This multilevel conceptualization supports the multidimensionality and multi-contextuality of health behaviors (Scarneo et al., 2019). According to the SEM, individuals' health and health behaviors are significantly influenced by the complex interaction between features of the individual, interpersonal, the community, and the physical, social, and political environments (CDC, 2022; Kilanowski, 2017), with factors at each level having a different degree of influence from one individual or community/population to another. Utilizing this SEM framework provided more comprehensive knowledge about how the diverse micro- and macrolevel factors and their interaction impact breast cancer screening, diagnosis, and treatment uptake.

From the SEM perspective, women's willingness to screen for breast cancer and timely seek medical help are factors of the balance between barriers they must overcome and the support they receive at all levels. Barriers include low SES, lack of knowledge and awareness, body image, negative or lay beliefs and misconceptions about breast cancer (at the individual level), the lack of spousal or familial support (at the intrapersonal level), unavailable and inaccessible breast cancer care services, high cost of



care, inadequate and poor quality services, lack of supply and trained staffs (at the organizational level); social stigmatization of breast cancer, gender role, cultural and religious beliefs and practices (at the societal level), and the lack of breast policies, such as funding of breast cancer care services to train HCWs and supply healthcare facilities (at the policy level). On the other hand, examples of support range from high SES, knowledge, and awareness to positive attitudes toward breast cancer (intrapersonal level), spousal and familial support (intrapersonal level), accessible, available, and quality breast care services (organizational level), societal norms and culture supportive of modern medicine (societal/community level), trained HCWs, and funded breast cancer programs (policy level). The willingness to screen for breast cancer and seek timely medical help for potential or suspected breast cancer symptom(s) is determined by which side the balance (between barriers and supports) is tilted for the individual, group of individuals (community), or population. If barriers outweigh support, the likelihood of uptake of preventive breast cancer care (screening) and seeking timely medical health care decreases.

On the other hand, in circumstances where the supports (facilitators) outweigh the barriers, willingness to screen and promptly seek medical help would increase. As previously noted, the weight of each factor and level depends on each individual or group. For example, even if an SSA woman is aware of breast cancer, has a supportive social circle, and has access to breast cancer care services, her willingness to seek and utilize these services may be halted by the perceived poor quality of these services combined with her cultural and religious beliefs that might value traditional herbal

medicine and spiritual healing over modern medicine. Similar circumstances might result in better health-seeking behavior for another individual if the perceived quality of breast cancer care service is higher (despite her cultural inclination toward traditional herbal medicine).

### **Application of Theories Used in Previous Studies**

Previous studies have used several social and health theories explicitly or implicitly to describe breast cancer behaviors and associated factors among SSA women. Like any other health behavior, breast cancer behavior is a complex and multifaceted phenomenon implicating and influenced by drivers and intertwined multilevel factors. This complexity of breast cancer behavior is evidenced and reflected by the diversity in theoretical and conceptual frameworks used in the existing literature to explain and understand breast cancer behaviors, burdens, and challenges among SSA women. Most studies on breast cancer in SSA recognized the plurality and multidimensional context of breast cancer behavior and influencing factors by adopting a broader socioecological theoretical approach (Agbeko et al., 2020; Akinyemiju et al., 2022; Akuoko et al., 2017; Brown et al., 2018; Gbenonsi et al., 2021; Ilaboya et al., 2018; Khakbazan et al., 2014; Kohler et al., 2017; Sanuade et al., 2018). Several authors (Akinyemiju et al. 2022; Foerster et al., 2019; Kohler et al., 2017; McKenzie et al., 2018; McCormack et al., 2020) have used this socioecological framework to investigate and explain inequities in breast cancer treatment uptake (in Uganda, Nigeria, and Namibia), breast cancer awareness in SSA, breast cancer survival in SSA, breast cancer prevention, and early breast cancer detection in SSA, respectively. A similar theoretical approach was used or implied by

Akuoko et al. (2017), Sanuade et al. (2018), Agbeko et al. (2020), and Ilaboya et al. (2018) to explain barriers to early presentation of breast cancer among SSA women, causes of breast cancer treatment delays in Ghana, breast cancer health-seeking, and perceived barriers to early detection of breast cancer among Ugandan women, respectively. Using the SEM, these authors demonstrated that whether a woman adopts preventive breast cancer behavior, her willingness and self-efficacy or ability to undertake breast cancer screening, seek help, access breast cancer care services, or uptake these services is the result of the interplay between factors from the five SEM levels.

In addition to the SEM, the HBM was used or implied by several authors, such as Kohler et al. (2017), Akuoko et al. (2017), Ogunkorode et al. (2021), Agatha Ogunkorode et al. (2021), and Brown et al. (2018), to underscore the significance of individual-level behaviors and factors (perceived barriers, perceived susceptibility, perceived severity, and cues to action, self-efficacy) that explain the poor breast cancer behaviors (lack of screening uptake, delayed health-seeking, use of traditional/herbal medicine) and outcomes among SSA women.

The care pathways theory is another theoretical approach used (explicitly or implicitly) by several authors, like Frie et al. (2018), Bonsu et al. (2019), and Mwaka et al. (2021) to describe and evaluate the sequence of the healthcare stages SSA women navigate through from breast cancer detection to treatment. According to the care pathway theory, SSA women experienced four intervals (symptom appraisal, help-seeking, diagnosis, and pretreatment) in their journey to breast cancer treatment (Mburu et al., 2021; Bonsu et al., 2019; Mwaka et al., 2021).

Other theoretical frameworks used include critical feminism (Tetteh, 2017) and the theory of planned behavior (TPB) (Harries et al., 2020; Khakbazan et al., 2014). Tetteh et al. (2017) used the critical feminism theory to explain how the gender roles and the sexual objectification of breast cancer influence SSA women's breast cancer screening, conventional medical help-seeking, and treatment uptake. On the other hand, the TPB was used by Harries et al. (2020) and Khakbazan et al. (2014) to investigate and understand how SSA women's attitudes toward breast cancer (its risk factors, symptoms, and treatment), the social subjective norms related to breast cancer in the communities in which they live, and their perceived behavioral control or self-efficacy (Bosnjak et al., 2020) influence and shape their breast cancer screening, help-seeking, and treatment uptake behaviors.

HBM, TPB, and critical feminism (to some extent) focus on individual-level factors, placing the individual at the center of the blame for their health conditions. Unlike the TPB and HBM, the socioecological and care pathway theories consider health behavior's broad and multidimensional scope beyond the individual-level factors. Few studies (Lilian et al., 2020; Ziegenhorn et al., 2020; Darre et al., 2021; Bah et al., 2020; Bray et al., 2022; Amadou et al., 2021) lacked theoretical or conceptual frameworks.

### **Rationale of the SEM Theoretical Framework for the Study**

The rationale for using the SEM framework for the current study was drawn from the extensive application of the socio-ecology model theory in health behavior studies to assess barriers to disease prevention, help-seeking, and healthcare utilization. The current study aimed to utilize this multi-level influence concept to identify and understand factors

beyond individual scope or level that explain breast cancer screening and anticipated time to medical help-seeking behaviors among the general population of Togolese women. Unlike many other behavior health theories that put individuals at the center of health behaviors and responsibilities without accounting for the influence of the broader sociocultural, political, and physical environments in which they live, the SEM provides a better scope for analyzing and understanding the extent and magnitude of these broader environments, which are often out of the individual's control, yet predispose them to disease risks, shape their health behaviors and define their health outcomes.

Indeed, an individual's health and health behaviors at any given time and point are not merely the individual's attribution and responsibilities but a reflection of the interactive and cumulative result of experiences and circumstances throughout time within specific sociocultural, medical, and physical settings or contexts (Short & Mollnorn, 2015). Viewing breast cancer health behaviors through the lenses of the SEM allows a more holistic view and understanding of individuals' breast cancer behaviors and the social determinants that influence these behaviors. From a practical perspective, the SEM framing of this study can guide upstream breast cancer prevention and management within the target population. Using the SEM as a theoretical framework allowed me to assess the various level-specific factors and their influence on the anticipated time to seek medical help for known (or suspected) breast cancer symptom(s). In addition to guiding the literature review, this theoretical framework will guide the study's variables, and the data mirrored the SEM levels (individual, interpersonal, organizational, community, and policy levels). At the individual level, Togolese women's

breast cancer literacy and sociodemographic characteristics will be assessed, while social support, trust in the healthcare system, and breast cancer stigma will be the objects of the intrapersonal-, organizational- and society-level factors assessment. For the current study, the policy-level construct was not explored.

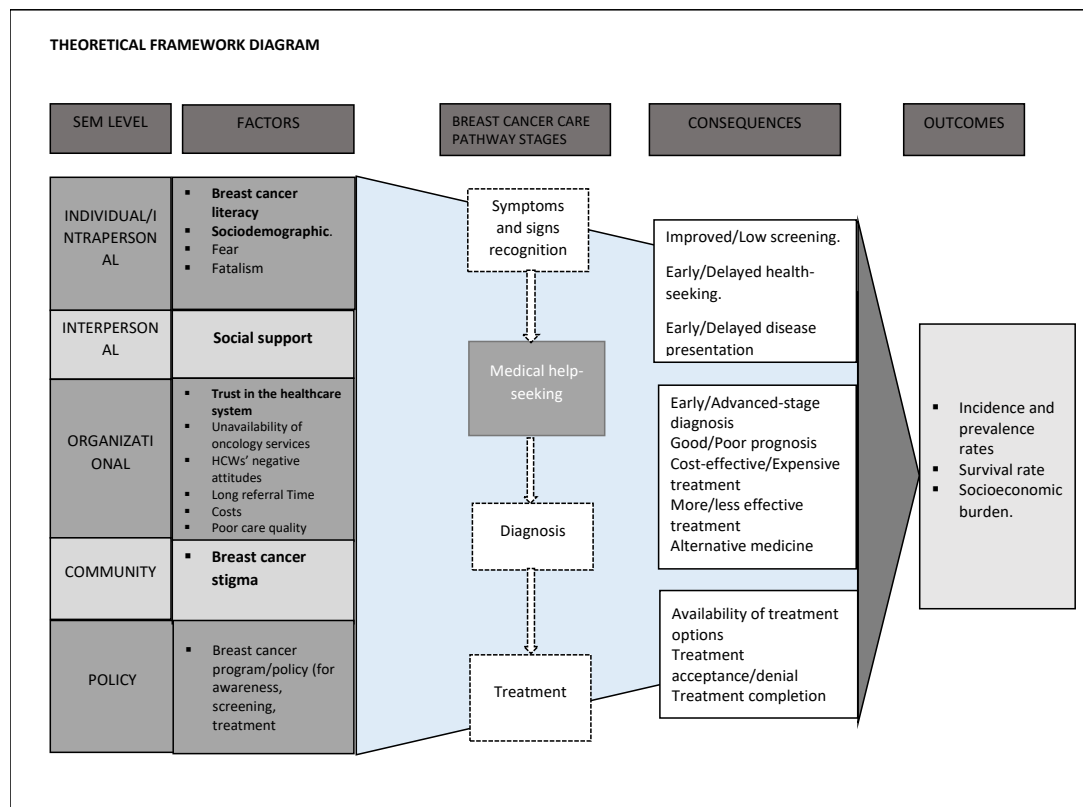
Table 1 summarizes the alignment between the study variables and the SEM.

Figure 1 visually illustrates the SEM theoretical approach to assessing and understanding the numerous factors impacting the anticipated time to seek breast cancer medical help among SSA and Togolese women. The diagram in Figure 1 depicts the SEM levels, associated factors, their influence on health-seeking behavior (and other steps of the care pathways), and the overall impact on breast cancer outcomes among SSA women.

**Table 1**

*Summary of the Alignment Between the Study's Theoretical Framework and Variables*

Independent variables	Associated SEM level	Dependent variables
Sociodemographics (age, income, education, residence, ethnicity, religion)	Individual level	Breast screening behavior
Breast cancer literacy		Anticipated time for medical help-seeking
Social Support	Interpersonal	
Healthcare system trust	Organization	
Sociocultural breast cancer stigma	Community	

**Figure 1***Visual Illustration of the SEM Theoretical Framework***Literature Review****Breast Cancer Pathophysiology, Risk Factors, Prevention, Diagnosis, and****Treatment*****Pathophysiology***

Breast cancer is the cancer of the tissue of the breast, which consists of the lobules, ducts, and connective tissue (Figure 2) (ASC, 2021; CDC, 2022a; National Breast Cancer Foundation, n.d.). The pathophysiology of breast cancer is complex, multidimensional, and still not well understood, with many theories about the disease

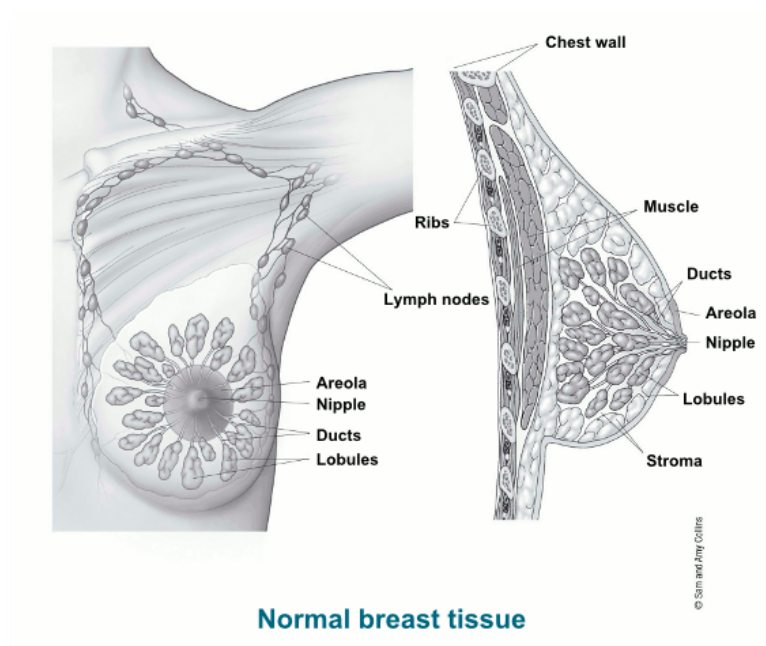
development pathways and risk factors (Watkins, 2019). Most breast cancer originates from the ducts or the lobules and can metastasize to other organs via blood and lymph vessels (CDC, 2022a). Breast cancer originating from the ducts is called invasive ductal carcinoma, while breast cancer beginning in the lobules is known as invasive lobular carcinoma (CDC, 2022a). When the cells lining the ducts become cancerous but localized (stay in place) at the early stage, the cancer is referred to as ductal carcinoma in situ (DCIS) (Grimm et al., 2022; Van Seijen et al., 2019). One in every five new breast cancers is a DCIS (ACS, 2021c; Van Seijen et al., 2019). DCIS is referred to as non-invasive (does not often spread outside the breast) or pre-invasive (because if left untreated, it can become invasive over time (ACS, 2021c; Grimm et al., 2022; Van Seijen et al., 2019).

The clinical presentation of breast cancer is less characteristic; it is marked by nonspecific symptoms, such as a painless lump in the breast or underarm, irritation or dimpling of the breast skin, thickening or swelling of part of the breast, redness or flaky skin in the nipple area, newly inverted nipple (pulling in of the nipple) or pain in the nipple area, nipple discharge, including blood, change in the size, shape or appearance of the breast, or pain in any part of the breast (ACS, 2022a; CDC, 2022b; Mayo Clinic, 2022a).



## Figure 2

Anatomy of a Normal Breast Tissue Showing the Lobules and Milk Ducts



Source: American Cancer Society (<https://www.cancer.org/cancer/types/breast-cancer/about/what-is-breast-cancer.html>).

### ***Risk Factors***

Many non-modifiable and modifiable factors are identified as contributing factors to breast cancer development. The non-modifiable factors include the female sex and older age (the most common risk factors) (ACS, 2021a); followed by genetic mutations (BRCA 1 and 2, notably), which account for nearly 10% of all breast cancers (ACS, 2021a); history of DCIS, having dense breast (with more connective tissue than fatty tissue) family history of breast or ovarian cancer, nulliparity (involuntary childlessness or infertility), reproductive history (early menarche before age 13 years and late menopause), and previous radiation therapy (ACS, 2021a; Arafat et al., 2021; CDC,

2022b; Nindrea et al., 2017; WHO, 2023). The modifiable risk factors include first birth at age over 30 years, postmenopausal hormone therapy use, and high body mass index (BMI) (CDC, 2022b; Hacking et al., 2022; Watkins, 2019). Other modifiable risk factors include alcohol consumption, smoking, lack of physical activity, and exposure to diethylstilbestrol drugs (Arafat et al., 2021; CDC, 2022b; Hacking et al., 2022; Nindrea et al., 2017). Among these factors, family history of breast cancer and mutations in the BRCA1 and BRCA2 genes (in 2.5% of breast cancer cases) are considered strong risk factors (CDC, 2022b; Hacking et al., 2022; WHO, 2023). Even though breast cancer is common in women, men are also at risk for the disease. As listed above, many of the breast cancer risk factors are modifiable. Therefore, some breast cancer cases can be prevented through lifestyle and risk behavior changes.

### ***Prevention and Screening***

Given its many non-modifiable risk factors, breast cancer might not be preventable. However, considering that there are some modifiable risk factors, there are effective ways to reduce the risk and possibly prevent some breast cancers (ACS, n.d.1). Studies have reported that 50 to 70% of breast cancers can be averted through the adoption of a healthy lifestyle and risk-reducing behaviors (Breast Cancer Research Foundation [BCRF], n.d.). One of the ways and arguably the most effective way to prevent (to some extent), reduce risk, and improve prognosis is adopting a healthy lifestyle coupled with routine screening (ACS, n.d.1). That is, combining early screening with lifestyle change can significantly reduce the risk of breast cancer and improve prognosis and survival (Mayo Clinic, 2022a). The asymptomatic nature of many breast

cancer cases underpins the significance of screening in detecting the disease at an early stage to improve treatment outcome and survival (ACS, n.d.2). Even though screening does not prevent breast cancer (CDC, 2023), it is recognized as the golden standard for breast cancer secondary prevention (early detection and outcome improvement). The earlier the anatomical signs (new lump or mass) of breast cancer are detected (at the non-invasive stage), the better the management and treatment and the better the survival. When new lumps or masses are detected early, at the non-invasive cancer stage (and probably smaller in size), they can be surgically or chemically treated with high efficiency, preventing them from growing and metastasizing to other parts of the body.

As previously noted, routine screening is vital to breast cancer early detection and diagnosis, treatment and management, and survival improvement. There are several ways to screen for breast cancer, including mammography, ultrasound, and Magnetic Resonance Imaging (MRI), which are the most commonly used screening (and prognostic) tools (ACS, n.d.2). Mammography is one of the most effective breast cancer screening tools. It has been shown to reduce breast cancer-specific mortality rates by 15 to 30% (Lipschitz (2018) when used as recommended. Other and new breast cancer screening tests include CT (computed tomography) scans, PET (positron emission tomography) scans, abbreviated breast magnetic resonance imaging [MRI] (fast breast MRI), nuclear medicine tests (radionuclide imaging, such as molecular breast imaging (MBI) and positron emission mammography (PEM)), contrast-enhanced mammography (CEM), elastography, and electrical impedance tomography (EIT) (ACS, 2022b). Many of these screening tests are also used as breast cancer treatment monitoring tools.

Additionally, clinical breast examination and BSE are standard screening practices (ACS, 2022c), especially in developing, low-income, and resource-limited countries. BSE consists of a visual and tactile examination of the breasts by women themselves, with the purpose of helping women learn to familiarize themselves with the topography and the usual feel of their breasts and be self-efficient in identifying changes in their breasts (Mayo Clinic, 2022b; National Breast Cancer Foundation, 2023a; WHO, 2006). On the other hand, the CBE consists of a visual and tactile examination of the breasts and the chest area by a trained health care professional (physician, nurse, or physician's assistant) (National Breast Cancer Foundation, 2023b; WHO, 2006). The basis of all these screening tests is detecting a new lump (or mass), calcification (except BSE and CBE), or visual, structural, or density change in the breast, except BSE and CBE, which are limited to visual and lump detection. However, each test has its strengths and limitations. While there are many organizational and country-specific breast screening guidelines (screening age, methods, and intervals) in developed nations, most developing countries, including SSA countries, lack such guidelines. Few SSA nations have adopted international guidelines (Ren et al., 2022), such as the WHO's breast cancer screening guidelines. In addition, these guidelines are often ineffectively implemented or followed due to several health system barriers and a systemic lack of political will translating into ineffective breast cancer policies. For example, according to the WHO's breast cancer screening guidelines, women should have a CBE as part of their routine check-up every 2 or 3 years, from age 20 years, increasing to once a year from age 40 (WHO, 2006). Also, many screening recommendations in developing countries,

including SSA, are ineffective, considering the unique demographical profile of the at-risk population in these countries. For example, most breast cancer cases in SSA are among younger women (less than 50 years) (Anyigba et al., 2021; Joko-Fru et al., 2020; Martei et al., 2022); therefore, following the 50 years minimum recommended age for mammography (CDC, 2023) will be ineffective in targeting the largest population group at risk of breast cancer in SSA.

### ***Diagnosis, Grading, and Staging***

A biopsy is recommended for further histochemical examination and confirmatory testing when a new lump or mass is detected during screening. During the breast (and/or lymph node) biopsy (either by fine needle aspirate [FNA], open surgical, or core needle biopsy), small pieces of the suspicious mass/lump or lymph node (identified during screening) are removed for analysis (ACS, 2022d).

The laboratory (histochemical) analysis consists of morphological and immunohistochemistry assessment of breast tissue/cells and breast cancer grading or staging, using biomarkers such as the estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2)- membrane receptor tyrosine kinase that promotes cell proliferation (Hacking et al., 2022). Other breast cancer biomarkers include the nucleic protein Ki-67 (cellular proliferation biomarker), tumor-infiltrating lymphocytes (TILs), and the programmed death ligand 1 (PD-L1) (Hacking et al., 2022). Immunohistochemically, 75 to 80% of breast cancers are hormone receptor (ER and PR) positive, with ER-positive breast cancers showing higher survival following endocrine therapy (ACS, 2022f; Hacking et al., 2022). HER2-positive breast cancers

represent about 20% of breast cancers (Hacking et al., 2022). Like screening tests, these morphological and immunochemistry tests constitute standard breast cancer prognostic and treatment monitoring tools. The overall assessment of breast cancer comprises the histopathologic type, grade, size, lymph nodal status, and distant metastasis of the cancerous tissue (Hacking et al., 2022). Triple-negative breast cancer (TNBC) (ER-, PR- and HER-), which is primarily observed in younger Black women (less than 40 years) or those with BRCA1 gene mutation, grows and spreads faster than most other breast cancer types and often have the worst clinical outcome (ACS, 2022f; ACS, 2022g; Kumar & Aggarwal, 2016; Wright et al., 2018). These TNBCs represent 10 to 15% of all breast cancers worldwide (ACS, 2022g; Jouali et al., 2019; National Cancer Institute [NCI], n.d.; Yao et al., 2017) and 27.0 to 30.2% of all breast cancer cases in SSA (Hercules et al., 2022).

In recent years, more advanced laboratory assays, such as Radiomics and Multi-Omics Machine Learning, have been used to assess epigenetic modifications, point mutations, translocations, amplifications and deletions, chromosomal abnormalities, protein expression and phosphorylation, and in-vivo/in vitro culture (Hacking et al., 2022), allowing more diagnostic precision, better management and treatment, and improved survival.

Generally, breast cancer is graded based on the level of differentiation of the cancer cells, the pace of growth, and morphology (Hacking et al., 2022). Grade 1, 2, and 3 breast cancers are well-differentiated and slow-growing, moderately differentiated and growing at the speed of other cells, and poorly differentiated, fast-growing, and spreading

cancer cells, respectively (ACS, 2022e). The grading is based on scoring the three major morphological features (the proportion of tumor tissue with normal breast ducts, the size and shape of the nuclei of the tumor cells, and the pace of growth/number of dividing cells present) on a 1 to 3 scale. A score of 1 indicates that cells and tumor tissue most resemble normal cells and tissue, and a score of 3 means the tumor cells and tissue are the most abnormal (National Breast Cancer Foundation [NBCF], 2023). The sum score (3 to 9) of the three features determines the grade of the tumor: Grade 1 (total score of 3 to 5), Grade 2 (total score of 6 to 7), and Grade 3 (total score of 8 to 9) (ACS, 2022e; NBCF, 2023).

In addition to grading, staging is used to differentiate breast cancers based on the size and spread of the breast cancer cells (American College of Surgeons, n.d.; Cancer Research UK, 2023a). Based on this staging, there are four stages of breast cancer (Figure 2):

- Stage 0: noninvasive cancer limited only to the ducts and lobules of the breast, without spreading to nearby tissue (American College of Surgeons, n.d.).
- Stage 1: small cancer cells situated only in the breast tissue, or the lymph nodes close to the breast (American College of Surgeons, n.d.; Cancer Research UK, 2023a). It comprises stage 1A, which is 2cm or less in size and has not spread outside the breast, and stage 1B, which is like 1A in size but differs by a few breast cancer cells found in the lymph nodes close to the breast, with no cancer in the breast (American College of Surgeons, n.d.; Cancer Research UK, 2023a).

- Stage 2: The cancer is either in the breast or in close by lymph nodes, or both (American College of Surgeons, n.d.; Cancer Research UK, 2023a). Like stage 1, stage 2 has two substages, 2A and 2B. Stage 2A is characterized by no cancer cells in the breasts or less than 2cm breast cancer, and breast cancer cells found in 1 to 3 lymph nodes in the armpits or lymph nodes near the breastbone (American College of Surgeons, n.d.; Cancer Research UK, 2023a). Stage 2B is marked by > 2 cm but  $\leq$  5 cm breast cancer, with cancer cells found in the lymph nodes (American College of Surgeons, n.d.; Cancer Research UK, 2023a).
- Stage 3 (locally advanced breast cancer): The cancer has spread to the lymph nodes (close to the breast), skin of the breast, or to the chest wall (American College of Surgeons, n.d.; Cancer Research UK, 2023a). There are three substages: 3A, 3B and 3C. The substage 3A is characterized by no cancer in the breast or cancer of any size in the breast, and cancer in 4 to 9 lymph nodes in the armpit or near the breastbone, or > 5 cm breast cancer that has spread to 1 to 3 lymph nodes in the armpit or to lymph node neat the breastbone (American College of Surgeons, n.d.; Cancer Research UK, 2023a). Stage 3B is marked by cancer that has spread to the breast skin or the chest wall (ribs, muscles connective tissues), with spread to up to 9 lymph nodes in the armpit or near the breastbone (American College of Surgeons, n.d.; Cancer Research UK, 2023a). Stage 3B is recognizable by cancer cells of any size (or no cancer in the breast) that have grown into the chest wall of the breast skin and spread to either ten or more lymph nodes in the armpit, lymph nodes above or below the collar bone, or



lymph nodes in the armpit and near the breastbone (American College of Surgeons, n.d.; Cancer Research UK, 2023a).

- Stage 4 (advanced or secondary breast cancer): Breast cancer of any size, with either cancer cells in the lymph nodes, and has spread to other parts of the body, such as bones, lungs, liver, or brain (American College of Surgeons, n.d.; Cancer Research UK, 2023a).

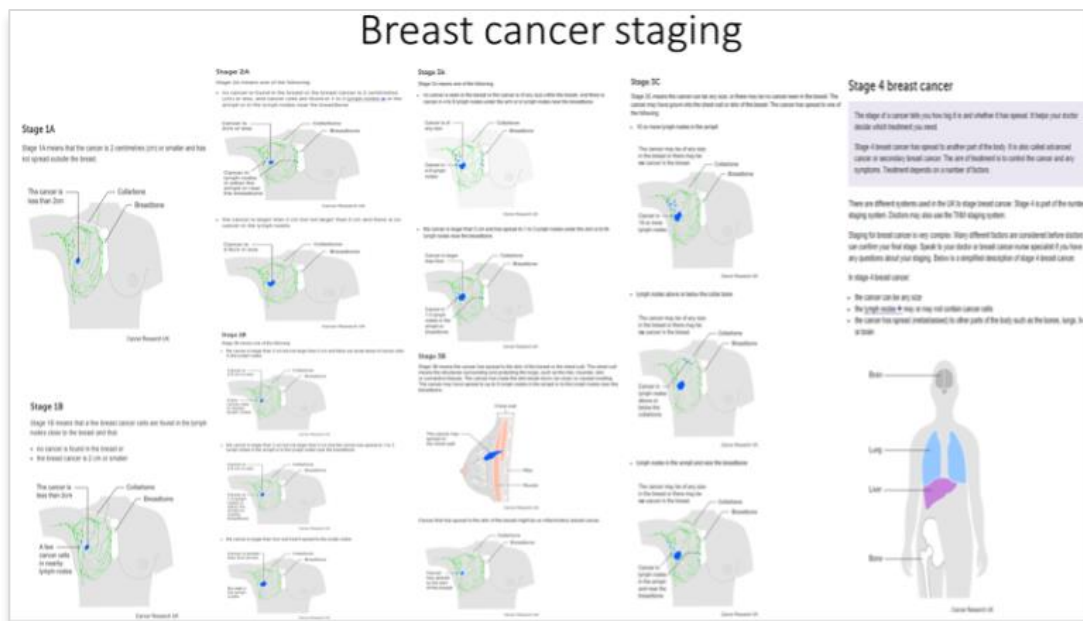
Different staging systems are used for breast cancer. An example is the tumor node metastasis (TNM) system, the most widely used cancer staging system (ACS, 2021b; NCI, 2022). In the TNM nomenclature, letters T, N, and M indicate the size of the cancer, whether the cancer spreads to lymph nodes, and whether the cancer has metastasized (spread to another part of the body) (ACS, 2021b; American College of Surgeons, n.d.; Cancer Research UK, 2023a; NCI, 2022; Rosen & Sapra, 2022).

A detailed molecular, histological, and molecular description of breast cancer subtypes is beyond the scope of this study. The following literature: Al-thoubaity (2020), Beňačka et al. (2022), do Nascimento & Otoni (2020), and McMullen et al. (2019) provide ample detail on this matter for interested readers.

Screening plays a significant role in breast cancer management, treatment, and survival, especially in resource-limited populations like SSA and Togo. In these resource-scarce regions, screening allows early detection of breast cancer (at the less complex and differentiated stage 1 or 2) when the breast cancer is more susceptible to treatment, and the treatment is more affordable (Akuoko et al., 2017).

**Figure 3**

*Breast Cancer Staging With Pictures Showing the Location, Spread, and Size of Breast Cancer Cells*



Source: Cancer Research UK.

### **Treatment**

Breast cancer's morphological and immunohistochemical characterization and grading are imperative to treatment decision-making and disease outcome. Assessing whether breast cancer cells are hormone receptor-positive is essential. Hormone-positive breast cancers (either ER, PR, or both) are favorable for hormone therapy and have better short-term prognosis and survival (ACS, 2022f, Han et al., 2022). On the other hand, TNBCs (breast cancer cells lacking the three ER, PR, and HER2 receptors) have a 19% lower 5-year overall survival and 18% lower disease-free survival than their non-TNBC counterparts and other non-TNBC types (Gonçalves et al., 2018; Nwagu et al., 2021),

with significant variations depending on the breast cancer stage at diagnosis, treatment effectiveness, individual health status and other determinants of health (ACS, 2022g; BCRF, 2023; NCI, n.d.). There is racial disparity in TNBC prevalence, with women of African descent more likely to have TNBC than women of other races (Nwagu et al., 202; Vanderpuye et al., 2017). Generally, breast cancer is treated surgically coupled with hormone therapy (for HR-positive breast cancer), chemotherapy, biological therapy, radiotherapy, or a combination of these treatment types (CDC, 2022c; WHO, 2023).

## **Descriptive Epidemiology**

### ***Global Breast Cancer Burden***

The global incidence and mortality of breast cancer are rapidly growing. Breast cancer remains a significant global public health challenge and a leading cause of death (Arnold et al., 2022; Barrios, 2022; Wilkinson & Gathani, 2022). It has surpassed lung cancer to become the most diagnosed cancer, representing 11.6% of all cancer cases, with about 2.3 million new cases diagnosed yearly (Bray et al., 2018; Sung et al., 2021; Wilkinson & Gathani, 2022). It is the leading cause of cancer death among women, accounting for 6.6% (626,679 deaths) of all cancer deaths in 2018 (Bray et al., 2018). According to recent Global Burden of Cancer (GBC) 2020 data, the global incidence of breast cancer has significantly increased, making the disease one in every four cancer cases diagnosed among women (Union for International Cancer Control [UICC], 2023). In 2020, about 2.3 million newly diagnosed breast cancers and 685,000 breast cancer deaths were reported (WHO, 2023). The socioeconomic sequelae of breast cancer are equally severe. The direct economic costs of breast cancer treatment are estimated at \$2.0

trillion (Chen et al., 2023), constituting a significant financial burden and barrier to breast cancer treatment and survival in mid- and low-income countries. The indirect costs are even more alarming, including the loss of productivity and the social and psychological burden from premature deaths. Even though addressing this global health and public health crisis has been a priority, evidenced by current efforts and progress in improving early detection and better treatment, significant disparities in breast knowledge, awareness, screening, and treatment remain, with developing nations disproportionately bearing a substantial part of the global breast cancer burden.

### ***Breast Cancer in Sub-Saharan Africa and Togo***

Despite the rapid increase in cancer incidence and mortality in recent years in SSA and worldwide, SSA countries and the region are far behind in implementing evidence-based public health and medical interventions to reduce cancer-associated burden at the population and regional levels. There were 801,392 new cases of breast cancer, and 520,158 breast cancer deaths reported in SSA in 2020, with breast cancer representing about 27.7% of all female cancer cases (Bray et al., 2022). The SSA region hosts a significant portion of the global breast cancer burden, with SSA (and low-income countries in general) women three times more likely to develop very aggressive (TN and inflammatory) breast cancer (Hamdi et al., 2021) and two times more likely to die from breast cancer than their counterparts in developed nations (Meacham et al., 2016). These poor outcomes and related socioeconomic, physical, and emotional burdens are partly due to the late or advanced stage presentation at diagnosis (Meacham et al., 2016; Scheel et al., 2018), owing to various environmental, cultural, and social determinants of health.

Given its economic struggle, precarious sociodemographic profile, and pernicious lack of political will or commitment, it is no surprise that SSA remains one of the regions the most ravaged by diseases, including breast cancer, in the world. Breast cancer is the second leading cause of cancer death in SSA, with more than 22.4 deaths per 100,000 women reported annually (Anyigba et al., 2021; Joko-Fru et al., 2020). This toll is even more alarming, given that many SSA countries lack population-based breast cancer registries and reporting systems. Considering the current state of breast cancer in the SSA and the existing challenges, the breast cancer burden (incidence, deaths, and associated socioeconomic costs) on SSA nations is expected to double by 2040 (Sharma et al., 2022). SSA's significant breast cancer burden is credited to the mounting socioeconomic, cultural, geographical, structural, and political barriers SSA populations face in accessing and utilizing breast cancer knowledge, screening, diagnosis, and treatment services.

In Togo (a West African country sandwiched between Ghana in the west, Benin in the east, and Burkina Faso in the north), breast cancer remains a significant public health challenge and a leading cause of death, accounting for 21.2% of cancers in women (Darre et al. (2017). The age-standardized breast cancer incidence, prevalence, and mortality rates in Togo are 30.7%, 39.8%, and 16.1%, respectively (International Agency for Research on Cancer [IARC], 2020). There was a significant (18.6%) increase in breast cancer prevalence in Togo between 2016 (21.2%) and 2020 (39.8%) (Darre et al., 2017; IARC, 2020). An 8-year retrospective study conducted in 2016 showed that breast cancer is the most diagnosed cancer among Togolese women, representing 10-12.4% of all cancer cases (Darre et al., 2017; Amadou et al., 2021). These estimates are likely to be

low due to the lack of a breast cancer registry, surveillance, and screening in Togo. Since 2009, the country has implemented an annual 1-month-long low-cost breast cancer mammography screening program during breast cancer awareness month (Pink October) (Amadou et al., 2021) to address its breast cancer screening availability and accessibility challenges. Despite such an initiative, the screening level is still far from optimal. According to Darre et al. (2023), most Togolese women with breast cancer are diagnosed at Stages 3 and 4, with an average time of 6 months (up to 50 months) between the first symptoms and diagnosis. Given the lack of a breast cancer registry and reporting system in Togo, the above statistics are likely to be inaccurate and even worse. According to the WHO Cancer Regional Profile statistics, only 15% and 2% of African countries have population-based cancer registries and early cancer detection programs, respectively (2020), suggesting an underestimation of the breast cancer burden in SSA. Also, like many other SSA countries, the incidence of breast cancer is higher in younger women (less than 50 years), about 10 years earlier than women in developed countries (Amadou et al., 2021). The breast cancer burden in Togo is further compounded by its emerging yet scarce and fragile oncology infrastructure and services. Until 2016, the country did not have an oncology specialist (Adani-Ife, 2021). Palliative treatment is the only treatment modality for most cancer patients (Adani-Ife, 2021). In addition, Togo currently has no breast cancer radiotherapy center nor a subsidized chemotherapy or hormone therapy policy (Darre et al., 2021). A recent study involving about 897 breast cancer cases reported between 2016 and 2020 revealed that more than 50% of Togolese women with confirmed breast cancer diagnoses failed to complete treatment (Adani-Ife, 2021). Togo

lacks a national breast cancer screening, diagnostic, or treatment program (Adani-Ife, 2021).

Addressing the breast cancer challenge and alleviating the breast cancer-associated burden in SSA countries and Togo notably calls for urgent actions from SSA countries at individual, local, community, national, and regional levels. These breast cancer burden-reducing actions are essential to achieving socioeconomic development and meeting the Millennium Development Goals 4 and 5, which are to reduce child mortality and improve maternal health (Bryce et al., 2013; WHO, 2018).

**Reasons for Breast Cancer Burden in SSA and Togo.** The health and socioeconomic burden of breast cancer in SSA countries is heartbreaking and alarming, calling for urgent, evidence-based, and practical solutions. The origin and growth of this burden are partly attributed to modifiable risk factors such as the growing adoption of Western lifestyles and behaviors by SSA populations (Azubuike et al., 2018). These modifiable risk factors contributed to the rising incidence of breast cancer (and other cancers and non-communicable diseases). In addition, the unique and diverse sociodemographic, religious, cultural, and ethnic characteristics (beliefs, values, and norms) of the SSA population, the perniciously fragile health system, and the lack of political will in many SSA countries have hindered many SSA women from adopting healthy breast cancer behaviors, screening, and timely health-seeking notably. The cumulative outcome is the advanced-stage disease at presentation, costly and less effective treatment, low survival rate, and premature death.

### **Scope and Characteristics of Existing Studies**

Even though breast cancer remains a significant public health challenge, many SSA countries, including Togo, struggle to address it. This struggle is partly due to the lack of data to effectively assess the magnitude of the challenge and guide evidence-based solutions. Togo lacks a breast cancer registry, and there are limited breast cancer studies among the Togolese population. Most existing studies focus on the clinical, physio-pathological, and therapeutic aspects of the disease, offering limited insight into the factors associated with breast cancer screening and breast cancer care seeking among the at-risk general population of women. A recent study by Darre et al. (2023) offers insights into factors contributing to late diagnosis of breast cancer but had a narrow focus (fear of diagnosis, delayed diagnosis, and self-breast examination), providing little information on breast cancer prevention (screening) and health-seeking behaviors (and associated factors), which are vital to prevent late-stage diagnosis and improve outcome. Also, studies about breast cancer in SSA and Togo included in this literature review only covered breast cancer patients with advanced-stage disease who have navigated the healthcare system and have been exposed to breast cancer knowledge at some points. The existing studies about breast cancer in SSA and Togo covered both urban and rural settings; they were conducted overwhelmingly in clinical settings rather than community settings, with few conducted among non-breast cancer patients or healthy yet at-risk populations. Breast cancer research in non-patients can help better assess the risk factors among the at-risk population, assess existing public health breast cancer initiatives, and better inform breast cancer prevention policy decision making.



This lack of or limited breast cancer studies targeting breast cancer care-seeking behaviors and associated factors among the public constitutes a significant knowledge and practical gap that the current study aimed to fill.

## **Existing Breast Cancer Studies in SSA and Togo**

### ***Geographical Representation/Coverage***

SSA is a geographically large region of 48 countries with a population of about 1.2 billion (World Bank, n.d.). While there have been extensive breast cancer studies in the region, most of the studies were conducted in less than 50% of the SSA countries, with most being conducted in Ghana, Nigeria, Ethiopia, South Africa, and Uganda. Only one study in Togo assessed delayed presentation in the health setting.

### ***Design/Methodology***

A significant number of studies about breast cancer screening and health-seeking in SSA and Togo are qualitative in design, including focus groups (Agatha Ogunkorode et al., 2021; Frie et al., 2018; Harries et al., 2020; Ilaboya et al., 2018), in-depth interviews (Ilaboya et al., 2018; Bonsu et al., 2019; Sakafu et al., 2022), phenomenology (Agbeko et al., 2020) and meta-phenomenology (Khakbazan et al., 2014). A few studies (McCormack et al., 2020; McKenzie et al., 2018; Foerster et al., 2019) adopted a longitudinal (cohort) design. The qualitative and cohort designs provide more robust evidence of factors impacting screening, health-seeking, and treatment uptake behaviors among SSA women. There are also many quantitative, cross-sectional studies and systematic reviews.

### ***Outcomes Measured***

Several breast cancer-related outcomes were assessed. The outcomes measured in most existing studies included breast cancer knowledge, breast cancer screening knowledge and uptake, health-seeking behaviors, delayed presentation, barriers to screening and health-seeking, psychological impacts, diagnostic interval, treatment uptake, incidence, mortality and survival rates, treatment modalities, attitudes, and lay beliefs.

### ***Breast Cancer Screening Knowledge and Practices Among SSA Women***

Breast cancer screening remains a key determinant in improving breast cancer prevention and outcome. Unfortunately, breast cancer screening knowledge, awareness, and practices remain low in many SSA countries, including Togo.

Despite recent regional and international efforts, and contrary to developed nations, knowledge and awareness of breast cancer, its symptoms, and screening in many parts of SSA, including Togo, are lacking or disturbingly low among SSA women, their families, and medical professionals (Akuoko et al., 2017; Frie et al., 2018; Kagee, 2022; Kolawole et al., 2022; McKenzie et al., 2018; Sakafu et al., 2022; Ogunkorode et al., 2021). A study investigating barriers to early detection of breast cancer among SSA women showed that only 55% of HCWs had adequate knowledge of breast cancer (Akuoko et al., 2017), underscoring one of the health system challenges in SSA: lack of trained healthcare professionals. However, such a low level of knowledge and awareness is not uniform within and across SSA countries. Several studies conducted in one SSA country or across multiple SSA countries have reported significant variations in breast

cancer and screening knowledge across SSA populations. Some studies reported elevated levels of breast cancer and screening knowledge among more than 70% of participants (Ramathebane et al., 2022; Meacham et al., 2016).

In addition to the cross-country variations, geographical or setting (urban vs. rural), racial/ethnic, and socioeconomic disparities in breast cancer screening knowledge and awareness were reported, ranging from less than 50% to more than 70% of participants in a myriad of studies (McKenzie et al., 2018; Udoh et al., 2020).

Moreover, studies reported several discrepancies in the knowledge about breast cancer screening (type, purpose, skill [how it is done], and frequency) (Udoh et al., 2020). For example, in a study evaluating Nigerian women's knowledge, attitudes, and practices regarding BSE, albeit more than 70% of participants reported being knowledgeable ("had heard about") of the test, only 22%, 12%, and 16% knew its purpose, its frequency, and the age to begin, respectively, and only 19% practiced BSE (Faronbi & Abolade, 2012; Udoh et al., 2020). Nde et al. (2015) reported similar findings in Cameroon; out of 73.5% of participants who reported having heard about BSE, only 37.3% and 9% knew it is performed monthly and how it is performed, respectively. Studies also reported disparities in breast cancer screening knowledge across breast cancer screening types. In a study assessing breast cancer knowledge and screening among women in Cameroon, Lilian et al. (2020) reported that 58% of participants were knowledgeable and aware of BSE, compared to 60% for mammography and 5% for clinical examination.

Studies also reported disparities between breast cancer screening knowledge and breast cancer screening practices, with several studies reporting a significantly lower breast cancer screening practice than knowledge level (Godfery et al., 2016; Udoh et al., 2020). In their study among female university students in Uganda, Godfery et al. (2016) reported that out of the 98% of the participants who reported being knowledgeable of BSE (had heard about it), only 43.6% possessed the BSE practices-related skills. A similar disparity between breast cancer knowledge and practice was reported by Ramathebane et al. (2022) in a study among women in Maseru, Lesotho, with 77.6% of participants reporting being knowledgeable of breast cancer screening but only 40.1% reporting examining their breasts. Contrary to this, other studies found a positive correlation between breast cancer knowledge and practice. A study by Isara and Ojedokun (2011), cited in Udoh et al. (2020), reported 56.4% and 52.3% for BSE knowledge and practice, respectively.

### ***Breast Cancer Screening Practices***

Like breast cancer screening knowledge, a low level of breast cancer screening uptake was reported in SSA. According to a multi-country population-based study conducted by Ba et al. (2020), the level of breast cancer screening in SSA is very low, ranging from 5.2% (in Ivory Coast) to 23.1% (in Namibia). In a study investigating factors associated with late breast cancer diagnosis in Togo, Darre et al. (2023) reported that less than one in four participants practiced BSE. A similar observation was reported by Udoh et al. (2020), who observed that only 0.4% of market women (mostly indigenous women selling agricultural products and foods in the marketplace) in Nigeria

practiced BSE. Several studies, such as Ng'ida et al. (2019), Sharp et al. (2019), and Ramathebane et al. (2022), reported a positive correlation between breast cancer screening practice (and skills) and breast cancer screening knowledge and awareness. In their study in Uganda, Sharp et al. (2019) reported a lower level of breast cancer screening participation and practices among women with lower breast cancer knowledge and awareness. In Lesotho, Ramathebane et al. (2022) reported as high as 72.9% breast cancer screening among those with breast cancer knowledge and awareness. On the contrary, other studies found no direct correlation (Lilian et al., 2020; Udoh et al., 2020). For example, in a study investigating perceived barriers to early breast cancer detection among Uganda women, 58% of participants reported being aware of BSE, but less than 16% recognized lumps as breast cancer symptoms (Lilian et al., 2020). Also, there was a parallel between the disparities in breast cancer screening knowledge and screening practices across countries and populations (Ramathebane et al., 2022; Udoh et al., 2020). In studies conducted in Cameroon, Kenya, and Uganda, only 19% of participants reported practicing BSE monthly, compared to 78%, 55%, and 0.4% reported by similar studies in Nigeria among antenatal patients, undergraduate students, and market women, respectively (Udoh et al., 2020). The observed disparities in breast cancer screening knowledge and practices among women in SSA highlighted the need for further population-specific to identify each population's contextual challenges and generate evidence-based knowledge to guide effective breast cancer interventions in SSA.

Due to limited resources and several barriers (at the individual, organizational, and policy levels, BSE is the standard and most practical breast cancer screening in SSA.

As many studies reported, most breast cancer cases (symptoms) are initially detected by the women themselves, either accidentally (mostly) or during self-examination (Agbeko et al., 2020; Sakafu et al., 2022). In a cross-sectional study, 93-95% of participants with breast cancer reported detecting their breast cancer symptoms themselves (Gebremariam et al., 2019; Mburu et al., 2021). These observations underscored the necessity of BSE promotion as an essential to breast cancer prevention and detection in these resource-limited SSA countries.

### **Medical Help-Seeking for Breast Cancer Symptoms**

#### ***Health-Seeking Interval***

The time interval to seeking medical help represents the period between women detecting an abnormal bodily change (lump, skin discoloration, discharge, or dislocation of the nipple) and their first attempt or decision to get a consultation with a health care professional for the symptom. This health-seeking interval differs from the patient delay interval, which is defined as the period between the date of symptom detection/recognition and the first consultation with the healthcare provider (Moodley et al., 2018). This patient delay interval, which is the object of many breast cancer studies, includes the health-seeking interval and the “health care provider contact” or “primary care” interval, which is more health system- than patient-dependent. Separating the two intervals (health-seeking and “first provider contact” intervals) is essential to understand better the factors driving each interval and implement more target interventions to promote early breast cancer diagnosis and treatment. Prompt health-seeking decision-making is instrumental to secondary and tertiary disease prevention, especially for non-

communicable diseases. This interval is vital in the early diagnosis and treatment of breast cancer, and the length of this interval is proven to be a pivotal contributor to the delayed presentation and low survival rate in SSA (Moodley et al., 2018; Sakafu et al., 2022), where most women (more than 60%) experienced significantly prolonged health-seeking intervals of varying lengths (Agodirin et al., 2020), ranging from 46 days in Nigeria (Agodirin et al., 2020) to more than 90 days in Ethiopia (Gebremariam et al., 2019), 6 months in Togo (Darre et al., 2023), and up to 24 months in Ghana (Agbeko et al., 2020). Considering the various health system barriers (limited accessible health facilities, limited human and logistical resources) to accessing medical care in many parts of SSA (like in other low-income nations), delaying health-seeking from the onset of disease makes the lack of access to care even more detrimental, resulting in advanced disease, complications, costly and complex treatments, poor prognosis, poor outcomes, and death. Reducing the patient delay interval to medical help-seeking is imperative to improving the breast cancer stage at diagnosis and the survival rate. However, many SSA women face significant challenges, impeding timely health-seeking. Identifying factors hindering SSA women from timely medical help-seeking for a potential breast cancer symptom is imperative.

### **Disparities in Breast Cancer Health-Seeking in SSA**

Advanced-stage disease at diagnosis due to delayed health-seeking remains the key finding in most breast cancer cases in SSA and Togo, with most women delaying seeking conventional care for up to 2 years from the initial identification of the breast cancer symptom(s) (Sakafu et al., 2022). Despite the overall prolonged delay in the

health-seeking interval, there are significant within and across-country disparities reported by several studies, with some reporting delayed health-seeking and others reporting shorter health-seeking intervals. For example, using the GCO 2020 estimates, Sharma et al. (2022) reported 30% late breast cancer presentation cases in South Africa compared to 98% in Nigeria. In contrast, in a multicountry (Uganda and South Africa) study, Moodley et al. (2020) observed shorter (less than one week) patient delay intervals among 86.1% of the study participants. Considering these disparities and the significance of early health-seeking to improved survival, exploring factors influencing this health-seeking interval and behaviors is imperative.

**Socioecological Factors.** The disproportionately heavy breast cancer burden in SSA is due in part to the lack of and low breast cancer screening uptake and, more importantly, delay in seeking medical help among the SSA populations, translating into late diagnosis at advanced disease stage, poor prognosis, and high mortality rates (Agbeko et al., 2020; Akuoko et al., 2017; Moodley et al., 2020). While the early recognition or detection of breast cancer symptoms through regular screening is found to improve survival, prompt medical help-seeking following the recognition or detection of potential breast cancer symptoms (either through routine screening or accidentally) is the vital first step in the breast cancer care pathway toward an early diagnosis, effective and affordable treatment, and increased survival. Any challenges at this step can significantly prolong the care interval, undermine treatment effectiveness, and increase treatment costs. This delay in seeking medical help for breast cancer in SSA is attributed to several



factors, expanding to all socioecological levels: individual, interpersonal, organizational, community, and policy.

**Individual-Level Factors.** Many studies provide evidence for the implication of individual factors in breast cancer health behaviors, notably health-seeking. These studies place the individual at the center of the breast cancer crisis in SSA as victims and, more importantly, as the contributors to their own peril because of the various known individual modifiable and non-modifiable risk factors and health behaviors. These individual behavioral factors include health literacy (knowledge and awareness), perception (misconception and fear), attitudes, beliefs (fatalism), demographics (age, education, economic status, marital status, and residence), and body image.

### **Breast Cancer Literacy: Knowledge and Awareness**

Knowledge and awareness are essential to healthy behavior, and they shape and reshape perspectives, clear misconceptions/myths, and unfounded cultural, religious, and social beliefs, norms, and practices (Udoh et al., 2020). They enable informed cognitive decision-making about risk perception and disease/symptoms severity - attributing symptoms to severe vs. non-serious conditions (Khakbazan et al., 2014). There is overwhelming evidence of the influence of knowledge and awareness among healthcare professionals and the general population on breast cancer care seeking and utilization in SSA and on health behavior globally. The implication and significance of breast cancer knowledge and awareness in breast cancer behavior (notably health-seeking) are illustrated by the parallel between the substantial lack of them and poor breast cancer outcomes (delayed presentation, poor prognosis, and high mortality) in SSA. That is,

several studies reported a positive correlation between the lack of or limited breast cancer literacy (knowledge and awareness about breast cancer, its risk factors, symptoms, and detection, diagnosis, and treatment) and low level of breast cancer screening uptake, delayed seeking of medical help, advanced stage disease at diagnosis and low survival (Akuoko et al., 2017; Iiaboaya et al., 2018; Kagee, 2022; Kolawole et al., 2022; Ogunkorode et al., 2021; Sakafu et al., 2022; Sharp et al., 2019). Similar observations were made by Frie et al. (2018), who identified low levels of breast cancer knowledge among women, their immediate social circle, and medical professionals as the main barrier to breast cancer screening and care-seeking in SSA. The lack of knowledge results in false attribution of symptoms (Harries et al., 2020), misconception about risk factors and denial (Afaya et al., 2023; Bonsu et al., 2019; Brown et al., 2018), low perceived vulnerability and perceived disease severity and poor health-seeking behavior (Iiaboaya et al., 2018; Brown et al., 2018; Lilian et al., 2020). For example, in a qualitative study in Mali, some participants referred to the painless lump as “furuncle” treatable with antibiotics or denied it as “nothing” (Frie et al., 2018). Many SSA women also attributed breast cancer to injury, infection (that can be cured with antibiotics, leading to self-medication), mobile phones, wearing a secondhand bra, or putting money in the bra (McKenzie et al., 2018). A multicountry African Breast Cancer Disparities in Outcomes (ABC-DO) study revealed that women who had never heard of breast cancer were 1.6 times more likely to be diagnosed at an advanced stage (McKenzie et al., 2017).

Conversely, higher breast cancer literacy is associated with a shorter time to seeking help, increased screening and early diagnosis, and improved treatment uptake. In

a household survey, Atuhairwe et al. (2018) demonstrated that women who were aware of breast cancer, knew how to reduce breast cancer risks, knew what diminishes the incidence of breast cancer, and knew how to do BSE were about 4, 2, 2.8 and 3 times, respectively, more likely to uptake breast cancer prevention services, including seeking care on time. Meacham et al. (2016) reported similar findings in a study in Uganda, where most participants were knowledgeable of breast cancer and sought medical help immediately after discovering their breast cancer symptom(s).

In addition, studies revealed varying levels of breast cancer knowledge and awareness within (urban vs. rural) and across SSA countries. For example, some studies reported as high as 81% and 98.9%, respectively, levels of knowledge of mammography as a breast cancer diagnostic and early detection measure (Akuoko et al., 2017) and BSE's purpose and practices (Udoh et al., 2020). In contrast, other studies showed minimal knowledge and awareness levels as low as less than 10% (Udoh et al., 2020). Similar disparities in breast cancer knowledge and awareness were reported in another multinational cohort study, with 1 in 4 women (in Uganda and Nigeria) reported not being aware of breast cancer compared to 1 in 7 women in Zambia and less than 1% of non-black SSA women in Namibia (McKenzie et al., 2018). The same study also found that 20 to 40% of participants in Zambia were unaware of the curability of breast cancer compared to 67% in Uganda and Nigeria. Studies also showed that the level and accuracy (or credibility) of this knowledge and awareness and its influence on breast cancer care-seeking behavior is dependent on the source(s) where individuals acquire their breast cancer information (Akuoko et al., 2017; Bonsu et al., 2019).

Contrary to the general perception that HCWs are the primary sources of health information in SSA, studies revealed that HCWs in SSA have limited breast cancer knowledge and awareness and are not the primary sources of breast cancer information. Instead, SSA women obtained breast cancer information from varying sources, ranging from media (TV) to primary care providers, breast cancer information leaflets, physicians, community elders, neighbors, friends, and breast cancer patients (Akuoko et al., 2017). The source of information and the reliability of the information can have different effects. For example, a study showed that TV-mediated breast cancer information doubles women's likelihood of utilizing breast cancer care services (Atuhairwe et al., 2018).

The relationship between breast cancer literacy (knowledge and awareness) and practice (behavior) is not linear. That is, the level of knowledge and awareness only partially translates into the desired behavior. This is illustrated by the disparity between breast cancer screening knowledge and practices (previously mentioned). Also, breast cancer literacy (knowledge and awareness) is not enough to increase health-seeking (Kohler et al., 2017). In addition to breast cancer literacy, health-seeking decision-making is influenced by many other factors, as described below.

### ***Breast Cancer Lay Beliefs, Attitudes, and Misconceptions***

Like breast cancer knowledge and awareness, there is overwhelming evidence about the correlation between individuals' perceptions and beliefs about a disease or health issue and their health behaviors. Lay beliefs and misconceptions about breast cancer, its risk factors, causes, and treatments are common in SSA. The contribution of

misconceptions, lay beliefs, and attitudes to SSA breast cancer burden and profile (lack of screening, delayed health-seeking, late-stage disease presentation, low survival, and premature death) has been extensively demonstrated. Indeed, studies show that most SSA women hold folkloric or spiritual/traditional beliefs about breast cancer and disease in general (Frie et al., 2018; McKenzie et al., 2018; Meacham et al., 2016; Tetteh & Faulkner, 2016; Yahaya et al., 2023). Several breast cancer studies among SSA women reported that a sizable number of participants believed that breast cancer is caused by witchcraft, divine/ancestral punishment, spiritual attack, evil curse, or a test from God (Afaya et al., 2023; McKenzie et al., 2018, Sanuade et al., 2018; Tetteh & Faulkner, 2016). In a qualitative study in Ghana, participants narrated their thoughts about breast cancer as “a satanic” disease contracted during a dream (Sanuade et al., 2018). Others believed in the incurability of breast cancer, equating it to a “death sentence” or “killer disease,” “death sentence” or fate (Afaya et al., 2023; Akuoko et al., 2017; Meacham et al., 2016; Tetteh & Faulkner, 2016). In another study, participants labeled breast cancer as a “Caucasian disease” (meaning it only affects Caucasians) (Akuoko et al., 2017). The misconception that mastectomy (surgical breast cancer treatment) can spread the disease to other organs is also reported (Meacham et al., 2016). Consequently, these unfounded breast cancer beliefs, negative attitudes, and misconceptions often result in fear of death (Iddrisu et al., 2020), denial, fatalism, non-disclosure for fear of social consequences (stigma, spousal and social rejection) (Iddrisu et al., 2020), use of traditional or spiritual medicine, delayed medical care seeking (when the symptom worsened), and denial of the need for treatment (McKenzie et al., 2018; Sakafu et al., 2022; Sanuade et al., 2018). For

example, in their study exploring breast cancer beliefs in Uganda, Scheel et al. (2017) discovered that most participants held a fatalistic attitude toward breast cancer and the impossibility of being cured once diagnosed. The same study also showed that most (>95%) Ugandan women believed that wearing tight bras causes breast cancer. These lay beliefs and misconceptions about breast cancer and disease in general among the SSA population are grounded in cultural/ethnic and religious beliefs and practices and a lack of breast cancer literacy.

However, the level and extent of these beliefs, attitudes, and misconceptions vary within and across populations and nations. For example, in a cohort study, 25-40% of participants in Zambia believed in the incurability of breast cancer, compared to more than 60% in Uganda and Nigeria (McKenzie et al., 2018). In studies in Nairobi and South Africa, only about 6.3% of participants believed in witchcraft as a cause of breast cancer (David et al., 2022; Rayne et al., 2019), compared to 22.2% of participants in another study in Uganda and South Africa (Moodley et al., 2020). Moreover, the correlation between lay belief and time to health-seeking or behavior is not evident across all SSA populations. For example, in a cross-sectional study about health-seeking behavior among women diagnosed with breast cancer in Kenya, David et al. (2022) found that the cultural belief of witchcraft or curse as the cause of breast cancer was not significantly associated with medical help-seeking behavior ( $\chi^2 = 9.907$ ,  $p = 0.624$ ).

### ***Fear***

Fear is a complex psychological construct with a double-edged impact on individuals' cognitive health decision-making. That is, drawing from its classic

physiological “fight-or-flight” response, fear can be either a source of motivation or an obstacle to act. As a motivator, fear can stimulate individuals to adopt healthy behaviors to avoid the threat (disease) they perceive as sufficiently scary (severe or fatal) (Salazar et al., 2013). This protective aspect of fear is commonly exploited in public health’s fear appeal communication strategies to promote healthy behaviors (Salazar et al., 2013; Moussaoui et al., 2021).

As an obstacle, fear can hinder an individual’s ability to make a rational decision, especially without knowledge and understanding of the object of the fear. This aspect of fear has been extensively demonstrated to be a significant barrier to healthy decision-making among racial minorities and Blacks, especially concerning perceived life-threatening events or circumstances, including diseases like cancer (High, 2020). This fear (obstacle) is reported as a significant contributor to the lack of breast cancer screening, delayed health-seeking, and poor outcomes among SSA women (Darre et al., 2023; Lilian et al., 2020; Mwaka et al., 2021; Sanuade et al., 2018). In a cross-sectional study, Darre et al. (2023) noted that the fear of (positive) breast cancer diagnosis delayed health-seeking and increased the risk of late diagnosis by 29%. Other studies, such as Ilaboya et al. (2018), Lilian et al. (2020), and Sharp et al. (2019), also revealed that the fear of the unknown, fear associated with breast cancer, fear of hospitals, and fear of mastectomy were reported by many SSA women as significant barriers to health-seeking for breast cancer symptom(s). In a study in Cameroon, 22% and 15% of participants reported fear of death and fear of the stigma associated with breast cancer, respectively, as reasons for not screening and delaying health-seeking (Lilian et al., 2020). Similar

observations were made in a study in Nigeria where participants reported their fear of losing social relationships (with husbands, friends, and families) as a barrier to disclosing their breast cancer symptoms and seeking help (Agatha Ogunkorode et al., 2021; Meacham et al., 2016).

The sociocultural painted fear about breast cancer as a fatal disease coupled with other cultural beliefs and misconceptions about breast cancer among SSA societies hinders SSA women's motivation to "fight" for their lives by taking action (abiding by breast cancer screening, health-seeking, and treatment recommendations) to avoid the associated adverse breast cancer outcomes. Besides the fear of death and social isolation, the fear of loss of femineity (womanhood) was also reported by several studies as a significant determinant of symptom/disease denial and delayed health-seeking. This fear related to femineity is drawn from the SSA social and cultural sex objectification of women's breasts as a symbol of sex appeal, fertility, "complete woman," "whole and beautiful body," and motherhood (Tetteh, 2017; Tetteh & Faulkner, 2016). Consequently, breast removal (via mastectomy due to breast cancer) is physically, psychologically, socially, and culturally inconceivable for many SSA women (Iiabaya et al., 2018; Tetteh & Faulkner, 2016). As a result, for these women, for fear of losing their womanhood and motherhood, the simple (biased/uninformed) thought of mastectomy as the only treatment for breast cancer and the physically, psychologically, and socioculturally belittling consequences (hair and weight loss, and skin discoloration) associated with some cancer treatments (chemotherapy and radiotherapy) force them to be in denial, hide symptoms (until they worsen) and delay seeking medical help (Agatha Ogunkorode et al., 2021;



Iddrisu et al., 2020; Mburu et al., 2021; Tetteh & Faulkner, 2016). The materialization of this fear of loss of femineity and “complete woman” as a barrier to health-seeking for breast cancer was evidenced by several studies among SSA breast cancer patients where many participants reported feeling less desired (unattractive) by their spouses, loss of self-esteem, loss of libido, or being divorced shortly after their mastectomy (Akpor et al., 2023; Sakafu et al., 2022; Tetteh & Faulkner, 2016). Considering these sociocultural consequences of the loss of their breasts and other adverse effects of breast cancer treatments, some SSA women reported preferring their death due to breast cancer by hiding their symptoms and avoiding or delaying seeking medical help (until the symptoms become worse and unbearable) over living without a breast (Mburu et al., 2021; Sakafu et al., 2022).

Despite the general perception of fear as a barrier to breast cancer screening and health-seeking among SSA women, several studies reported fear as a health-seeking motivator. In qualitative studies among Southwestern Nigerian and Uganda women, many participants reported their fear of death (desire to live) preventing them from caring for their children and family motivated them to seek medical help (Agatha Ogunkorode et al., 2021; Mwaka et al., 2021).

As the above examples illustrate, fear can constitute either a significant catalyst for or barrier to early breast cancer health-seeking among SSA populations or countries. However, fear can only effectively motivate positive and protective health behaviors when combined with enhancing skills, knowledge, and conditions to avoid the disease (Salazar et al., 2013). The absence of these essential skills, knowledge, and conditions

hinders the materialization of the positive side of fear while fueling the negative one. The lack of knowledge and awareness of breast cancer, its risks, and treatments, combined with fear of death and the prominent fatalistic view among many SSA societies, instead promote SSA women's negative fear response by neglecting their responsibility to screen for breast cancer, denying symptoms, not seeking medical help when needed (unless symptoms get worse), or courageously accepting their death fate.

### ***Conflicting Social Priorities and Roles***

The family's functional structure in many SSA cultures represents a moral norm that dictates household members' gender roles, expectations, responsibilities, and priorities vis-à-vis the family's welfare. This social functional structure can constitute a barrier to women's health and well-being, obliging them to prioritize their family's socioeconomic well-being over their individual needs. This social obligation has been reported as a recurrent reason among many SSA women for failing to screen, hiding symptoms from others, and delaying seeking medical help for potential breast cancer symptoms (albeit their knowledge of the vulnerability and severity) for fear of becoming a social and economic burden for their family or for being labeled as being unable to assume their social responsibilities and duties (taking care of their children and their family) (Agbeko et al., 2020; Akuoko et al., 2017; Kohler et al., 2017). In a study among Tanzanian women with breast cancer, some participants reported these conflicting familial expectations and obligations with their own well-being as the main reason for delaying seeking healthcare services (diagnosis and treatment) (Sakafu et al., 2022). A similar observation is made by Agbeko et al. (2020) in Ghana, where participants

reported initially delaying seeking healthcare due to conflicting economic, family, and social role priorities. The still prominent gender role in many SSA societies makes many SSA women voiceless about expressing their concerns to their husbands or unilaterally making their own health decisions without the input or approval of their husbands. Within this gender role context (and due to financial dependency), some SSA women must seek spousal or their in-laws' permission or approval before seeking medical care (Akuoko et al., 2017; Sayed et al., 2019). This sociocultural norm hinders SSA women whose husbands might hold potent sociocultural myths about breast cancer, putting them in a predicament where they are obliged to hide their symptoms and delay seeking medical help until the disease worsens. For example, in a qualitative study conducted among breast cancer survivors in Mali by Fries et al. (2018), a participant reported being shut off by her husband for talking too much when she told him about the lump in her breast.

However, a positive link between gender roles and healthy breast cancer behaviors is reported by some studies in SSA, which found gender roles to be a motivator for some SSA women to promptly seek help to stay healthy and alive to assume their social responsibilities and expectations. For example, in an interpretative qualitative study among women with breast cancer in Southwestern Nigeria, some participants reported their desire to live and care for their children (their social responsibility) as a motivation for not delaying seeking medical help (Agatha Ogunkorode et al., 2021).

### ***Belief and Use of Alternative (Traditional/Herbal or Spiritual) Medicine***

Traditional medicine and spiritual healing have been widely documented for decades in SSA and many low- and middle-income countries. These practices have been reported in many SSA countries as a significant determinant of health behavior, notably breast cancer behaviors (screening and health-seeking) (Akuoko et al., 2017; Darre et al., 2023; Harries et al., 2020; Kohler et al., 2017; Mburu et al., 2021; Ogunkorode et al., 2021; Sakafu et al., 2022). In a study among women in Ethiopia, Gebremariam et al. (2019) reported that using herbal or spiritual medicine doubled the patient delay, which includes appraisal, illness, behavioral, and scheduling delays. Such practice is often based on traditional and religious beliefs about the cause of illness. In many African societies, the disease is conceptualized as disrupting the harmony between the living and their ancestors or divine powers, necessitating spiritual healing or traditional herbal medicine as treatment (Tetteh & Faulkner, 2016). For example, many SSA women believed in the spiritual (God's punishment) and evil (witchcraft and curse) origin of breast cancer (Afaya et al., 2023; McKenzie et al., 2018; Sakafu et al., 2022; Tetteh & Faulkner, 2016). Therefore, most of these women opted for traditional medicine or spiritual healing as the first resort to cure the disease and delayed seeking medical help until such treatment/healing failed and when the condition worsened. For example, in a study conducted by Sakafu et al. (2022) among women with breast cancer in Tanzania, most participants reported spending at least 3 months using traditional medicine before seeking medical help following the worsening of the symptoms. In Togo, Darre et al. (2023) reported that 77 % of breast cancer patients who used traditional medicine had long delayed seeking

medical help and diagnosis. They also found that using traditional medicine increased the odds of delayed breast cancer diagnosis by 162%. In another study in Ghana, Iddrisu et al. (2020) reported that women who sought traditional medicine were eight times less likely to seek and receive conventional medical care. Also, the preference for and the use of alternative medicine is motivated and promoted by health system-related barriers, such as cost of treatment, inaccessibility of health facilities, long waiting time, negative and discriminatory attitudes of HCWs toward patients, poor care quality, and lack of trust in the health care system (Githaiga & Swartz, 2023; Kohler et al., 2017; Sakafu et al., 2022). In the face of these obstacles, many SSA women opted for these alternative, non-conventional treatments, which are readily available, accessible, and affordable.

### ***Sociodemographics***

In addition to the factors mentioned above, the social and physical environment in which many women live in SSA and other low- and middle-income countries put them in difficult circumstances, hindering their willingness and self-efficacy to seek medical help promptly. These circumstances include living in rural areas and poverty (financial hardship (Harries et al., 2020; Kagee, 2022; Kohler et al., 2017; Moodley et al., 2020). A sizable portion of the SSA and Togolese populations live in rural areas that lack needed basic health facilities and have significant financial hardship, making health-seeking an act of luxury or privilege reserved for the wealthy. Consequently, most of these women (who also lack breast cancer knowledge and awareness because of these same social circumstances) are unable to afford transportation to reach far-away health facilities and the cost of consultation and treatment and, therefore, they opt for traditional medicine and

seek medical help only when symptoms worsen, and the non-medical traditional/spiritual treatment fails (Kohler et al., 2017; Moodley et al., 2020; Sanuade et al., 2018). Due to their financial hardship, some SSA women reported feeling defeated, accepting, and waiting hopelessly for the death fate or God's call (Sakafu et al., 2022).

Regarding the link between residence (urban vs. rural) and breast cancer health-seeking, a study in Uganda and South Africa showed that living in rural areas increases health-seeking time by three times (Moodley et al., 2020). In another study in Malawi, many participants reported their family's financial hardship as a competing priority, preventing them from seeking early help (Kohler et al., 2017). However, this financial hardship is not perceived as a barrier across all SSA populations. For example, although health-seeking was not investigated, a recent cross-sectional study conducted in Togo by Darre et al. (2023) showed that financial hardship was not a significant contributor to late breast cancer diagnosis. David et al. (2022) made a similar observation, reporting no association between income and breast cancer health-seeking and treatment uptake among Kenyan women.

In addition to the above social circumstance, SSA women's demographic characteristics (age, gender, education, marital status, employment) are reported by several studies as key contributors to delayed health-seeking and late diagnosis of breast cancer (David et al., 2022; Foerster et al., 2019; Kagee, 2022; Moodley et al., 2020). A well-known yet less commonly mentioned barrier to health-seeking among SSA women is the female gender, a key breast cancer risk factor. As previously mentioned, for many SSA women, putting themselves before their family's well-being would be considered a

social failure and a culturally shameful act. Like gender, employment was also a significant determinant of breast cancer health-seeking (David et al., 2022). Also, age and marital status were found to influence breast cancer screening and health-seeking behaviors (Ba et al., 2020) via the mediating role of breast cancer knowledge and awareness among older (Bah et al., 2020; Ramathebane et al., 2022; Mwaka et al., 2021) and married (McKenzie et al., 2018) SSA women who were more knowledgeable and aware of breast cancer and its risk factors than their younger and unmarried counterparts. On the contrary, in their study exploring the determinants of early breast cancer detection among Kenyan women, Kisiangani et al. (2018) reported younger participants being more knowledgeable about early breast cancer screening and health-seeking as key to improving their survival relative to older participants. Employment was also a significant determinant of breast cancer health-seeking (David et al., 2022) via the mediating effect of income.

### ***Perceived Severity and Emotional Reaction to Symptoms***

Perceived susceptibility, like the individuals' emotional reaction to the disease, is a key determinant of health behavior. High perceived susceptibility and severity followed by a concerning emotional reaction to the symptoms or the disease often promote positive health behavior, such as immediately seeking medical help (Agatha Ogunkorode et al., 2021; Khakbazan et al., 2014). On the other hand, a low perceived susceptibility and lack of emotional reaction or fatalistic (defeatist) attitude toward the disease or its symptoms would likely lead to denial and delayed help-seeking (Agatha Ogunkorode et al., 2021; Brown et al., 2018; Khakbazan et al., 2014). Perceived susceptibility to breast cancer and

emotional reaction to breast cancer symptoms have been reported by several studies among SSA women as critical determinants of health-seeking intervals (Agatha Ogunkorode et al., 2021; Bonsu et al., 2019; Khakbazan et al., 2014). In a study exploring breast cancer help-seeking among women in Malawi, many participants reported not considering symptoms as severe and expecting them to go away because they did not feel ill (Kohler et al., 2017). The same study reported a significant delay in help-seeking among participants with low breast cancer risk perception compared to shorter help-seeking time among participants with high-risk perception.

### ***Disease-Related Factors***

The characteristics of a disease, such as (actual or perceived) severity of the signs and symptoms (pain vs. painless), the persistence of the symptom, the morphological (size) and functional (interference with daily social activities) changes are also key factors in health-seeking behavior (Harries et al., 2020; Kohler et al., 2017; Mwaka et al., 2021). In addition to the overwhelming evidence of individual-related factors influencing the breast cancer health-seeking interval, many studies found that the severity of the breast cancer symptoms (painful vs. painless lump or worsening), the nature of the symptoms (lump vs. visible skin discoloration vs. blood discharge vs. wound) and the size of the lump are triggers for health-seeking behavior (Agatha Ogunkorode et al., 2021; Harries et al., 2020; Kohler et al., 2017). Breast cancer symptoms (lump, skin discoloration, discharge) are often painless and small but become painful and larger as the disease progresses. This initial lack of pain is frequently mistaken by many SSA women (due to lack of knowledge and awareness) for non-severe or other non-breast



cancer or other diseases-related symptoms that will resolve on their own; therefore, they do not feel the need or urgency to seek medical help until the symptoms worsen (become painful and larger). For example, in a study conducted in South Africa, several participants attributed their delay in seeking medical help to their painless symptoms that they thought were nothing serious associated with daily activities, such as manual labor and wearing tight undergarments (Harries et al., 2020). Similar findings were reported in a phenomenological study in Ghana and Ethiopia, where participants reported delaying seeking medical help because the symptoms at the early stage were thought to be related to a common self-limiting problem (Getachew et al., 2020) and did not interfere with their usual economic, family, and social roles (Agbeko et al., 2020). Another study in Nigeria also found a correlation between symptom severity and health-seeking time, with participants reporting the worsening symptoms as a trigger for health-seeking (Agatha Ogunkorode et al., 2021). The size of the lump is also reported as an independent determinant of health-seeking. For example, in a study in Nigeria, Agodirin et al. (2020) reported a shorter breast cancer presentation interval for bigger tumors. This practice significantly contributes to the delayed health-seeking time, advanced-stage presentation, and poor breast cancer outcomes observed in SSA.

### ***Interpersonal Factors***

A social network is a network of relationships among people living or working in a particular society. Not only does this network of relationships enable the effective functioning and harmony of society, but it also plays an essential role in the society members' health and socioeconomic, physical, and emotional well-being (Bekalu et al.,

2019). In most societies, including SSA, the social network starts with family, spouse, and immediate acquaintances (friends, coworkers, and church members) and expands to community and religious leaders. In SSA communities, social networks considerably influence individual decision-making, mainly women's, due to the gender roles and expectations in these communities. Several studies have demonstrated that the presence or lack of social support (informational, financial, and practical) has a double-edge effect (facilitator and/or barrier) on SSA women's breast cancer health-seeking behavior (Akuoko et al., 2017; Brown et al., 2018; Frie et al., 2018; Harries et al., 2020; Kagee, 2022; Kohler et al., 2017; Mburu et al., 2021; Ogunkorode et al., 2021; Sakafu et al., 2022; Sharp et al., 2019). This double-edge effect of social support depends on the social network's level of knowledge and awareness, sociocultural beliefs and attitudes toward breast cancer, sociodemographics, and general sociocultural practices.

The positive impacts of individuals' social networks on their health and health behaviors are well-documented. These impacts are even more noticeable in resource-limited regions like SSA, where most individuals rely heavily on their social networks (spouses, families, friends, and traditional and spiritual leaders) for informational, emotional, and practical guidance in everyday life events, including health.

For example, the sociocultural gender role within the SSA society, with the men assuming most of the decision-making and controlling the finances in the household, is both an obstacle to women's self-efficacy in independent decision-making about their health and an opportunity to improve their health. A (perceived) emotionally and financially supportive mate can facilitate and boost an SSA woman's willingness to

disclose symptoms and seek medical help early. Many SSA women have reported this emotional and financial spousal support as the main reason for seeking healthcare early (Kagee, 2022).

In most resource-limited SSA societies, the broader family (family members, friends, and traditional and religious leaders outside the marital relationship) plays an essential role in breast cancer patients' health-seeking behavior and lives socially, emotionally, and financially (Alexander et al., 2019). They (family members, friends, and traditional and religious leaders) are often a source of information about breast cancer, its risk factors, screening, symptom interpretation and attribution, health-seeking time, and type of healthcare to seek (Harries et al., 2020; Kohler et al., 2017; Ogunkorode et al., 2021; Sakafu et al., 2022). Several studies highlighted this health-seeking facilitating effect of social support. The individual's social networks can also provide financial support assurance (alleviating the perceived cost barriers to health-seeking) and emotional support throughout the care pathways (Brown et al., 2018; Mburu et al., 2021; Sakafu et al., 2022). In a qualitative study, breast cancer survivors in Uganda reported social support as one of the key factors in overcoming breast cancer stigma, a known contributor to delayed diagnosis and poor treatment adherence (Meacham et al., 2016). In other studies, several participants (40-60%) attributed their early health-seeking decision to their families and friends for their advice to seek medical care and their financial support in covering treatment costs (Foerster et al., 2019; Harries et al., 2020; Mburu et al., 2021; Sakafu et al., 2022). Additionally, the positive influence of the social network on health-seeking behaviors is illustrated by the positive correlation between shorter

health-seeking time and peer experience reported in Malawi and Ghana with women who had relatives and friends knowledgeable about breast cancer (Bonsu et al., 2019; Kohler et al., 2017) or had friends with a history of breast cancer (Bonsu et al., 2019) receiving help in interpreting symptoms and early health-seeking advice. Moreover, the perceived or actual social support can divert the feeling of social and financial burden some SSA women feel after detecting their breast cancer symptoms (Khakbazan et al., 2014), consequently motivating them to seek help early. Positive social support is also found to help SSA women overcome the social stigma associated with breast cancer (Meacham et al., 2016).

Despite the facilitating effect of social support, almost all studies across several SSA populations revealed that the lack of or poor social support remains a significant barrier to timely health-seeking for breast cancer (and treatment uptake) among SSA women. One negative impact of SSA women's social network on health-seeking and care service utilization is the lack of spousal and familial support. Some women often need permission from their husbands before seeking medical care (Akuoko et al., 2017; Sayed et al., 2019). In a study among women in Uganda, 24% of participants reported the lack of social support as the main barrier to breast cancer detection practices (Sharp et al., 2019). Similar observations were reported by Getachew et al. (2020) in a qualitative study assessing perceived barriers to early breast cancer diagnosis among women in southwestern Ethiopia. Also, as previously noted (in the Sociodemographic section), in a qualitative study in Mali and Tanzania, participants reported their husbands either shutting them off for talking too much when they told them about the lump in their

breasts (Fries et al. (2018) or not taking their symptoms seriously (Sakafu et al., 2022).

Also, several SSA women attributed their denial of their breast cancer symptoms, delayed disclosing of them, and delayed seeking medical help to fear of spousal and social rejection (Kisiangani et al., 2018; Meacham et al., 2016; Tetteh & Faulkner, 2016).

Because of the general lack of breast cancer knowledge and awareness, the lay social and cultural beliefs and attitudes toward breast cancer, and the preference for alternative medicine in most SSA populations, it is not uncommon for SSA women's social network to provide socioculturally biased and erroneous breast cancer information and advice that further promote these women's mythical conceptions about breast cancer and deter them from seeking medical help early. For example, in studies evaluating delayed breast cancer detection and diagnosis among Tanzanian and Malawian women, several participants reported being advised by their relatives and friends to seek traditional healing or wait to see if symptoms worsened rather than to seek medical help (Kohler et al., 2017; Sakafu et al., 2022). In a focus group in Ghana, a participant referred to breast cancer as a "satanic" disease contracted during a dream when a child is sucking a woman's breast because it was preached by her religious leader (pastor) (Sanuade et al., 2018). As illustrated, through the provision of informational, practical, and financial support or the lack of such provision, SSA women's social network can positively or negatively influence their health-seeking decision-making.

### ***Organization-Level Factors***

Adequate healthcare infrastructure is essential to a well-functioning healthcare system. The healthcare system's weak state is regarded as a significant contributor to

delayed diagnosis and treatment and poor breast cancer outcomes in many middle and low-income countries, including SSA countries (Vanderpuye et al., 2021). Timely treatment (preceded by early health-seeking and diagnosis) can significantly improve breast cancer 5-year survival to 85%, compared to 45% for delayed or no treatment (Chen et al., 2015; Vanderpuye et al., 2021). This contribution of the healthcare system to the breast cancer care accessibility and delivery and breast cancer outcomes is exemplified by the disparity between developed and developing countries and across developing nations, with nations with better healthcare systems having better health outcomes than those with weakened healthcare systems, plagued by limited supplies, insufficient and underqualified workforce, poor care quality, misdiagnosis, and lack of public trust. Organization-level factors impacting breast cancer health-seeking behaviors among SSA women include provider- and HCW-related and health system factors.

#### ***Provider and Healthcare Worker-Related Factors***

Healthcare providers (HPs) and HCWs are essential in public health behaviors, health literacy, and health outcomes. Unfortunately, in many SSA countries and Togo, they (HPs and HCWs) are considered significant barriers to health services seeking and uptake in general, specifically for diseases with substantial sociocultural stigma, like breast cancer. The provider and HCW-associated breast cancer barriers in SSA are related to the lack of breast cancer knowledge and awareness and the negative attitudes toward breast cancer and patients.

**Lack of Knowledge and Training.** The dearth of knowledge and awareness among healthcare professionals in SSA about breast cancer and other non-communicable

diseases (NCDs) is well-documented and reported as a key contributor to the rising incidence of advanced-stage breast cancer, poor outcomes, and low survival among SSA women (Agbeko et al., 2020; Getachew et al., 2020; Iiaboaya et al., 2018). For example, in a systematic review of barriers to early presentation and diagnosis of breast cancer among women living in SSA, Akuoko et al. (2017) found that only 55% of HCWs had a good knowledge of breast cancer. This lack of knowledge and awareness of breast cancer and other NCDs is attributed to the lack of training and conflicting health burden priorities, with much attention given to other diseases, such as infectious diseases, by default, neglecting NCDs (Iiaboaya et al., 2018). The resulting outcomes are misdiagnosis, inappropriate and ineffective treatment, poor quality of care, and ultimately the public mistrust in the healthcare community's competence to effectively and accurately care for them while promoting and validating the use of alternative medicine (Adani-Ife, 2021; Frie et al., 2018; Gbenonsi et al., 2021; Getachew et al., 2020; Sakafu et al., 2022) and validating the sociocultural beliefs and stigma surrounding breast cancer in SSA. Many studies reported these consequences as barriers to early breast cancer health-seeking, diagnosis, and treatment. This lack of knowledge and its outcomes are exemplified by findings from several studies in different SSA countries where participants reported being initially misdiagnosed and prescribed the wrong medication (cream, painkillers, and antibiotics) for their symptoms (Brown et al., 2018; Frie et al., 2018; Gbenonsi et al., 2021; Sakafu et al., 2022).

**Negative and Discriminatory Attitudes, Favoritism, and Corruption.** The healthcare providers' and HCWs' attitudes and behaviors are vital to the patient-provider

relationship and are significant predictors of healthcare access (Gbenonsi et al., 2021; Getachew et al., 2020) in a way that they can either reinforce or disintegrate it. Several studies have reported HPs and HCWs' attitudes and behaviors as detrimental to breast cancer health behaviors among SSA women. Many SSA women reported being discriminated against, disrespected, or ignored by HCWs (Frie et al., 2018; Gbenonsi et al., 2021; Khakbazan et al., 2014; Sanuade et al., 2018). These negative encounters with HCWs (either experienced or heard from others) are found to be a significant barrier to subsequent healthcare seeking and utilization. In a qualitative study exploring the framework for improving early detection of breast cancer in Malawi, many participants reported their perceived and past negative encounters with HCWs as the main reason for delaying seeking health until symptoms worsened before rushing to the health facility (Kohler et al., 2017).

Besides the above-mentioned discriminatory attitudes and behaviors, favoritism and corruption among HCWs were also reported as barriers to healthcare seeking and access. For example, Gbenonsi et al. (2021) and Sanuade et al. (2018) found that many providers prioritized acquaintances over those they did not know. This practice often led to long waiting times, discouraging many SSA women from seeking medical care and instead opting for alternative treatment, leading to delayed healthcare seeking until symptoms got worse and/or alternative treatment failed.

These negative providers and HCWs attitudes, discriminatory and judgmental behaviors toward patients, coupled with their lack of knowledge (displayed through the poor quality of care, misdiagnosis, and ineffective treatment), create an unwelcoming



care environment and mistrust that discourage many SSA women from seeking medical care or sharing their health problems with providers and HCWs at the onset of their symptoms (Harries et al., 2020; Khakbazan et al., 2014). The broader health system factors further amplify these sentiments.

### ***Health System Factors***

The poor breast cancer profiles of many SSA countries and the SSA regions, in general, are attributed to their weak and unstructured health systems overwhelmingly plagued by the lack of health infrastructure, logistically unequipped health facilities, lack of health insurance, shortage of qualified human resources, and high-cost services, which are reported as significant barriers to breast cancer screening and early detection and treatment in SSA (Brown et al., 2018; Darre et al., 2023; Gbenonsi et al., 2021; Getachew et al., 2020; Kolawole et al., 2022; Sanuade et al., 2018).

**Lack of Health Infrastructure and Equipment.** The lack of health infrastructure, including diagnostic equipment, in most SSA countries remains a significant obstacle to improving their populations' health outcomes. Several communities (primarily rural and socioeconomically deprived communities) either lack or have health facilities situated far away and often lack the needed qualified staff and/or equipment and technical support to accurately and timely meet patients' needs (Darre et al., 2023; Vanderpuye et al., 2017). Consequently, patients must travel a long distance and often experience long waiting times before being seen by a healthcare provider (Getachew et al., 2020; Ilaboya et al., 2018). This lack of health facilities explains in part the differential health-seeking behaviors observed between urban and rural communities,

with rural women reporting worse breast cancer care uptake and behaviors than urban women due to the high perceived access and availability barriers (Akinyemiju et al., 2022; Moodley et al., 2020). This access and availability of breast cancer services challenge is further amplified by the lack of medical training in NCDs and their low prioritization (Akinyemiju et al., 2022; Gbenonsi et al., 2021) and the high population per provider density, ranging from 30,000 in Seychelles to 1.8 million in Congo (Ziegenhorn et al., 2020). The SSA region generally has the lowest health workforce density, with average concentrations of physicians and nurses (including midwives) of 2.7 and 12.4 per 100,000 population, respectively, compared to 32.1 per 100,00 in Europe (Sharma et al., 2022). This severe and chronic shortage of qualified HCWs translates into increased provider workload (patient volume), inadequate HCW-patient communication, long waiting times (for consultation, diagnosis, and treatment), poor quality of care and health outcomes, negative public perception, and proliferation of the use of traditional and herbal medicine in most SSA countries (Brown et al., 2018; Sanuade et al., 2018; Sharma et al., 2022).

**Costs of Care.** Considering the overall financial constraints continuously faced by the large majority of SSA populations and the lack of affordable public health insurance (with many having to pay for health care out-of-pocket) (Bah et al., 2020; Gbenonsi et al., 2021), the perceived high cost of care in general (and breast cancer care in particular) is undoubtedly a significant health care utilization challenge among SSA women. Indeed, several studies have reported healthcare costs as the main obstacle to breast cancer health-seeking among SSA women across most countries (Brown et al.,

2018; Frie et al., 2018; Foerster et al., 2019; Gbenonsi et al., 2021; Getachew et al., 2020; Kagee, 2022; Kolawole et al., 2022; Sakafu et al., 2022; Sharp et al., 2019). This influence of the cost of breast cancer care-seeking and utilization is illustrated by findings from a comparative multi-country study by Foerster et al. (2019) among women in Namibia, Nigeria, and Uganda. They reported that in Namibia, where breast cancer care is free, about 98.7% of participants sought and received care (treatment), compared to only 62% in Nigeria, where the cost of care is the individual's responsibility. This cost barrier also explains the disparity in breast care uptake and outcomes observed across socioeconomic classes, with those in lower socioeconomic strata exhibiting lower uptake and poorer outcomes (Foerster et al., 2019) due to their financial inability to afford expensive breast cancer care.

**Lack of Trust in the Healthcare System.** Public trust in the healthcare system refers to the public appraisal of the healthcare system's ability and capacity to provide quality and affordable services when needed and seek the interest of patients (Peters & Youssef, 2016). Several provider and health system factors are used as healthcare service appraisal indicators or metrics to determine the public trust (or distrust) in the healthcare team and the broader health system. Such trust is proven, across all populations, to be paramount to health-seeking, healthcare services utilization, and compliance (Arakelyan et al., 2021; Peters & Youssef, 2016; Westgard et al., 2019). Unfortunately, in developing nations and SSA, in particular, the resulting outcome, considering all the previously mentioned barriers (HP and HCWS' negative attitudes, behaviors, favoritism and corruption, and costs), is the lack of public trust in the health system and health care team

(Frie et al., 2018; Sanuade et al., 2018), underscoring the general perception of the health system's poor capacity and ability to provide basic quality care in a compassionate and timely manner. Several studies report this lack of trust in the health system as a significant contributor to delayed breast cancer health-seeking and delayed diagnosis and treatment among SSA women (Frie et al., 2018; Gbenonsi et al., 2021; Kohler et al., 2017). Conversely, trust in the healthcare system is a facilitator of health-seeking. In their study exploring a framework for improving the early detection of breast cancer in Malawi (Kohler et al., 2017) reported that belief and trust in the healthcare system (to have the answer for breast cancer) significantly increased women's likelihood to seek medical care early.

**Privacy.** The lack of physical privacy in most SSA healthcare settings constitutes an obstacle to healthcare access for many SSA women (Mwaka et al., 2021; Tetteh & Faulkner, 2017). Considering the close community network in which many SSA women live, with everyone knowing everyone, coupled with social and cultural/ethnic stigma associated with breast cancer, many women denied their breast problems or delayed seeking medical help for fear of being gossiped about by others and healthcare professionals. (Mwaka et al., 2021)

It is apparent that the weakened and overburdened health system remains a substantial influencer of SSA women's breast cancer health-seeking decision-making. Such influence is further amplified by the sociocultural context and environment in which these women live.

### ***Community/Society-Level Factors***

The social, ethnic, and cultural beliefs, norms, and values governing the community in which individuals live are known determinants of health, and SSA women are not exempt from these determinants. These community-level determinants of breast cancer behaviors among SSA women include sociocultural and ethnic stigmatization of breast cancer, gender roles and responsibilities, and religious beliefs.

**Sociocultural Stigmatization of Breast Cancer.** Health-related stigma is extensively studied and well-documented as a significant barrier to health-seeking behavior across various health conditions and populations globally (Stangl et al., 2019). The sociocultural stigmatization of breast cancer is reported by multiple studies as a substantial barrier to breast cancer care-seeking and treatment acceptance in SSA (Akuoko et al., 2017; Iddrisu et al., 2020; Meacham et al., 2016; Sakafu et al., 2022; Sanuade et al., 2018). This stigmatization is founded on sociocultural/ethnic beliefs and perceptions about breast cancer (and disease in general), including its risk factors/causes, symptoms, signs and treatment, health, and womanhood (body image, whole body, beauty, femininity). There is a general social and cultural misconception of the cause of and susceptibility to breast cancer among SSA populations. In studies across several SSA countries, many participants referred to breast cancer as a “disgraceful” disease, a curse, and divine or ancestral punishment for wrongdoing (such as extra-marital or immoral lifestyle) or refusal to give birth (Afaya et al., 2023; Akuoko et al., 2017; Getachew et al., 2020; Iddrisu et al., 2020; Meacham et al., 2016; Sakafu et al., 2022; Sanuade et al., 2018). Some studies reported the cultural misconception of breast cancer incurability,

with participants referring to the disease as a death sentence (Meacham et al., 2016; Sakafu et al., 2022). In other studies, participants considered mastectomy (a standard breast cancer treatment modality in SSA) as a cause of infertility (Getachew et al., 2020). These culturally founded misperceptions about breast cancer forced many SSA women not to disclose their symptoms to their significant others, to deny their symptoms, or to delay seeking medical help until symptoms got worse for fear of social rejection by their own family, children, and friends (Agatha Ogunkorode et al., 2021; Meacham et al., 2016; Iddrisu et al., 2020) or public shame (Meacham et al., 2016). In a study among Ugandan women, some participants related their delay in seeking healthcare to their fear of bringing shame to their family or their children being shamed for their disease (Meacham et al., 2016).

Another impact of cultural stigmatization of breast cancer is the promotion of a fatalistic view of the disease (resulting in disease denial) (Agatha Ogunkorode et al., 2021; Scheel et al., 2017) and the belief in and use of traditional (herbal and spiritual) healing as preferential treatment of breast cancer in many SSA communities (Getachew et al., 2020; Mburu et al., 2021). For example, in a study in Ghana, some participants believed breast cancer was caused by a “spiritual attack from family members who want to kill you” or a “test from God,” prompting the need for spiritual healing (Afaya et al., 2023). This sociocultural, stigma-promoted traditional medicine or faith healing was found to adversely impact healthcare-seeking and uptake behaviors among SSA women (Foerster et al., 2019; Getachew et al., 2020; Meacham et al., 2016; Mburu et al., 2021; Sanuade et al., 2018).

Additionally, the social stigma associated with other diseases, such as HIV and cervical cancer, was associated with delays in seeking medical help for breast cancer among SSA women with these diseases (Foerster et al., 2019). However, the level and significance of cultural beliefs and stigmatization of breast cancer are not uniform across populations. For example, contrary to the popular cultural belief of the witchcraft origin of breast cancer, David et al. (2022) reported that only 6.3% of the participants in a study in Kenya believed breast cancer was caused by witchcraft and that such belief was not significantly associated with health-seeking behavior.

#### **Sociocultural Perceptions of Femininity, Womanhood, and Motherhood.**

Another prominent barrier to breast cancer screening and early breast cancer care seeking and uptake among SSA women is the sociocultural-based sexual conceptualization of breast and womanhood or femininity. In most SSA societies, breasts are considered integral parts of femininity, womanhood, the woman's physical appearance ("perfect body" and "whole and beautiful body"), and fertility (ability to give birth and breastfeed) (Tetteh, 2017; Tetteh & Faulkner, 2016). Considering this cultural perception of womanhood, any deviation from such sociocultural "ideal" women has significant physical and psychological consequences on women's sexual and social life, such as sexual rejection, loss of self-esteem, and being labeled "incomplete" women (Idrisu et al., 2020; Meacham et al., 2016; Sanuade et al., 2018). These physical and psychological consequences were reported in several studies as key determinants of SSA women's breast cancer health-seeking decision-making, due in part to the lay beliefs and sociocultural stigma associated with breast cancer causes and treatment. The beliefs that

breast cancer causes infertility and that mastectomy (and chemotherapy) make a woman less feminine, less woman, or less beautiful were commonly reported (Foerster et al., 2019; Tetteh & Faulkner, 2016; Sakafu et al., 2022). These beliefs, coupled with the consciousness about the sociocultural perception of womanhood, created fear (of rejection), anxiety, and depression (Tetteh, 2016; WHO, 2022) among SSA women, forcing them to deny or ignore symptoms or withdraw from disclosing them or seeking medical care until symptoms worsen (Tetteh & Faulkner, 2016). This fear of losing one's femininity and facing social rejection was proven to materialize among many SSA women with breast cancer who underwent mastectomy; they reported being divorced 3 years after mastectomy (Tetteh & Faulkner, 2016). Also, the cultural perception of women's breasts as intimate body parts that cannot be exposed to or touched by others (if not intimate partner) discourages many SSA women from seeking medical examination of their breast cancer symptoms in a health facility, likely by a male HCW, for fear of embarrassment (Tetteh & Faulkner, 2016).

**Gender Roles.** Social gender roles in SSA cultures significantly affect women's health decision-making. Many SSA women must seek their spouse's (or, in many cases, their spiritual or religious leader's) approval before seeking health care or prioritizing their health over social responsibilities (caring for children and household responsibilities) (Akuoko et al., 2017). This can delay seeking help in unsupportive relationships if a spouse or leader holds lay beliefs about breast cancer. Several studies have reported a significant link between gender roles in SSA societies and delayed breast cancer health-seeking, diagnosis, and treatment among SSA women (Frie et al., 2018).



### ***Other Society-Level Factors***

Besides the factors mentioned above, there are other social/community level factors reported as barriers to breast cancer healthcare seeking and utilization among SSA populations. These barriers include poverty and lack of media coverage (Iiaboaya et al., 2018). As previously mentioned, most SSA populations live in poverty; therefore, they lack the financial capability to afford the relatively expensive essential healthcare services when needed. Similarly, the lack of breast cancer knowledge among SSA is in part attributed to the lack of coverage of breast cancer or the magnification of cultural-based negative stories and misconceptions about breast cancer risk factors and treatment in the media (Iiaboaya et al., 2018; Tetteh, 2017), further fueling these cultural stigma and misconceptions and undermining existing breast cancer prevention and management efforts.

### ***Policy-Level Factors***

Policy-level actions weigh heavily on disease prevention and health promotion as they can impact many aspects of the healthcare continuum, from individual health behaviors to the healthcare system's capacity. One factor contributing to the poor healthcare system and health outcomes in many SSA countries (and the SSA region at large) is the lack of effective population-based healthcare policies aimed at addressing their populations' health needs.

Policy implications in timely health-seeking are related to barriers to public knowledge and awareness and the availability, access to, quality, and affordability of care. Policies that promote availability, access to, and affordability of care (such as

healthcare infrastructure, trained HCWs, reduced or cost-free national screening, diagnostic, and treatment) promote health-seeking behavior and shorter health-seeking time intervals. The lack of such policies in SSA countries (Iiaboaya et al., 2018) compounds individual, interpersonal, organizational, and societal barriers. Consequently, the lack of these policies prolongs the patient health-seeking time interval. Several studies have linked the observed delayed presentation, diagnosis, and treatment, and associated individual-level (lack of knowledge and awareness), health system-level (shortage of trained HCWs, lack of health infrastructure and equipment, and high costs, etc.), and society-level (stigmatization, lack of media coverage) barriers to the lack of breast cancer policies, such as investment in medical training for oncologists and population-based breast cancer registries, implementation of awareness and educational programs, screening, diagnostic and treatment subsidies, and prioritization of NCDs (Akinyemiju et al., 2022; Gbenonsi et al., 2021; Iiaboaya et al., 2018). For example, according to the WHO Cancer Regional Profile (2020) recent statistics, only 15% and 2% of African countries have population-based cancer registries and early cancer detection programs, respectively. This lack of population-based breast cancer registries undermines the validity and accuracy of many SSA countries' current breast cancer burden estimates, underscoring the ineffectiveness of current and existing interventions guided by these estimates.

### **Summary and Discussion**

This literature review reveals significant barriers to and lack of opportunities for breast cancer health-seeking (and care uptake) in SSA, explaining the region's alarming

breast cancer profile marked by delayed health-seeking, late or advanced-stage diagnosis, high incidence and prevalence, and low breast cancer survival (Espina et al., 2017). These barriers range from sociodemographic and economic factors (age, income, education, residence, and marital status) to cognitive and psychological factors (fear, fatalism, lay beliefs about breast cancer and its risk factors, screening, and treatment), environmental factors (sociocultural stigmatization of breast cancer, gender role and lack of social support), structural factors (HCWs' negative attitudes toward those seeking help, conflicting priorities, corruption and favoritism among HCWs), and policy level factors (inadequate funding, limited screening facilities, untrained HCWs, and lack of breast cancer policies). The interactive combination of these different level factors is the decrease in SSA women's cognitive and psychological self-efficacy, self-confidence, and willingness to promptly seek medical help for their breast cancer symptoms, translating into delayed health-seeking, advanced-stage presentation, diagnosis, and treatment, and low survival. The resulting outcome is the disproportionately high breast cancer burden among SSA women.

The observed correlation between the above factors and breast cancer health-seeking is extensively studied and proven in other low- and middle-income countries. For example, Negi and Nambiar (2021) reported a socioeconomic disparity in breast cancer screening in India. Also, a systematic review of studies conducted in Southeast Asia, Africa, Latin America, and Eastern Europe about the impacts of the sociodemographic and sociocultural factors on delayed breast cancer presentation revealed a positive correlation between longer delays and lack of knowledge, fear, negative belief about

cancer, low social support, alternative medicine, and distrust in the healthcare system (Petrova et al., 2022).

SSA women's sociodemographic characteristics (age, marital status, income, education), breast cancer knowledge, and lay beliefs can positively or negatively influence their breast cancer risk, susceptibility, severity perception, and their self-efficacy to make rational, cognitive, and emotional health-seeking decisions. Similarly, interpersonal factors (social support) influence individuals' perceived health-seeking barriers (informational and financial). Lack of or negative social support increases perceived barriers (Akuoko et al., 2017; Kisiangani et al., 2018; Meacham et al., 2016; Tetteh & Faulkner, 2016), while the presence of positive social support helps alleviate perceived barriers (Kagee, 2022; Mburu et al., 2021; Sakafu et al., 2022).

Organizational-level factors, including lack of trained and knowledgeable HCWs, privacy issues, limited infrastructure and healthcare supplies, negative HCWs' attitudes, HCWs' corruption and favoritism, misdiagnoses, costs, and poor disease management, are extensively reported as SSA nations' healthcare system challenges and barriers to healthcare seeking and utilization (Ahinkorah et al., 2021; Dominic et al., 2019). They are shown to undermine the availability, timely accessibility, and utilization of healthcare services and interventions, including breast cancer care (Ahinkorah et al., 2021; Dominic et al., 2019). These barriers are more prominent in rural areas and among low socioeconomic populations than in urban and high-income regions. The lack of privacy, the negative discriminatory HCW attitudes, and the unreliable diagnosis of breast cancer in many developing nations are, in part, the result of the lack of accountability of HCWs

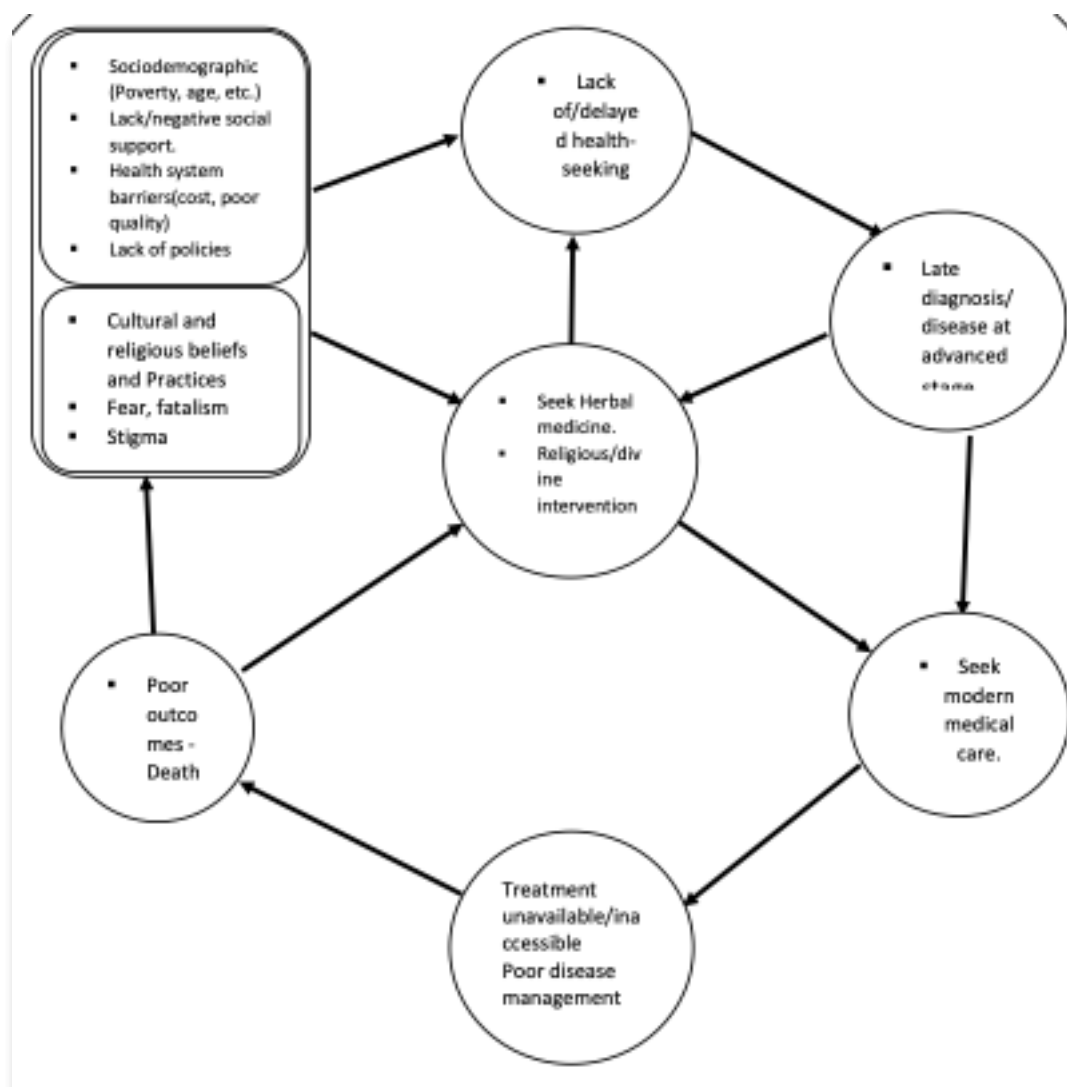
and their disregard for their professional and ethical responsibilities to facilitate and promote access to care and educate and treat patients with fairness, compassion, and respect (Berlan & Shiffman, 2012).

The pervasive social, cultural, ethnic, and religious stigmatization of disease in general and breast cancer in particular forces most SSA women to conform to their biased and scientifically unsubstantiated norms and beliefs, selflessly and unjustifiably neglect their health, deny their health problems, or delay seeking medical help for the sake of sociocultural and religious conformity. This social, cultural, and religious conformity or traditionalism of health behavior and its impact on preventive health behavior and medical help-seeking has been reported in other studies, such as Chaudhry and Chen (2019), involving other health conditions, such as mental health. The social and religious stigmatization of breast cancer as divine punishment for sin (promiscuity), or “witchcraft,” coupled with financial hardship, the mistrust in HCWs, and the perceived inadequate quality and high costs of care motivate many to seek herbal medicine and divine intervention instead of seeking modern health care services at the onset of their symptoms.

The policy-level barriers (as noted above) can be explained by the lack of commitment and political will from many SSA countries’ governments toward the health of their people. Indeed, the lack of political will and commitment have been reported in studies like Land et al. (2019), and Oleribe et al. (2019), and they are key contributors to the alarming disease burden in developing nations, including SSA.

In addition to revealing the existing knowledge and practice gaps concerning breast cancer healthcare-seeking, these findings call for, more importantly, the pressing need for effective multilevel approach interventions and policies to reduce the above-identified barriers, promote early breast cancer health-seeking, diagnosis, and treatment, and reduce breast cancer burden among SSA women.

The interaction between the various socio-ecological factors creates a vicious path that many SSA and Togolese women navigate, leading to high numbers of breast cancer risk behaviors, poor disease prognosis, and premature death (low survival). In a positive feedback manner, the lack of breast cancer policies and the overwhelmed and weakened health system plagued by a shortage of skilled HCWs, lack of adequate and easily accessible infrastructure, misdiagnosis, poor quality of care, and distrust in the health system do not only force SSA women to delay seeking care, but further validate and further fuel the negative perceptions, stigma, and beliefs about breast cancer as incurable and divine punishment, and the preference for traditional and spiritual healing, resulting in a vicious circle leading to premature death and associated socioeconomic consequences faced by SSA families, communities, and nations. The diagram below (Figure 4) visually illustrates this vicious circle of breast cancer health behavior in SSA.

**Figure 4***Breast Cancer Vicious Circle in SSA***Literature Gaps**

Early healthcare-seeking is vital to early diagnosis and treatment and improved survival. Current literature reveals an overall long delay in seeking healthcare but significant variations in breast cancer health-seeking behaviors across studied populations. Some studies reported delayed seeking of breast cancer care across SSA

countries, ranging from 4-24 months in Ghana to 15 months in Rwanda (Agbeko et al., 2020; Espina et al., 2017), while another reported healthcare-seeking time intervals as low as less than a week among 86.1% of the participants (Moodley et al., 2020). Like the variation in the outcome (health-seeking time), there was also a noticeable disparity in factors impacting the outcome. For example, most studies reported variations in breast cancer knowledge, awareness, beliefs, perceptions, and practices (Foerster et al., 2019; Lilian et al., 2020; McKenzie et al., 2018). Similar disparities were reported for other factors.

In addition, there is a limited population representation in current studies, with most studies conducted in less than 50% of the 48 SSA countries and mainly in clinical and urban settings and among breast cancer patients, as opposed to community and rural settings and among non-breast cancer patient populations. Besides the lack of regional representativeness in breast cancer studies in SSA, there is also a lack of study population representativeness in several breast cancer studies in the region, considering the qualitative design of most studies about breast cancer in SSA.

The observed disparities in outcome and factors, the lack of population representativeness, and setting and target population limitations suggest the need for setting or population-specific breast cancer initiatives to promote early breast cancer health-seeking and address the breast cancer burden in SSA. Population-specific breast cancer studies are lacking in many SSA countries and Togo, creating literature and public health practice gaps that need to be filled urgently to alleviate this population's breast cancer burden. The current study aimed to fill the above gap (lack of knowledge about



population-specific breast cancer contextual challenges in SSA) by assessing the factors associated with anticipated medical help-seeking time for breast cancer symptoms among women in Togo from a socio-ecological perspective. Indeed, to the researcher's knowledge, no study investigating breast cancer health-seeking time has been conducted among women in Togo.

## Chapter 3: Research Method

### **Introduction**

Early healthcare-seeking, coupled with routine screening, is vital to avert the socioeconomic breast cancer burden in SSA at individual, family, community, national, and regional levels. As the literature review reveals, SSA women in general, and Togolese women in particular, face significant and unique sociocultural, geographical, and system challenges impeding their ability and willingness to timely seek conventional medical care at the onset of their breast cancer symptoms. The current study was conducted to explore the prevalence of breast cancer screening and factors associated with Togolese women's anticipated time to seeking medical help for potential breast cancer symptoms. By doing so, the current study has the potential to contribute to positive social change by informing evidence-based policies and programs that will promote early healthcare-seeking and breast cancer care access and utilization.

### **Research Design and Rationale**

The current study was conducted using a quantitative approach, and a cross-sectional survey was used to gather primary quantitative data from participants. This quantitative design helped to evaluate the level of breast cancer screening and identify and better understand the broader socio-ecological factors associated with breast cancer healthcare-seeking and the delayed medical help-seeking behavior among Togolese women. A quantitative design generates objective knowledge and helps detect trends and identify a predictive relationship between variables at one point in time (Babbie, 2016; Creswell & Creswell, 2017). Additionally, the cross-sectional design is cost-effective in

terms of resources and time. A qualitative design would have been necessary if the study was focused on understanding how the factors of interest impact Togolese women's health-seeking behavior. Finally, a mixed-methods design would have been the ideal study design to provide comprehensive knowledge about the relationships between the numerous factors and the anticipated healthcare-seeking time and the processes through which these relationships (if they exist) impact Togolese women's breast cancer health-seeking behaviors. However, considering the current study's resources and time constraints, such a mixed-methods design was not practically feasible. Similarly, in addition to not meeting the current study's purpose, longitudinal and experimental designs were not practically feasible.

### **Population**

Togo is an SSA country of 56,600 km<sup>2</sup> with an estimated population of 8.85 million inhabitants, almost equally composed of men and women (4.4 million each) in 2022 (Central Intelligence Agency [CIA], 2023; World Bank, n.d.). It is located between Ghana in the west, Benin in the east, Burkina Faso in the north, and the Atlantic Ocean in the south. Togo is a culturally diverse nation with about 37 ethnic groups (tribes); each with unique cultural and social values, norms, beliefs, practices, dialects, foods, holidays, etc. (CIA, 2023). The Adja-Ewe or Mina (42.4%), Kabye/Tem/Kotokoli (25.9%), Para-Gourma/Akan/Ouatchis (17.1%), Akposso/Akebu (4.1%), and Ana-Ife (3.2%) represent the major ethnic groups (CIA, 2023). The current study population comprised Togolese women ages 18 and older living in rural and urban areas. Participants were randomly

selected from the general population of women from conveniently chosen cities and villages of Togo.

### **Setting and Sample**

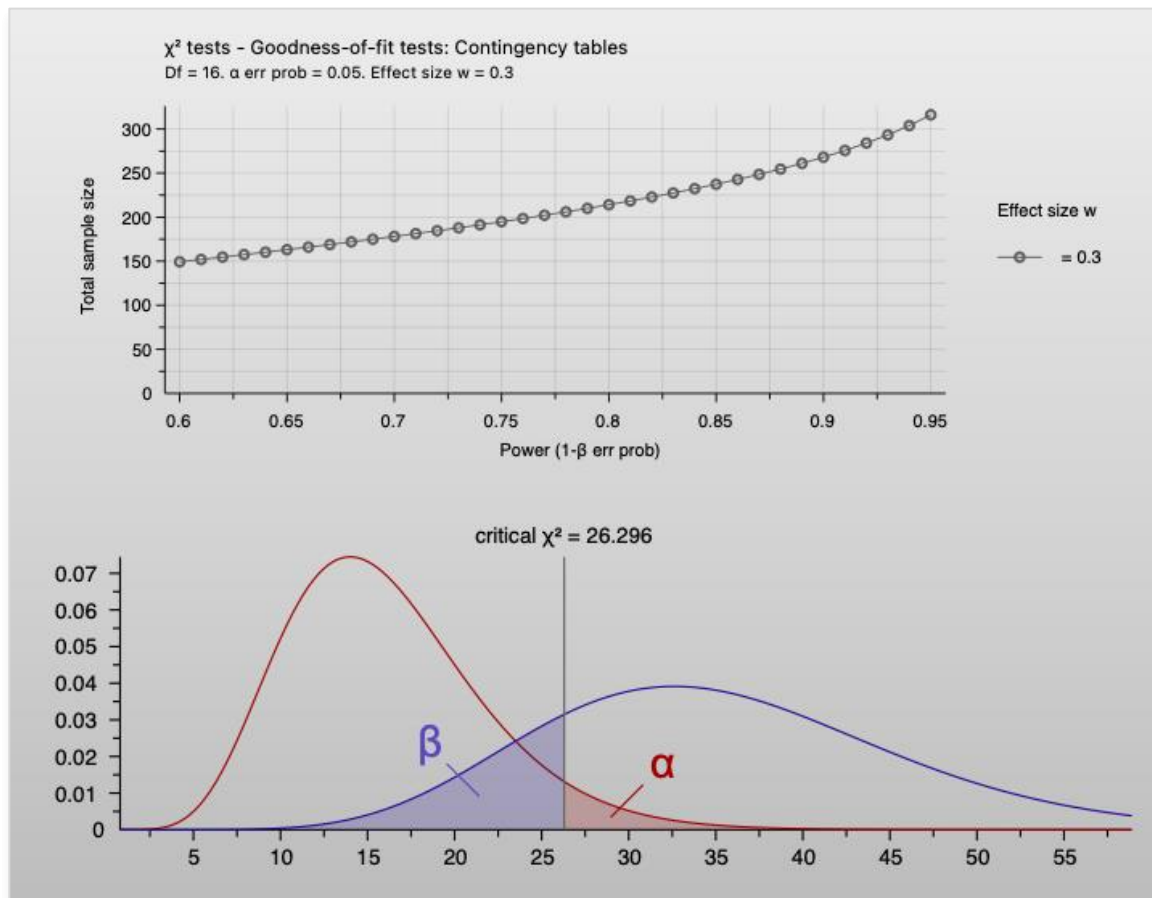
In addition to community health centers, religious congregations (churches and Mosques), community centers, and social gathering events/places (marketplace) were targeted as potential study settings. This diversity in setting helped ensure demographic, religious, and ethnic representativeness. Similarly, the random selection of the study participants helped obtain a representative sample of the country's socioculturally diverse population to ensure the findings' external validity. For all settings (in collaboration with health facilities and religious congregation management), a designated location (free of distractions) was allocated for data collection. In small rural areas, door-to-door sampling was used.

As illustrated in Figure 5, a power analysis was performed to determine the appropriate sample size using G\*Power 3.1.9.6 software (Faul et al., 2007; Faul et al., 2009). The number of the current study's independent variables and associated categories, the statistical analysis using a 95% confidence interval, a 5% error margin ( $\alpha = 0.05$ ), a commonly accepted Type II error ( $\beta$  value) of 0.2, which translates into 80% power, and an effect size of 0.3, which is the median effect size of factors like stigma on help seeking (Kane et al., 2019) were considered in the computation of the sample size. The computed minimum sample size was 215. To allow for nonresponses and missing data, I increased the sample size by 10%, giving a minimum sample size of 237.

G\*Power plots showing sample size estimate based on a 95% confidence interval, a 5% error margin ( $\alpha = 0.05$ ), and a type II error  $\beta = 0.2$ .

**Figure 5**

*G\*Power Plots*



### Research Questions and Hypotheses

The following research questions and hypotheses guided this study:

RQ1: Is there an association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>01</sub>: There is no statistically significant association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women.

*H*<sub>11</sub>: There is a statistically significant association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women.

RQ2: Is there an association between social support and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>02</sub>: There is no statistically significant association between social support and the anticipated time to medical help-seeking among Togolese women.

*H*<sub>12</sub>: There is a statistically significant association between social support and the anticipated time to medical help-seeking among Togolese women.

RQ3: Is there an association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>03</sub>: There is no statistically significant association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women.

*H*<sub>13</sub>: There is a statistically significant association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women.

RQ4: Is there an association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>04</sub>: There is no statistically significant association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women.

*H<sub>14</sub>*: There is a statistically significant association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women.

A detailed conceptualization and operationalization of the study variables will be provided later in this chapter.

### **Recruitment Strategy**

To ensure demographic (religious, ethnic, and SES) and geographical (regional and urban vs. rural) representativeness, participants were randomly selected from different conveniently chosen settings and locations of the country. An Invite (flyers and posters) was distributed in the target communities (and at the health facilities) in high-traffic areas such as marketplaces, churches, and mosques. The invite/flyer provided brief information about the study, unique date and time, and location of data collection, information about eligibility for the study, the overall purpose of the current study and potential positive social change resulting from its findings, information on how to reach the researcher for interested participants, and information about the participation incentive. Also, a recruitment memo was sent to religious congregations' (churches and mosques) leaders stating the study's overall purpose and potential positive social change resulting from its findings. A direct, unique telephone line reserved for the purpose of the current study was listed on the flyer. Interested participants who could not attend the unique pre-scheduled data collection session mentioned on their flyer were instructed to call or text the researcher to express their interest in participating in the study and arrange a convenient data collection session (date, time, and location) with the researcher.

During the data collection sessions, participants were screened for eligibility using the study's criteria, and only those who met these criteria were allowed to participate. To increase survey uptake, a \$3.0 gift card (about 2,000 CFA in local currency) was offered to respondents at the end of the survey as an incentive and in appreciation for their time and effort.

At the beginning of the data collection, eligible participants were administered a written or verbal informed consent, providing an overview of the study's purpose and information about their privacy, confidentiality of information, and autonomy to participate or withdraw from the study at any time without penalty, potential risks and benefits associated with participation. Additionally, participants were offered the opportunity to ask questions or raise any concerns before completing the survey. The survey was available and primarily administered in French (Togo's official language). The survey was also available in English. It was filled out by the participant herself or by the researcher (for those needing reading assistance). Ensuring participants' privacy was paramount, as it is one of the major principles of human research ethics. Therefore, no identifiable data (name, phone number, address, and date of birth) were collected. Instead, each participant was assigned a unique participant number. Also, to prevent unauthorized or accidental access, all collected data were stored in a password-protected file with researcher-only access. Additionally, the researcher followed the guidance of the Walden IRB and will comply with Walden University's research data retention policy and discard the raw data accordingly. The Ministry of Health and Hygiene of Togo



advised the researcher to comply with the data retention policy of the Academic institution sponsoring the study (for students).

### **Eligibility Criteria to Participate in the Study**

To be eligible to participate in the study, a person had to meet each of the following eligibility criteria: (a) be at least 18 years old and a woman; (b) have no known personal or family history of breast cancer; and (c) have lived in Togo for at least a year.

### **Role of the Researcher**

As the researcher, I oversaw participant recruitment and selection processes, as well as informed consent administration, data collection, and analysis.

### **Methodology**

#### **Data Collection**

##### ***Data Collection Instruments***

Using a structured, self-reported survey the researcher collected primary data on the variables of interest (demographics, breast cancer literacy, social support, trust in the healthcare system, and social stigma). The survey consisted of a researcher-developed general sociodemographic form, a researcher-developed breast cancer literacy questionnaire (adapted from the Breast Cancer Awareness Measure (BCAM) and the African Women Awareness of Cancer (AWACAN) breast and cervical cancer tool), the 3-item Oslo Social Support Scale (OSSS-3), a modified version of the Trust in Health Care Team (T-HCT) Scale, and a modified version of the Cancer Stigma Scale (CASS) (Appendix A).

### ***Sociodemographics Form***

This form was used to collect sociodemographic data. It consisted of eight researcher-developed questions about sociodemographic characteristics such as age, marital status, employment, education, income, place of residence (urban/rural), ethnicity, and religion.

### ***Breast Cancer Literacy Tool***

The researcher developed this data collection instrument based on two validated and commonly used breast cancer knowledge and awareness scales, the Breast Cancer Awareness Measure (BCAM) and the African Women Awareness of Cancer (AWACAN) breast and cervical cancer tool. The BCAM is a validated and reliable tool developed by Cancer Research UK, University College London, King's College London, and University of Oxford in 2007-2008 to assess awareness about breast cancer risk factors and symptoms) in the general population (Cancer Research UK, 2023b; Linsell et al., 2010; Stubbings et al., 2009). Previous studies like Elobaid et al. (2014), Linsell et al. (2010), and Stubbings et al. (2009) have demonstrated the tool's high construct validity and readability (Cronbach alpha of 0.77). It has been used successfully in studies to assess breast cancer awareness and knowledge in SSA (Wachira et al., 2017). Like the BCAM, the AWACAN breast and cervical cancer tool (a 115-item questionnaire) is a validated and reliable tool to assess individuals' knowledge and beliefs about breast and cervical cancer risk factors, symptoms, their lay beliefs, confidence in the symptom appraisal, anticipated help-seeking behaviors, and barriers to health care among SSA women (Moodley et al., 2019). It has been validated among African women and shown to

have good test-retest reliability (Intra-Class Correlation score  $\geq 0.7$ ) and internal reliability for knowledge of breast cancer risk factors, lay beliefs, and symptoms (Kuder-Richarson (KR-20) coefficient values  $> 0.7$ ) (Moodley et al., 2019). For the current study, researcher-developed adapted versions of both tools targeting general knowledge of breast cancer (*Have you ever heard of breast cancer?*), its risk factors, symptoms, curability, and lay beliefs were used. The resulting Breast Cancer Literacy Tool consisted of three sections: One section of three items focusing on general awareness and knowledge about the curability of breast cancer, one section of 19 items focusing on risk factors (13 items), and lay beliefs (6 items), and one section of 13 items targeting symptoms. Drawing from the scoring of the original scale items, the scale items of the current study's adapted tool were scored as follows: *Yes* = 1, *No* = 0, *Don't know* = 0, *Disagree* = 1, *Not sure* = 2 and *Agree* = 3. The maximum score for each section was seven for overview knowledge (items 1, 2, and 3), 39 for risk factors knowledge (items 4a, b, c, d, f, g, i, k, l, n, p, q, r), 39 for symptoms, and 18 for lay beliefs items (4e, h, j, m, o, s). The total score ranged from 34 to 103, with higher scores indicating higher knowledge and awareness.

### ***Oslo's 3-Item Social Support Scale (OSSS-3)***

The OSSS-3 is a self-reported scale that assesses an individual's level of social support. It consists of three items that measure an individual's number of close confidants (Item 1: How many people are so close to you that you can count on them if you have great personal problems?); the sense of concern from others (Item 2: How much interest and concern do people show in what you do? ); and the accessibility of practical help

from neighbors (Item 3: How easy is it to get practical help from neighbors if you should need it?) (Kocalevent et al., 2018). It was developed in 2006 by Dalgard. Existing literature showed that the scale has an acceptable reliability (Cronbach alpha of 0.64) (Kocalevent et al., 2018). Its extensive use in several large-scale, population-based studies in various settings and populations demonstrates the OSSS-3's predictive and construct validity (Kocalevent et al., 2018). It has been validated and used in SSA populations by several studies like Abiola et al. (2013) and Busary et al. (2021).

**Table 2**

*Scoring of the OSSS-3's items*

Item 1 response	None	1-2	3-4	5+	
Score	1	2	3	4	
Item 2 response	None	Little	Uncertain	Some	A lot
Score	1	2	3	4	5
Item 3 response	Very difficult	Difficult	Possible	Easy	Very easy
Score	1	2	3	4	5
Sum score range	3-14				

As shown in Table 2 above, the cumulative score for the three items ranges from 3 to 14, with higher and lower scores representing strong and poor social support, respectively (Kocalevent et al., 2018). Utilizing previous studies like Bøen et al. (2012) and Kocalevent et al. (2018), the OSSS-3 sum score was operationalized into three categories or levels of social support as follows: (a) 3–8 = poor social support; (b) 9–11 = moderate social support; and (c) 12–14 = strong social support.

### ***Trust in Health Care Team (T-HCT) Scale***

T-HCT is a 29-item validated and reliable data collection tool related to public trust in the healthcare system associated with diseases, including breast cancer among diverse populations and languages, with an internal consistency reliability score greater than 0.70 (Richmond et al., 2022). It is used to evaluate individuals' perceptions of their healthcare team's communication competency, fidelity, system trust, confidentiality, stigma-based discrimination, fairness, and global trust related to the utilization of preventive health services and health-seeking behaviors (Richmond et al., 2022).

(Appendix A) The T-HCT scale addresses all healthcare system domains the current study aimed to assess, making it a good fit for this study's purpose. The researcher used a -researcher-developed short version of the T-HCT scale consisting of 20 items adapted from the original T-HCT Scale. The adapted scale consisted of four items, each assessing communication, fidelity, system trust, and confidentiality domains; four items for the fairness domain; and two items for each of the stigma-based discrimination and global trust domains. Using the original T-HCT scoring system, all items were scored on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5), with low and high scores indicating low level or absence of trust (distrust) and high level of trust in the healthcare system, respectively. Negative statements were reverse scored 5 to 1 from strongly disagree to strongly agree. The total possible score on the scale ranges from 20 to 100, with a median total score of 60. Higher total scores indicate a higher level of trust in the healthcare system.

### ***Cancer Stigma Scale (CASS)***

CASS is a 25-item, valid and reliable tool (Cronbach's alpha value of 0.86 and content validity index (CVI) > 0.73) consisting of six subscales (awkwardness, severity, avoidance, policy opposition, personal responsibility, and financial discrimination) developed by Marlow and Wardle in 2014 (Bu et al., 2022; Çevik et al., 2023; Vrinten et al., 2019). It has been used to assess the non-patient population's multidimensional public stigma about cancer (Vrinten et al., 2019). The scale items are scored on a six-point Likert scale (strongly agree, moderately agree, slightly agree, slightly disagree, moderately disagree, and strongly disagree). There are positive and negative statements. The positive statements are scored as 6, 5, 4, 3, 2, 1 for strongly agree/yes definitely, moderately agree/ yes probably, slightly agree/yes possibly, slightly disagree/possibly not, moderately disagree/probably not, and strongly disagree/definitely not, respectively. Similarly, negative statements are reverse scored from 1 to 6 for strongly agree, moderately agree, slightly agree, slightly disagree, moderately disagree, and strongly disagree, respectively. A higher score indicates a higher level of stigma (Paneru et al., 2023; Vrinten et al., 2019). The *not sure* response is treated as a missing value and scored zero. Drawing from previous studies, such as Nyblade et al. (2017) and Paneru et al. (2023), the mean score (total score /# of items scored) was dichotomized into low stigma (mean score of 1 to 3) and high stigma (mean score of 4 to 6), for analytical simplicity.

The data collection instruments were translated into French and back-translated, with both the original and the translated versions being examined by experts. The translated tool was pretested among a sample of participants who did not participate in

the study. This pilot test aimed to assess the internal reliability of the translated versions of the instruments using Cronbach's alpha for scale and domains. If the internal reliability failed, the data collection instrument could not be used. The current data collection tool must be modified (adding or removing items) and retested, or a completely new data collection instrument might be necessary. The new instrument will go through the same reliability test.

The survey was programmed using Zoho Survey Software. To facilitate the data collection in the field and ensure data privacy, the digital version of the survey was downloaded onto password-protected portable computers and tablets.

### **Constructs/Variables Conceptualization and Operationalization**

#### ***Independent Variables or Predictors***

**Sociodemographics.** Sociodemographic characteristics were measured as follows:

- Age, which referred to the participant's chronological (calendar) age (in years), was measured on a continuous scale. However, it was later transformed (recoded) into a categorical variable linking categories to age groups as follows: 1 = 18 years - < 30 years, 2 = 30 years - < 40 years, 3 = 40 years - < 50 years, 4 = 50 years and older.
- Marital status, which referred to the participant's legal or customary matrimonial status, was measured on a categorical scale as follows: 1 = married, 2 = Living together with partner, 3 = divorced/separated, 4 = widowed, 5 = single/never married.

- Employment status, which referred to whether the participant currently held a remunerative job, was categorized using the following employment statuses: unemployed/student, self-employed, government/private company employee (current or retired), and homemaker. However, for analytical simplicity, it was recoded into a categorical construct with two categories: 1 = employed (for self-employed and government/private company employees), and 2 = unemployed and homemaker.
- Education, which referred to the participant's highest level of education, was measured on a categorical scale as follows: 1 = No education/schooling, 2 = primary (elementary school), 3 = intermediate (middle school), 4 = secondary (high school), and 5 = post-secondary (college or more).
- Income refers to the participant's monthly household income in local currency (in CFA Fran BCEAO, with \$1 = 600 CFA). It will be measured as an interval variable: <10,000; 10,000 to <25,000; 25,000 to <50,000; 50,000 to <75,000; and 75,000 or more. For analytical simplicity, income will be re-coded as a categorical construct, with four categories: 1 = poor (<10,000 and 10,000 to <25,000), 2 = Low income (for 25,000 to <50,000), 3 = Middle income (50,000 to <75,000), and 4 = Upper income (for  $\geq 75,000$ ).
- Residence refers to the participant's geographical (urban vs. rural) residential location. It was coded as follows: 1 = urban/ville, 2 = rural/village).
- Ethnicity, which referred to membership in a specific ethnic group, was measured as a categorical variable with seven categories and recoded as follows: 1 =



Ewe/Mina, 2 = Kabye, 3 = Ouatchis, 4 = Akposso/Akebu, 5 = Kotokoli/Tem, 6 = Losso, 7 = Other.

- Religion, which referred to believing in a specific religious doctrine, was operationalized as a categorical variable with four categories: 1 = Christian, 2 = Muslim, 3 = Tradition believer/Voodooist, and 4 = other.

These sociodemographic characteristics were captured by a researcher-developed generic demographic (background) information sheet (Appendix A).

**Breast Cancer Literacy.** At the individual/intrapersonal level, breast cancer literacy refers to participants' knowledge and awareness of breast cancer, its risk factors, and its symptoms. It assessed participants' ability to recognize/identify breast cancer risk factors and signs. It can be expanded to the interpersonal, organizational, and community levels, where it may also refer to individual social networks (family and friends), HCWs, and the larger community's awareness, understanding, and attitudes toward breast cancer and the sharing of breast cancer information. The current study only assessed the individual level of breast cancer knowledge and awareness using a researcher-developed questionnaire adapted from the BCAM and the AWACAN breast and cervical cancer tools (previously described in the Data Collection Instrument section). This construct was measured as the total score of items on the adopted scale, with a score ranging from 34 to 103 and a median score ( $[\text{min} + \text{max}]/2$ ) of 68. For this study, this construct was dichotomized as follows: 1= Low/Lack of breast cancer literacy (for total scores  $\leq$  the median score of 68), and 2 = High breast cancer literacy (for total scores  $>$  median score of 68).

**Social Support.** Social support is a multifaceted construct depicting various interpersonal social relationship processes that provide tangible and informational assistance or emotional comfort to enhance health and well-being (Leahy-Warren, 2014; Haugan & Erikson, 2021), with broader conventionalization and operationalization ranges. For this study, it referred to the participant's appraisal of the quality, type (tangible, informational, and emotional), and level (size of the network) of her relationship with her immediate social entourage (family and friends, in addition to spouse). Operationally, it was defined at an interpersonal level as the participant's self-reported perception (or subjective appraisal) of the size and significance of her close social network. As previously described, the scale total score was categorized into three levels of social support: poor social support for a score of 3-8, moderate social support for a score of 9-11, and strong social support for a score of 12-14. However, for analytical simplicity and the study's purposes, the social support variable was dichotomized: 1 = Social Support Absent (score of 3-6) and 2 = Social Support Present (score of 7-11).

**Trust in the Healthcare System.** This organizational-level construct is a complex and multifaceted concept. For this study, trust in the healthcare system was defined as an organizational quality referring to the healthcare system or institution's professional and ethical competence, reliability, credibility, and dependability in delivering care as expected by patients and the public (Katapodi et al., 2009). Operationally, this construct was defined at the organizational level as a low (mistrust) or high (trust) level of trustworthiness through the lenses of the participant's perceived trust

and beliefs in the healthcare system's capacity and competence in adequately, confidently, and fairly communicating with her and providing her with the needed and timely breast cancer information and care rather than subverting her health interests for financial gain or professional pride. It was assessed using a researcher-developed, 14-item questionnaire adapted from the Trust in Health Care Team (T-HCT) Scale, with two items assessing each of the T-HCT's seven domains (communication competency, fidelity, system trust, confidentiality, fairness, stigma-based discrimination, and global trust), as previously described in the Instrumentation section. The total score on the scale ranges from 20 to 100, with a mean total score of 60. Higher total scores indicate a higher level of trust in the healthcare system. For the current study, the healthcare system trust construct operationalized as a dichotomous variable: 1 = trust (for a total score  $\geq 60$ ), and 2 = low trust/distrust (for a total score  $< 60$ ).

**Social Breast Cancer Stigma.** This society-level construct can be conceptualized either as the negative attitudes and behaviors felt by the individual with breast cancer (felt stigma or internalized stigma) or expressed by the public toward individuals with breast cancer (public or enacted stigma) (Vrinten et al., 2019). For this study, social breast cancer stigma referred to the public stigma of breast cancer. This public stigma of cancer has been shown to negatively impact timely health-seeking and public health efforts to reduce the burden of cancer (Vrinten et al., 2019). It was measured using an adapted version of the abovementioned CASS scale. For analytical simplicity and the study's purposes, the total score was dichotomized into 1 = low stigma (total mean score of 1-3) and 2 = high stigma (total mean score of 4-6).

### *Dependent Variables*

**Breast Cancer Screening.** This construct refers to a participant's breast cancer screening practice (whether the participant has ever screened for breast cancer) in the last 12 months. The time limit of 12 months was chosen to minimize recall bias. It was operationalized as a dichotomous variable (Have you ever been screened for breast cancer by yourself or a doctor?): 1 = Yes, 2 = No.

**Anticipated Time to Seeking Medical Help.** This construct is the time it will take a participant to seek conventional medical help from the moment she notices or suspects the first symptom of breast cancer (if she chooses to); in other words, how soon a participant would seek medical help after noticing a change in her breast(s). The anticipated time to seeking medical help was categorized as follows: < 1 week, 1 week - < 2 weeks, 2 weeks - < 1 month, 1 month - < 2 months, 2 months - < 3 months, and  $\geq$  3 months.

Considering the aggressivity of breast cancer among SSA women, the rarity of breast cancer symptoms, the lack of national breast cancer-related medical help-seeking guidelines in Togo, and other barriers to accessing health care services in SSA, a cut-off time of 2 months was used in the current study. Using this 2-month cut-off, this construct was operationalized as a categorical variable with two categories (dichotomous variable): (a) 1 = no delay in seeking medical help (for anticipated time < 2 months), and (b) 2 = delay in seeking medical help (for anticipated time  $\geq$  2 months, which included never seeking medical help).

Data on all variables were self-reported; therefore, they were considered perceived. Table 3 below illustrates the cross-reference between the study variables, research questions, and survey instruments and/or questions.

**Table 3**

*Cross-Reference Between Study Variables, RQs, and Survey Instruments and/or*

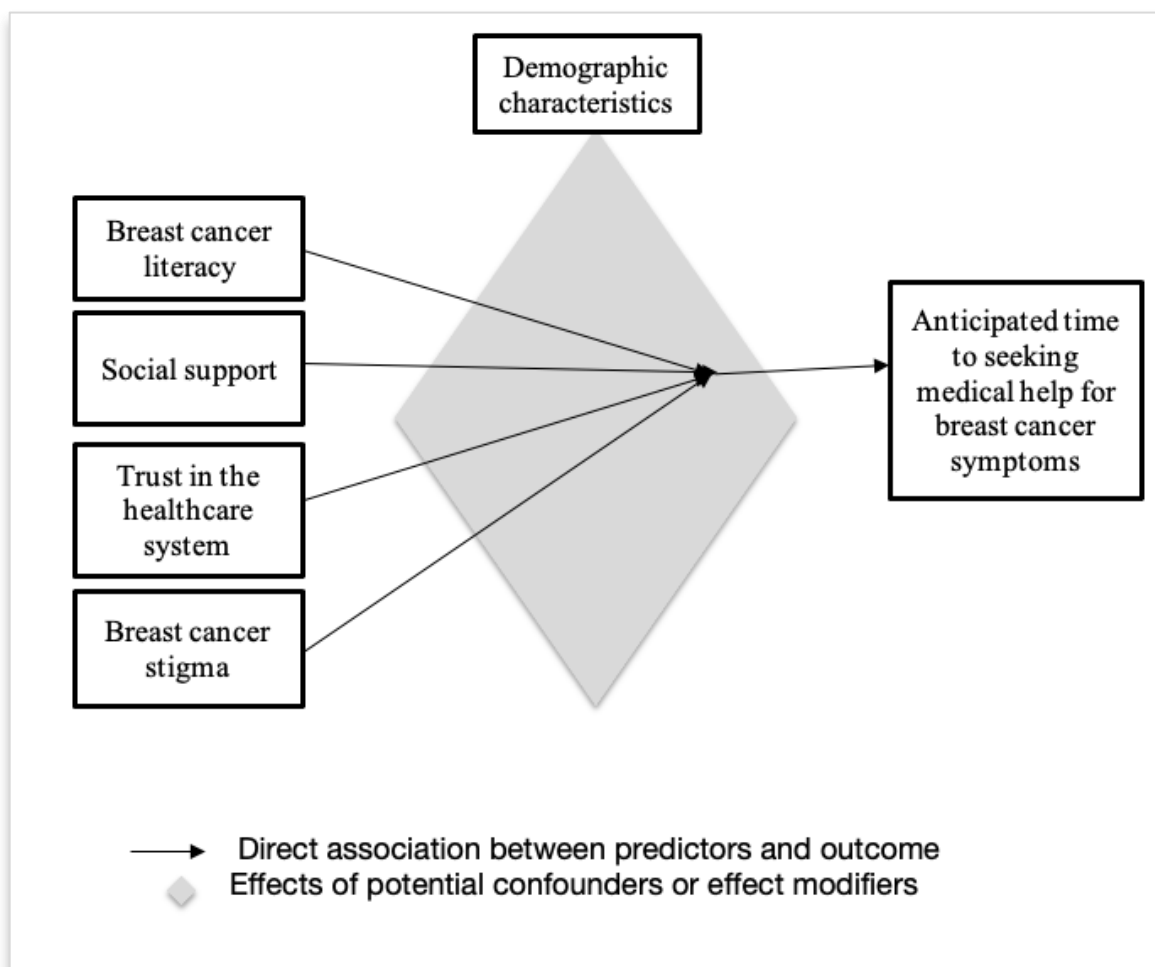
*Questions*

Variable name	Research question	Survey instrument/questions
Independent variable 1: Breast cancer literacy	RQ1: Is there an association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women?	Researcher-developed questionnaire adapted from the AWACAN breast cancer and the BCAM tools
Independent variable 2: Social support	RQ2: Is there an association between social support and the anticipated time to medical help-seeking among Togolese women?	Three-item Oslo Social Support Scale
Independent variable 3: Healthcare system trust	RQ3: Is there an association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women?	Trust in health care team (T-HCT) scale
Independent variable 4: Breast cancer stigma	RQ4: Is there an association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women?	A modified version of the cancer stigma scale (CASS)
Dependent variable 1: Breast cancer screening uptake		Have you ever examined your breasts in the past 12 months?
Dependent variable 2: Anticipated time to seek medical help	RQs 1, 2, 3 and 4	Modified version of Section 5 of the AWACAN.
Control variables: Sociodemographic characteristics (age, education, residence, income, marital status, employment, religion)		Researcher-developed sociodemographic information sheet.

The graph in Figure 6 depicts the association between the outcome variable (anticipated time to seeking medical help for breast cancer symptom(s)) and several predictors (socioecological factors) and potential demographic confounders.

**Figure 6**

*Directed Acyclic Graph Showing the Connection Between the Study Variables*



### **Threats to Validity**

Threats to validity refer to challenges that can undermine the researcher's ability to conclude that the observed outcome is not due to factors other than the IVs in the study (Creswell & Creswell, 2017).

#### **External Validity**

Threats to external validity refer to threats that might undermine the generalizability of the study's findings. Participants for this study were selected from conveniently chosen cities; therefore, their characteristics and breast cancer behaviors might not fully represent all other Togolese (in different cities) and SSA women who might otherwise have been part of the study. However, the proposed random sampling and recruitment techniques allowed me to recruit a sociodemographically representative sample, limiting the threat to external validity.

Another potential threat to external validity is the threat to statistical validity, which might arise when the researcher draws inaccurate statistical inferences resulting from inadequate statistical power or unmet statistical assumptions (Babbie, 2016; Creswell & Creswell, 2017). The power of a statistical test refers to the probability of the test detecting a statistically significant and actual difference between groups when a difference actually exists (Akobeng, 2016; Cohen, 2013). Failure to have adequate statistical power can reduce the probability of detecting significant associations while increasing the likelihood of type II error –failing to reject null hypotheses that should be rejected (Akobeng, 2016; Sham & Purcell, 2014). To minimize threats to statistical validity, I ensured that the study had adequate statistical power by recruiting an adequate

sample size (actually 10% greater than the calculated minimum sample size), selecting the appropriate statistical analysis, and ensuring that the assumptions associated with each of the statistical tests used in the study were met.

Threats to construct validity can also undermine the validity of the study findings due to the failure to use adequate variable definitions and measures (Creswell & Creswell, 2017). The researcher did not anticipate any construct validity threats, considering the detailed conceptualization and operationalization of the study variables that were done (as described above).

### **Internal Validity**

Threats to internal validity relate to challenges with the study design, methods, and procedures, as well as challenges determining and recording participants experiences, that limit the researcher's ability to draw valid conclusions as well as to make inferences based on the study results from the sample to the study population in quantitative research (Creswell & Creswell, 2017). Potential threats to internal validity include problems with the data collection instrument(s), information bias, and confounding variables.

The data collection instruments' validity (content and construct validity) is paramount to the study's internal validity. It is imperative to ensure that the data collection instruments measure the actual constructs correctly (construct validity) and that there is a correlation between the instruments' scores/responses and the observed outcome variables in health, social, and, more importantly, behavioral sciences (Boateng et al., 2018; Tsang et al., 2017). Failure to do so could result in invalid data and erroneous



conclusions and inferences. To limit potential data collection instrument-related threats to internal validity, the researcher used pre-existing, validated data collection instruments (OSSS, T-HCT, AWACAN, BCAM, and CASS) to construct the study's instruments. In addition, all researcher-developed data collection instruments were pilot-tested on a non-study participant sample to ensure validity by measuring their internal consistency (their Cronbach  $\alpha$  values).

Information bias constitutes a significant threat to internal validity, as it is detrimental to data validity and completeness (Althubaiti, 2016; Kesmodel, 2018; Pandis, 2014). The researcher collected self-reported data, thereby relying on participants' honesty and recall, which can potentially be impacted by social desirability and recall biases. Social desirability bias occurs when a study participant reports a socially desirable behavior rather than her actual behavior or experience for fear of being socially disapproved or embarrassed. Recall bias can result from a study participant's inability to recall information from the distant past. (Latkin et al., 2017; The et al., 2023). To limit these threats to internal validity, the researcher intentionally limited recall questions to 12 months or less to reduce the likelihood of recall bias. Also, only one question required much recall (Have you examined your breast in the past 12 months?).

Confounding variables, such as age, education, income, marital status, etc., can distort the measures of association between the IVs and the DV, which can lead to invalid conclusions and inferences if these confounders are not controlled for (Pourhoseingholi et al., 2012; Skelly et al., 2012). Confounding variables can be controlled for during study design and data collection through randomization, restriction, and/or matching, as well as

during data analysis through stratification or multivariate modeling (Pourhoseingholi et al., 2012). For the current study, the researcher conducted multiple regression, which enabled him to control for potential confounders and thereby reduce threats to internal validity.

### **Ethical Procedures**

All aspects of the study (design, methodology, recruitment, data collection instruments, data collection, and storage) were guided by the Institution Review Board (IRB) of Walden University. In addition, the researcher sought and received approval from the Ministry of Health of Togo. Informed consent, which included providing each participant with information about the study, including its purpose and potential harms and benefits to the participant as a result of her participation in it, and guaranteeing her autonomy to decide whether or not to participate in as well as to withdraw from the study at any time without repercussions, was administered to each participant before data collection. No personal identifiable data were collected, and all data collected were stored in a password-protected file with researcher-only access. Finally, per Walden University's IRB data retention regulation, all the data collected for the study (both hard and digital copies) will be kept for only 5 years and shredded thereafter.

### **Pilot Testing**

All data collection instruments were pilot-tested on non-study participants to ensure their validity (construct validity) and reliability (internal reliability). Also, the pilot testing made it possible to assess how long it would take participants to complete

the survey and whether there were any potential challenges, such as participant fatigue and missing data (Babbie, 2016).

### **Preliminary Data Cleaning and Screening**

The survey responses were entered directly into the Zoho Survey platform in real-time by the participants using portable computers and tablets and later uploaded to the secure server to minimize data loss and ensure data privacy and security. Once the data were uploaded, an initial data cleaning was performed to ensure completeness and evaluate missing data and their potential impact on the data analysis. Additionally, data diagnostic screening was conducted to assess whether the characteristics of the data met or violated the assumptions of the statistical method (multivariate binary logistic regression). These assumptions include (a) binary outcome (dependent variable), (b) independent observations, (c) normally distributed residuals (errors) for continuous variables, (d) absence of multicollinearity among IVs, (e) undue influences/outliers, (f) linearity of continuous IVs and log-odds (logit), and (g) sample size adequate for each independent variable in the dataset (Daniel & Cross, 2019; Stoltzfus, 2011). The outcome or DV (anticipated time to seek medical help) was operationalized as a categorical binary variable, and there was no repeated measurement of observations or matched data (Schreiber-Gregory & Bader, 2018), thus satisfying Assumptions 1 and 2, respectively. The researcher used the following statistical approaches to assess assumptions three through six:

Cook's distance for outliers. The standard threshold for outliers is  $4/N$ , with  $N$  being the number of observations. This means that for  $N$  observations, a Cook's distance  $>4/N$  suggests the presence of outliers (violation of assumption two).

Variance Inflation Factor (VIF) for multicollinearity. A VIF value greater than 10 indicates a significant degree of multicollinearity, violating assumption four (Schreiber-Gregory & Bader, 2018).

Q-Q plot. If the points on the plot fall close to a straight line, then the residuals are considered normally distributed, satisfying assumption 3. Otherwise, the assumption is violated.

The Box-Tidwell test for linearity of IVs and logit for assumption five (Schreiber-Gregory & Bader, 2018).

For the sample size assumption, there should be a minimum of 10 observations with the least frequent outcome for each independent variable. This assumption was assessed by calculating the count or frequency of each variable. (Schreiber-Gregory & Bader, 2018).

This preliminary data screening was vital to ensuring the statistical methods' appropriateness, the findings' validity and reliability, and the validity of subsequent inferences and applications (Creswell & Creswell, 2017; Warner, 2013). Assumptions 3 to 6 were assessed during analysis and reported in Chapter four.

### **Data Analysis**

Primary data collected using the abovementioned instruments were analyzed using the Statistical Package for Social Sciences (SPSS – IBM) version 28.0. I calculated

descriptive statistics to describe the characteristics of the study sample. Arithmetic means, minimums, maximums, and standard deviation values were used to describe numerical (continuous) data, while frequencies and percentages were used to characterize categorical data. Inferential statistics were calculated to assess the association between the DV and each IV separately), as well as the relationship between the DV and all the IVs together. The researcher used binary logistic regression for data analysis to evaluate our hypotheses, considering the categorical nature of the outcome variable of interest (anticipated time to seek medical help). Daniel and Cross (2019) noted that logistic regression is the analytical method of choice for dichotomous dependent variables. The researcher conducted bivariate and multivariate regression analyses to assess the significance of the associations between each IV and the DV and between all the IVs together and the DV, respectively. The statistical significance level was 5% ( $p < 0.05$ ).

### **Summary**

This chapter was focused on the study design and methodology. The researcher utilized a cross-sectional study design to answer the research questions, using a survey adapted from previously validated psychometric tools as a data collection instrument. Following the Walden University IRB approval, the data collection instrument was used to collect primary data on sociodemographics, breast cancer literacy, social support, trust in the healthcare system, breast cancer stigma, breast cancer screening, and anticipated health-seeking time from a minimum of 237 Togolese women aged 18 years and older with no personal or family history of breast cancer. Participants were randomly selected from conveniently chosen major regions of Togo. No personal identifiable information

was collected to ensure participants' privacy, and collected data were stored in a password-protected file with researcher-only access. Descriptive and inferential statistical analyses of the data were conducted using SPSS Version 28.0 to describe the study sample and answer the research questions. The results of the data analysis will be the subject of chapter four.

## Chapter 4: Results

### Introduction

This quantitative cross-sectional study aimed to explore breast cancer screening (BSE) practices, medical health-seeking behaviors, and the socioecological factors influencing these behaviors among Togolese women aged 18 years and older. To accomplish this aim, four research questions were developed to assess whether Togolese women's breast cancer literacy, social support system, overall trust in the country's healthcare system, and breast cancer stigma influence their anticipated medical care help-seeking time. Using a socioecological framework as a theoretical foundation, a structured questionnaire consisting of 27 questions was administered in person to 434 participants aged 18 years and older randomly selected from five different regions and geographical (urban and rural) settings to collect primary data on the variables of interest. The structured questionnaire was developed by the researcher using modified pre-existing validated data collection instruments (AWACAN, BCAM, OSSS, and T-HCT scale). By randomly selecting the participants from five different localities of the country in both urban and rural settings, the researcher tried to ensure external validity and sociodemographic representativeness.

The following research questions and hypotheses guided this study.

RQ1: Is there an association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>01</sub>: There is no statistically significant association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women.

*H*<sub>11</sub>: There is a statistically significant association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women.

RQ2: Is there an association between social support and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>02</sub>: There is no statistically significant association between social support and the anticipated time to medical help-seeking among Togolese women.

*H*<sub>12</sub>: There is a statistically significant association between social support and the anticipated time to medical help-seeking among Togolese women.

RQ3: Is there an association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>03</sub>: There is no statistically significant association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women.

*H*<sub>13</sub>: There is a statistically significant association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women.

RQ4: Is there an association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women?

*H*<sub>04</sub>: There is no statistically significant association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women.

*H*<sub>14</sub>: There is a statistically significant association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women.



To test the hypotheses and answer the research questions, statistical analyses were conducted on the primary data collected using the IBM Statistical Packages for Social Sciences (SPSS) Version 29.0. Descriptive statistics were calculated to assess the characteristics of the study sample and to provide baseline information on the participants' breast cancer screening (BSE) and help-seeking behaviors, breast cancer literacy, social support, trust in the healthcare system, and breast cancer stigma. Inferential statistical analyses were performed using binary logistic regression to test the study hypotheses and answer the research questions. All assumptions of logistic regression were evaluated and found to have been met. All variables (IVs and DV) were coded as categorical for analytical simplicity.

In this chapter, I will report on the descriptive and inferential statistics related to testing the hypotheses and answering the research questions.

### **Ethical Considerations**

Ethics approval was received from Walden University's Institutional Review Board (IRB; approval number 06-04-24-0766603) and the Committee of Bioethics for Research in Health (Comité de Bioéthique pour la Recherche en Sante [CBRS]) of the Ministry of Health and Hygiene of Togo (Opinion No: 001/2024/CBRS). All study protocols were reviewed and approved separately by both institutions as meeting all ethical requirements for research. A written informed consent explaining the research procedures to each participant was obtained from them before data collection. For participants requiring reading assistance, a verbal consent was obtained in place of written consent. All data were saved on a password-protected computer with researcher-

only access and will be destroyed 5 years after completion of the study per the Walden IRB data retention policy.

### **Validity and Reliability of Data Collection Instrument**

The survey used in this study consisted of questions adapted and translated from existing validated data collection tools: AWACAN (Intra-Class Correlation score  $\geq 0.7$ ), Oslo's 3-item Social Support Scale [OSSS-3] (Cronbach alpha of 0.64), Breast Cancer Awareness Measure [BCAM] (Cronbach alpha of 0.77), Cancer Stigma Scale (Cronbach's alpha of 0.86), and Trust in the Health Care Team [T-HCT]) scale (Cronbach's alpha greater than 0.7). Even though these data collections were validated and demonstrated to be valid and reliable among a diverse population (based on Cronbach's alpha values and inter-class correlation scores), a pilot study was conducted before the beginning of the actual study to assess and ensure the validity and reliability (consistency) of the questionnaire. For this pilot study, data were collected from 35 non-study participants recruited from regions other than the five used to recruit participants. Reliability analysis was conducted in SPSS, and Cronbach's alpha values indicated excellent internal consistency and reliability for the Breast Cancer Literacy tool ( $\alpha = 0.86$ ), Social Support scale ( $\alpha = 0.91$ ), Breast Cancer Stigma scale ( $\alpha = 0.98$ ), and Trust in the Health Care Team scale ( $\alpha = 0.97$ ). Similarly, intraclass correlation coefficient values ranged from 0.2 to 0.7, which can be considered "good" to "moderate" (Appendix B), showing that items in each scale measure the same construct and are appropriately allocated to the scale. This analysis demonstrated that the study data collection

instruments (in French) used to measure the variables of interest were reliable and valid self-administered data collection instruments.

## **Results**

### **Descriptive Statistics**

#### ***Demographics***

The study sample consisted of 343 women randomly selected from five regions of Togo in urban and rural settings. All participants were 18 years and older and had reported living in Togo for at least a year, with no personal or family history of breast cancer. Table 4 summarizes the participants' demographics, including age, education, marital status, ethnicity, religion, and income.

Most participants were younger than 45 years old (82.1%) and had some education (between primary and post-secondary school) (79%). A total of 75% were in a relationship (married or living together with a partner), while 24.6% were either single, divorced, separated, or widowed. Regarding residence, 59.5% lived in rural areas, while 39.4% lived in urban areas (cities). Most participants were employed (63.8%) and had at least one child (84.5%). Regarding income, 62.6% earned less than \$84 (50,000 FCFA) per month, while only 12.5% reported earning \$84 (50,000 FCFA) or more per month. Regarding ethnicity, most participants were Mina/Ewe (40.8%) or Kabyie (21.9%), and regarding religion, most participants were Christian (75.5%) or Muslim (16.3%).

**Table 4***Summary of Participant demographics*

Variables	Categories	N	%
Age (in years)	18 - 24	77	22.4%
	25 - 34	116	33.8%
	35 - 44	89	25.9%
	45 - 54	39	11.4%
	55 - 64	16	4.7%
	65 and over	6	1.7%
Education	No schooling	69	20.1%
	Primary	89	25.9%
	Intermediate	60	17.5%
	Secondary	78	22.7%
	More than secondary	44	12.8%
Marital status	Married	194	56.6%
	Living together with a partner	63	18.4%
	Single	63	18.4%
	Separated/Divorced	16	4.7%
	Widowed	5	1.5%
Residence	Urban/city	135	39.4%
	Rural/Village	204	59.5%
Current employment	Un-employed	104	30.3%
	Student	19	5.5%
	Employed	219	63.8%
Number of children	0	53	15.5%
	1-2	109	31.8%
	3 or more	179	52.2%
Monthly income (in CFA)	<10,000	114	33.2%
	10,000 to <25,000	69	20.1%
	25,000 to <50,000	32	9.3%
	50,000 to <75,000	22	6.4%
	75,000 or more	21	6.1%
Ethnicity	Ewe/Mina	140	40.8%
	Kabye	75	21.9%
	Ouatchis	9	2.6%
	Akposso/Akebu	9	2.6%
	Kotokoli	38	11.1%
	Losso	15	4.4%
	Other	54	15.7%
Religion	Christian	259	75.5%
	Muslin	56	16.3%
	Voodooist	8	2.3%
	Other	17	5.0%

### ***Breast Cancer Literacy***

Breast cancer literacy refers to the participant's knowledge and awareness of breast cancer's risk factors, symptoms, screening (self-breast examination), treatability, and survival. A total of 78.4% of respondents were breast cancer literate, while 21.6% lacked breast cancer literacy. Most respondents (86.9%) reported having heard of breast cancer, but only 51.1% and 47.7% believed that breast cancer is treatable, and that early detection is vital for breast cancer survival, respectively. Tables 5 summarize these findings.

**Table 5**

#### *Frequencies*

		N	%
Breast cancer literacy	Low/lack of BC literacy	71	21.6
	High/presence of BC literacy	258	78.4
Have you ever heard of breast cancer?	Yes	284	86.9
	No	43	13.1
Breast cancer is treatable	Disagree	60	18.9
	Not sure	95	30
	Agree	162	51.1
Early detection is important to surviving breast cancer	Disagree	41	12.6
	Not sure	129	39.7
	Agree	155	47.7

### ***Breast Cancer Screening (BSE)***

Of the 343 participants, only 74.5% reported ever self-examining their breasts, while 24.2% never checked their breasts (Table 6).

**Table 6***Frequency Distribution of Self-Breast Examination*

Do you ever check your breasts?		
	N	%
Yes	243	74.5
No	83	25.5

***Health-Seeking behavior***

Tables 7-a and 7-b depict the distribution of participants' breast health-seeking behavior. 75.8% of participants reported that they would seek medical health if they ever noticed a change in their breast(s), while 24.2% reported that they would either tell someone close to them, seek help from a traditional/spiritual healer, or ignore it. Of those who reported they would seek medical help, 36.2% and 15.5% said they would do so in less than one week and within one week – <1 month, respectively, while 28% reported that they would seek medical help after a month or longer. For this study's purpose and analytical simplicity, the variable anticipated time to seeking medical help was recoded into a dichotomous variable called "delay seeking medical help with categories of "no delay" for anticipated time to seeking medical health of less than 2 months, and "delay" for anticipated time to seeking medical help of 2 months or more. 67.7% reported no delay, compared to 32.3% who reported delay.

**Table 7***Breast Health-Seeking Behavior Frequency Distribution*

	N	%
a- If you noticed a change in your breast or breasts, what would you do?		
Ignore it	28	8.6
Tell someone close to you	33	10.1
Visit a traditional/spiritual healer	7	2.1
Seek a medical help	247	75.8
Don't know	11	3.4
b- If you noticed a change in your breast or breasts, how soon would you visit the pharmacy or clinic or health center or hospital?		
Never	67	20.4
< 1 week	119	36.2
≥ 1 week < 1 month	51	15.5
≥ 1 month < 2 months	53	16.0
≥ 2 month < 3 months	26	7.9
≥ 3 months	13	4.0

*Social Support*

Table 8 summarizes the level of social support. Most participants (59.0%) reported poor social support.

**Table 8***Perceived Social Support Frequency Distribution*

Social support	N	%
Poor social support	194	59.0
Moderate social support	94	28.6
Strong social support	41	12.5

*Breast Cancer Stigma*

Regarding breast cancer stigma (perceived public and self-stigma), most participants (82.6%) reported no or a low level of breast cancer stigma (Table 9).

**Table 9***Breast cancer stigma frequency distribution*

Breast Cancer Stigma	N	%
Low BC stigma	270	82.6
High BC stigma	57	17.4

*Trust in the Healthcare System*

A total of 58.3% reported having trust in the healthcare system, while 36.7% reported distrusting the healthcare system (Table 10).

**Table 10***Trust in the Healthcare System*

Trust in the healthcare system	N	%
Trust	200	61.3%
Distrust	126	38.7%

**Inferential Statistics**

Five separate logistic regression models were constructed to investigate the relationship between the DV (Anticipated time to seeking medical help, operationalized as no delay/delay) and each of the IVs, followed by one model to investigate the relationship between the DV and all four IVs simultaneously, while controlling for the demographics age, education, marital status, residence (urban/rural), income, employment, religion, and ethnicity.

All logistic regression assumptions were tested and were satisfied: dichotomous DV, no multicollinearity between IVs (Table 11-a), no outliers, and independent observations [Durban-Watson = 2.023] (Table 11-b).



**Table 11***Logistic Regression Assumptions Tests*

a- Multicollinearity: Correlations					
		Social support	Breast cancer literacy	Breast cancer stigma	Trust in the healthcare system
Social support	Pearson correlation	1	-0.105	0.017	-.136*
	Sig. (2-tailed)		0.057	0.759	0.014
	N	329	329	327	326
Breast cancer literacy	Pearson correlation	-0.105	1	.203**	-.192**
	Sig. (2-tailed)	0.057		<.001	<.001
	N	329	329	327	326
Breast cancer stigma	Pearson correlation	0.017	.203**	1	-.161**
	Sig. (2-tailed)	0.759	<.001		0.004
	N	327	327	327	326
Trust in the healthcare system	Pearson correlation	-.136*	-.192**	-.161**	1
	Sig. (2-tailed)	0.014	<.001	0.004	
	N	326	326	326	326
b- Test for independent observations					
Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.511 <sup>a</sup>	0.261	0.251	0.4059	2.023

\*. Correlation is significant at the 0.05 level (2-tailed). \*\*. Correlation is significant at the

0.01 level (2-tailed). a. Predictors: (Constant), Trust in the healthcare system, Social

support, Breast Cancer Stigma, Breast Cancer literacy. b. Dependent Variable:

Anticipated medical help-seeking time

***Bivariate Logistic Regression***

Bivariate logistic regression analyses were conducted to test each of the study's null hypotheses and answer the associated research question.

RQ1: Is there an association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women?

This bivariate logistic regression analysis was conducted to determine if a Togolese woman's breast cancer literacy (knowledge and awareness of breast cancer, its risk factors, symptoms, screening, diagnosis, and treatment) influenced her medical health-seeking behavior (anticipated time to seek medical help) for a change in her breast (s) that could be a potential sign of breast cancer. The result showed that the model (anticipated time to medical help-seeking as a function of breast cancer literacy) was not statistically significant ( $\chi^2(1) = 0.367$ ,  $p = 0.545$ ) (Table 12-a). The model explained only between 0.1% (Cox & Snell R Square) and 0.2% (Nagelkerke R Square) of the variance in the anticipated time to seeking medical help variable (Table 12-b) and correctly classifying 67.8% of cases (Table 12-c). In this model, breast cancer literacy was not a statistically significant predictor of the anticipated time to medical help-seeking ( $\beta = -0.172$ , Wald = 0.371,  $p = 0.543$ , Exp (B) = 0.842, 95% CI [0.484, 1.464]) (Table 12-d). However, compared to women with low breast cancer literacy, those with higher breast cancer literacy had about a 16% decrease in the odds of reporting anticipated delay in seeking medical help (Table 12-d). The null hypothesis that there is no statistically significant association between breast cancer literacy and the anticipated time to medical help-seeking among Togolese women would not be rejected, suggesting that Togolese women's level of breast cancer literacy (awareness and knowledge about breast cancer risk factors, signs and symptoms, screening, diagnosis, and treatments) has no influence

on their anticipated time to seek medical help if they ever notice a change in their breast(s).

**Table 12**

*Model 1 (RQ1) summary*

a- Omnibus Tests of Model Coefficients						
		Chi-square	Df	Sig.		
Step	Step	0.367	1	0.545		
1	Block	0.367	1	0.545		
	Model	0.367	1	0.545		
b- Model Summary						
Step		-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square		
1		413.191a	0.001	0.002		
c- Classification Tablea						
Observed			Predicted			
			Anticipated medical help-seeking time		Percentage Correct	
			No delay	Delay		
Step	Anticipated medical help-seeking time		No delay	Delay		
1			223	0	100	
			106	0	0	
		Overall Percentage			67.8	

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001. The cut value is .500

RQ2: Is there an association between social support and the anticipated time to medical help-seeking among Togolese women?

The logistic regression model was statistically significant ( $X^2(2) = 47.431$ ,  $p < 0.001$ ) (Table 13-a), explaining between 13.4% (Cox & Snell R square) and 18.8% (Nagelkerke R Square) (Table 13-b) of the variance in the anticipated time to seeking

medical help and correctly classifying 67.8% of cases (Table 13-c). In this model, social support was a statistically significant ( $p < 0.001$ ) predictor of the anticipated time to medical help-seeking, indicating a trend with women with moderate and high social support having 22.4% ( $\beta = -1.496$ ,  $p < 0.001$ ,  $\text{Exp}(B) = 0.224$ , 95% CI [0.120, 0.416]) and 6.1% ( $\beta = -2.805$ ,  $p < 0.001$ ,  $\text{Exp}(B) = 0.06$ , 95% CI [0.014, 0.258]) decrease in the odds of reporting a delay seeking medical help, respectively, if they notice a change in their breast(s) (Table 13-d). The null hypothesis that there is no statistically significant association between social support and the anticipated time to medical help-seeking among Togolese women would be rejected, suggesting that Togolese women perceived social support (size of social network and significance of practical help) has a significant influence on their anticipated time to seeking medical help if they notice a change in their breast(s). However, as the odds ( $\text{Exp}(B)$ ) values indicated, the association between social support and the anticipated time to seek medical help is not linear or proportional. Figure 7 illustrates the trend in delayed seeking medical help relative to the level of social support.

**Table 13***Model 2 (RQ2) Summary, Omnibus Tests of Model Coefficients*

		Chi-square	Df	Sig.
Step 1	Step	47.431	2	<.001
	Block	47.431	2	<.001
	Model	47.431	2	<.001
Model Summary				
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square	
1	366.128a	.134	.188	

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Classification Table<sup>a</sup>

Observed	Predicted	Anticipated medical help-seeking time		Percentage	
		No delay	Delay	Correct	
		Step 1	Anticipated medical help-seeking time	No delay	223
		Delay	106	0	.0
Overall Percentage					67.8

The cut value is .500.

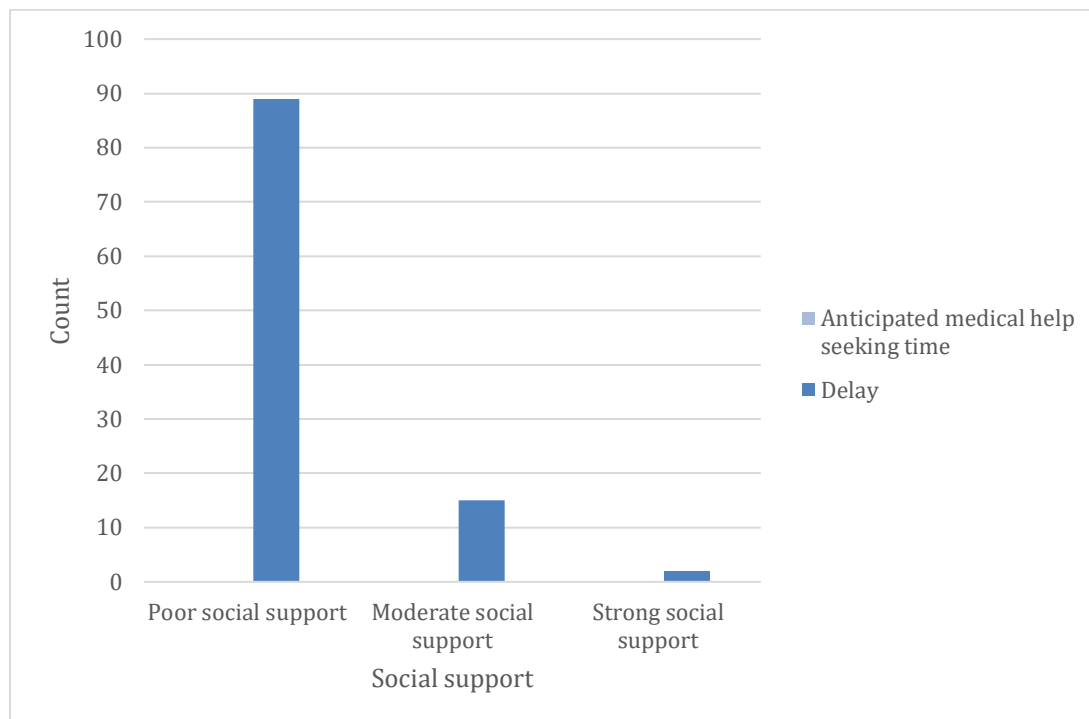
Variables in the Equation

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)		
							Lower	Upper	
Step 1a	Social support		33.845	2	<.001				
	Social support (1)	-1.496	.316	22.363	1	<.001	.224	.120	.416
	Social support (2)	-2.805	.739	14.401	1	<.001	.061	.014	.258
	Constant	-.165	.144	1.317	1	.251	.848		

a. Variable(s) entered on step 1: Social support.

**Figure 7**

*Trend in Delayed Medical Help-Seeking Time as a Function of Level of Social Support*



RQ3: Is there an association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women?

This model was statistically significant ( $X^2(2) = 56.765, p < 0.001$ ), explaining between 16% (Cox & Snell R square) and 22.3% (Nagelkerke R Square) of the variance in the anticipated time to seeking medical help (Table 14-a) and correctly classifying 73% of cases (Table 14-b). In this model, trust in the healthcare system was a statistically significant ( $p < 0.001$ ) predictor of the anticipated time to seek medical help, indicating a trend with women lacking trust in the healthcare system being 6.5 times more likely to delay seeking medical help for a change in their breast(s) than those who trust the

healthcare system( $\beta = 1.873$ ,  $p < 0.001$ ,  $\text{Exp}(B) = 6.510$ , 95% CI [3.907, 10.846]) (Table 14-c; Figure 8). The null hypothesis that there is no statistically significant association between trust in the healthcare system and the anticipated time to medical help-seeking among Togolese women would be rejected, suggesting that Togolese women's trust in the healthcare system significantly influences their anticipated time to seek medical help if they ever notice a change in their breast(s).

**Table 14**

*Model 3 (RQ3) Summary*

a- Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	354.447a	.160	.223

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Classification Table<sup>a</sup>

	Observed	Predicted			
		Anticipated medical help-seeking time		Percentage Correct	
		No delay	Delay		
Step 1	Anticipated medical help-seeking time	No delay	166	54	75.5
		Delay	34	72	67.9
	Overall Percentage				73.0

The cut value is .500.

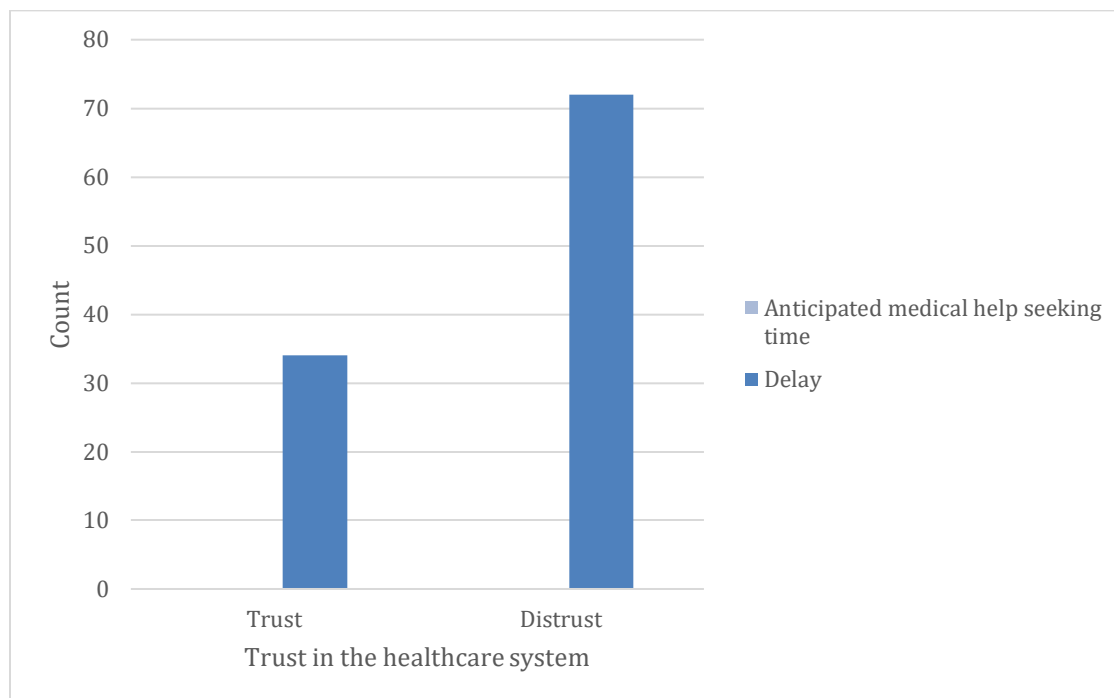
Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)		
							Lower	Upper	
Step 1a	Trust in the healthcare system (1)	1.873	.260	51.726	1	<.001	6.510	3.907	10.846
	Constant	-1.586	.188	70.951	1	<.001	.205		

a. Variable(s) entered on step 1: Trust in the healthcare system.

**Figure 8**

*Trend in the Delayed Medical Help-Seeking Time as a Function of Trust in the Healthcare System*



RQ4: Is there an association between breast cancer stigma and the anticipated time to medical help-seeking among Togolese women?

The model was not statistically significant ( $\chi^2(1) = 1.208, p = 0.272$ ). The model only explained between 0.4% (Cox & Snell R Square) and 0.5% (Nagelkerke R Square) of the variance in the anticipated time to seeking medical help (Table 15-a) and correctly classifying 67.6% of cases (Table 15-b). In this model, breast cancer stigma was not a statistically significant predictor of the anticipated time to seeking medical help ( $\beta = -0.353, Wald = 1.165, p = 0.281, Exp(B) = 0.703, 95\% CI [0.370, 1.334]$ ) (Table 15-c). Therefore, the null hypothesis that there is no statistically significant association between



breast cancer stigma and the anticipated time to medical help-seeking among Togolese women would not be rejected, suggesting that a Togolese woman's stigma toward breast cancer and persons with breast cancer had no influence on their anticipated time to seek medical help for a change in their breast(s).

**Table 15**

*Model 4 (RQ4) Summary*

a- Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	410.789a	.004	.005

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Classification Table<sup>a</sup>

Observed	Predicted		Percentage Correct
	Anticipated medical help-seeking time		
	No delay	Delay	
Step 1 Anticipated medical help-seeking time	No delay	221	100.0
	Delay	106	.0
Overall Percentage			67.6

a. The cut value is .500

Variables in the Equation

Step	Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
1a	Breast Cancer Stigma (1)	-.353	.327	1.165	1	.281	.703	.370	1.334
	Constant	-.677	.129	27.612	1	<.001	.508		

a. Variable(s) entered on step 1: Breast Cancer Stigma.

### ***Multivariate Logistic Regression***

Anticipated time to seeking medical help as a function of breast cancer literacy, social support, trust in the healthcare system, and breast cancer stigma

This multivariate logistic regression analysis was conducted to predict if a Togolese woman's breast cancer literacy (knowledge and awareness of breast cancer, its risk factors, symptoms, screening, diagnosis, and treatment), social support, trust in the health care, and stigma toward breast cancer and those with the disease influenced her medical health-seeking behavior (anticipated time to seek medical help) for a change in her breast (s) that could be a potential sign of breast cancer. This model was statistically significant ( $X^2(5) = 96.027, p < 0.001$ ), explaining 22.5% (Cox & Snell R square) and 35.6% (Nagelkerke R Square) of the variance in the anticipated time to seeking medical help and correctly classifying 81 % of cases (Tables 16-a, and 16-b). The Hosmer and Lemeshow Test ( $X^2(6) = 8.908, p = 0.179$ ) indicates that the data fit the model correctly. In the model, only social support ( $p < 0.001$ ) and trust in the healthcare system ( $\beta = 1.888, Wald = 42.960, p < 0.001, Exp(B) = 6.609, 95\% CI [3.757, 11.624]$ ) were statistically significant predictors of the anticipated time to seeking medical help, respectively, while controlling for all other variables. In this model (as observed in the bivariate logistic regressions), while controlling for other variables, breast cancer literacy and breast cancer stigma were not statistically significant predictors of the anticipated time to seek medical help. As Table 16-c indicates, women with low BC literacy and with high perceived BC stigma had about the same odds ( $Exp(B) = 1$ ) of delaying (vs. not delaying) seeking medical help for a change in their breast(s), compared to women with

higher breast cancer literacy and low breast cancer stigma, respectively. The Hosmer and Lemeshow Test ( $X^2(6) = 8.908, p = 0.179$ ) (Table 16-d) indicates that the data fit the model well. The result of this analysis suggests that, while controlling for other variables, Togolese women's anticipated time to seeking medical help for a change in their breasts is influenced by their perceived social support and trust in the healthcare system and not by their breast cancer literacy and their stigma toward breast cancer.

**Table 16***Model 5 (All Predictors) Summary*

## a- Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	315.185a	.255	.356

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Classification Table<sup>a</sup>

	Observed		Predicted		Percentage Correct
			Anticipated medical help-seeking time	Delay	
Step 1	Anticipated medical help-seeking time	No delay	198	22	90.0
		Delay	40	66	62.3
Overall Percentage					81.0

a. The cut value is .500

## Variables in the Equation

Step	Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
1a	Breast Cancer	.058	.356	.027	1	.870	1.060	.528	2.128
	Literacy (1)			27.232	2	<.001			
	Social support			15.170	1	<.001	.264	.135	.516
	Social support (1)	-1.333	.342	14.638	1	<.001	.053	.012	.239
	Social support (2)	-2.933	.767	14.638	1	<.001	.053	.012	.239
	Breast Cancer Stigma (1)	.103	.385	.072	1	.789	1.109	.521	2.358
	Trust in the healthcare system (1)	1.888	.288	42.960	1	<.001	6.609	3.757	11.624
	Constant	-1.103	.369	8.936	1	.003	.332		

a. Variable(s) entered on step 1: Breast Cancer literacy, Social support, Breast Cancer Stigma, Trust in the healthcare system.

## Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.908	6	.179

The final model included only the statistically significant IVs social support and trust in the healthcare system, controlling for the demographic characteristics of age, residence, marital status, ethnicity, income, and religion. The model was statistically significant ( $X^2(28) = 130.811, p < 0.001$ ) (Table 17-a), explaining 41.5% (Cox & Snell R square) and 56.5% (Nagelkerke R Square) of the variance in the anticipated time to seeking medical help and correctly classifying 82.4% % of cases (Table 17-b and 17-c). The Hosmer and Lemeshow Test ( $X^2(8) = 8.403, p = 0.395$ ) (Table 17-d) indicates that the data fit the model well. In this model, social support ( $p < 0.001$ ) and trust in the healthcare system ( $p < 0.001$ ) remained statistically significant predictors of the anticipated time to seek medical help for a change in the breast(s) (Table 17-e). The demographics Age ( $p = 0.031$ ), residence ( $P = 0.031$ ), and income ( $p = 0.005$ ) were also statistically significant predictors of women's anticipated time to seek medical help (Table 17-e). Figures 9 to 11 illustrate the trends in delayed seeking medical help relative to age, residence, and income.

The findings also suggested that besides social support and trust in the healthcare system (as well as age, residence, and income), which together account for only between 41.5% and 56.6% of the variance in the anticipated time to seeking medical help (Table 17-b), other factors could potentially influence the anticipated time to seek medical help.

**Table 17***Model 6 (Only Significant Predictors) Summary*

## Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step 1	Step	138.123	34	<.001
	Block	138.123	34	<.001
	Model	138.123	34	<.001

## Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	192.538a	.415	.565

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Classification Table<sup>a</sup>

Observed		Predicted		
		Anticipated medical help-seeking time		Percentage Correct
		No delay	Delay	
Step 1	Anticipated medical help-seeking time	No delay 131	Delay 21	86.2
		Delay 22	70	76.1
Overall Percentage				82.4

a. The cut value is .500

## Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.403	8	.395

Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1a Social support			23.419	2	<.001			
Social support (1)	-2.008	.495	16.424	1	<.001	.134	.051	.355
Social support (2)	-3.118	.931	11.211	1	<.001	.044	.007	.274
Trust in the healthcare system (1)	1.698	.419	16.446	1	<.001	5.462	2.404	12.408
How old are you? (in years)			12.257	5	.031			
How old are you? (in years) (1)	-.598	.645	.862	1	.353	.550	.155	1.945
How old are you? (in years) (2)	-2.473	.813	9.252	1	.002	.084	.017	.415
How old are you? (in years) (3)	-1.611	.904	3.177	1	.075	.200	.034	1.174
How old are you? (in years) (4)	-1.378	.922	2.236	1	.135	.252	.041	1.535
How old are you? (in years) (5)	.127	1.619	.006	1	.937	1.136	.048	27.118
What is your marital status?			6.250	4	.181			
What is your marital status? (1)	.478	.516	.857	1	.354	1.612	.587	4.433
What is your marital status? (2)	1.233	.704	3.065	1	.080	3.431	.863	13.642
What is your marital status? (3)	.604	.908	.442	1	.506	1.830	.309	10.848
What is your marital status? (4)	2.711	1.410	3.699	1	.054	15.044	.950	238.314
Where do you live? (1)	.965	.449	4.631	1	.031	2.626	1.090	6.326
Do you have children/number of children?			4.193	2	.123			
Do you have children/number of children? (1)	.499	.745	.448	1	.503	1.647	.382	7.094
Do you have children/number of children? (2)	1.434	.854	2.820	1	.093	4.196	.787	22.380
What is your monthly income (in Franc CFA)?			15.043	4	.005			
What is your monthly income (in Franc CFA)?(1)	-1.602	.592	7.307	1	.007	.202	.063	.644
What is your monthly income (in Franc CFA)? (2)	-.145	.609	.056	1	.812	.865	.262	2.854
What is your monthly income (in Franc CFA)? (3)	1.060	.692	2.349	1	.125	2.886	.744	11.192
What is your monthly income (in Franc CFA)? (4)	1.365	.799	2.919	1	.088	3.915	.818	18.740
Which one best describes your ethnic group?			3.419	6	.755			
Which one best describes your ethnic group? (1)	.313	.511	.375	1	.540	1.368	.502	3.727

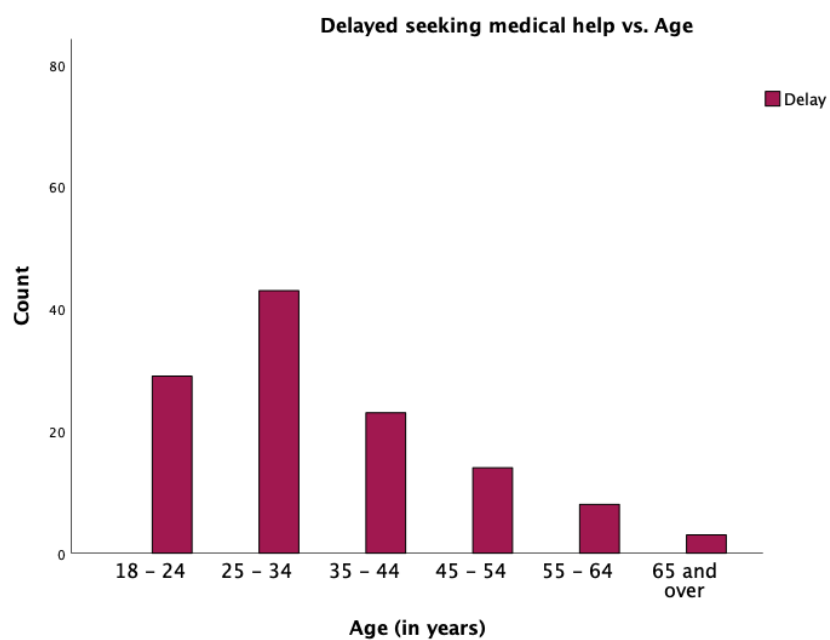
Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Which one best describes your ethnic group? (2)	.616	1.724	.128	1	.721	1.851	.063	54.324
Which one best describes your ethnic group? (3)	-.112	1.164	.009	1	.924	.894	.091	8.750
Which one best describes your ethnic group? (4)	.606	1.111	.297	1	.586	1.833	.208	16.172
Which one best describes your ethnic group? (5)	1.126	.994	1.282	1	.258	3.083	.439	21.639
Which one best describes your ethnic group? (6)	-.489	.550	.792	1	.374	.613	.209	1.801
Which one best describes your religion?			3.667	3	.300			
Which one best describes your religion? (1)	-.384	.911	.177	1	.674	.681	.114	4.063
Which one best describes your religion? (2)	2.101	1.579	1.771	1	.183	8.176	.370	180.587
Which one best describes your religion? (3)	1.372	1.024	1.797	1	.180	3.943	.530	29.309
Constant	-1.526	.904	2.849	1	.091	.217		

a. Variable(s) entered on step 1: Social support, Trust in the healthcare system, How old are you? (in years), What is your marital status? Where do you live?, Do you have children/number of children?, What is your monthly income (in Franc CFA)?, Which one best describes your ethnic group?, Which one best describes your religion?.



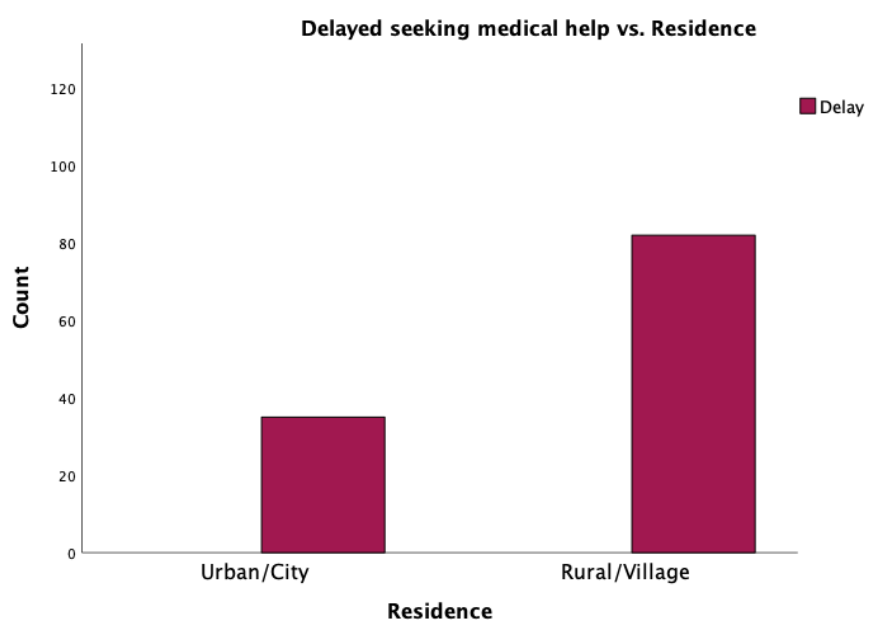
**Figure 9**

*Trend in Delayed Seeking Medical Help Relative to Age of Participants*



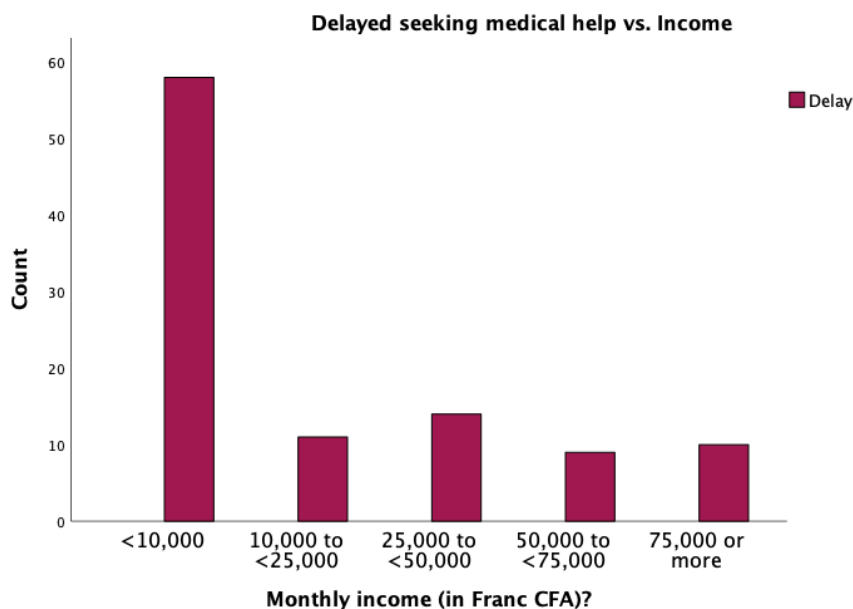
**Figure 10**

*Trend in Delayed Seeking Medical Help Relative to Participants' Residence (Urban vs. Rural)*



**Figure 11**

*Trend in Delayed Seeking Medical Help Relative to Participants' Income*



### Summary

The results of the analyses revealed an overall fit of the data to the models. However, the variables social support (low vs. moderate vs. high) and trust in the healthcare system (trust vs. distrust), as well as age, residence (urban vs. rural), and income, were significant predictors of the dependent variable, the anticipated time to seeking medical help (no delay vs. delay), while controlling for breast cancer literacy, breast cancer stigma, and sociodemographics (Age, education, marital status, employment, residence, number of children, ethnicity, and religion). Age, residence, and income were also moderate predictors of the anticipated time to seek medical help. On the other hand, the independent variables, breast cancer literacy, and breast cancer stigma

were not significant predictors of the anticipated time to seek medical help. These results and findings will be elaborated on and discussed in great detail in Chapter 5.

## Chapter 5: Discussion, Conclusions, and Recommendations

### **Introduction**

Breast cancer remains a leading cause of death and a significant public health challenge in SSA, which bears the largest portion of the disease burden in the world. This burden is due to several factors, notably delayed seeking medical help. Understanding the factors associated with delayed seeking medical help is vital for guiding public health initiatives and policies to promote breast health, improve breast cancer survival, avert unnecessary and preventable breast cancer-related deaths, and promote socioeconomic development at the community and national level in SSA.

This study aimed to evaluate Togolese women's breast cancer literacy, social support, trust in the health system, and breast cancer stigma and then to assess whether these factors influenced their anticipated medical help-seeking behavior upon noticing a change(s) in their breast(s). The results of the analysis of the primary data collected from 343 participants revealed that social support and trust in the healthcare system significantly influenced Togolese women's anticipated medical help-seeking time. At the same time, their breast cancer literacy and stigma had no significant influence. In this chapter, I interpret and discuss the importance of these findings and their public health initiatives and policy implications in detail.

### **Interpretation of the Findings**

#### **Breast Self-Examination**

BSE is the most useful breast cancer screening technique recommended in resource-limited SSA countries, including Togo (due to several individual,

organizational, and policy barriers). In these countries, most breast cancers are initially discovered by the women themselves, either accidentally or during routine self-examination (Agbeko et al., 2020; Sakafu et al., 2022). The lack of BSE remains one of the major contributors to late diagnosis in Togo and the rest of SSA (Darré et al., 2023). Contrary to the low levels of BSE practice reported in SSA, 70.8% of the current study's participants reported checking their breasts. For example, a previous cross-sectional study evaluating the factors associated with late breast cancer diagnosis in women in Togo by Darré et al. (2023) reported that less than 25% of participants practiced BSE. A similar observation was reported by Ketevi et al. (2023a) in a descriptive cross-sectional study conducted at the gynecology-obstetrics clinic of the CHU SO of Lomé, with only 31% of participants reporting a BSE screening. Ba et al. (2020) and Udoh et al. (2020) reported similarly low levels of BSE in Namibia (23.1%), Ivory Coast (Cote d'Ivoire) (5.2%), and Nigeria (0.4% among market women). The discrepancy between these findings (Ba et al., 2020; Darré et al., 2023; Ketevi et al., 2023a; Udoh et al., 2020) and the current study's findings could perhaps be explained by increased breast cancer awareness in Togo in recent years, resulting from public health breast cancer awareness efforts and/or the increased breast cancer prevalence and mortality there (creating informal public awareness). It could perhaps also be explained by the differences in the women in those previous studies compared to the current study: breast cancer patients (Darré et al., 2023), gynecology-obstetrics patients (Ketevi et al., 2023a), and patient population (Ba et al., 2020; Udoh et al., 2020) in clinical settings versus presumably healthy breast cancer-free women from the general public.

Similar to the current study's findings, Udoh et al. (2020) also reported a noticeable level of BSE practice but among antenatal women in Nigeria. However, the current study did not assess BSE's adequacy or effectiveness among the participants (whether they practiced it correctly). The high proportion of mothers with at least one child in the current study sample (84%) who were potentially taught BSE during their prenatal visits (most of the breast cancer education that was provided to women in Togo was provided during these visits) could perhaps explain this observed high level of BSE practice. This significantly high proportion of mothers in the current study sample could undermine the external validity of this finding, as it might not truly reflect the level of BSE among women with no children or in the general public.

### **Anticipated Medical Help-Seeking Behavior**

The patient health-seeking interval (the interval from the time a woman detects an unusual change in her breast(s) to the time she decides to seek medical help) is critical to early presentation, diagnosis, and treatment and can be detrimental to survival if delayed (Moodley et al., 2018; Sakafu et al., 2022). Contrary to previous studies, which found higher percentages of women reporting actual delays (Agbeko et al., 2020; Agodirin et al., 2020; Darre et al., 2023; Gebremariam et al., 2019) or anticipated delays (Moodley et al., 2021) in medical help-seeking of more than 3 months for breast cancer in SSA populations, in the current study, 65.0% of the women reported that they would seek medical help in less than 2 months from noticing an unusual change in their breast(s). On the other hand, this finding from the current study aligned with the finding of Sayed et al. (2019) in Kenya (a SSA country), where more than 90% of respondents reported their

intention to visit a health facility within a week after noticing a breast bump or swelling. Similar findings were reported by Mwaka et al. (2021) among Ugandan women, with most participants reporting their intention to seek medical care early at the onset of the symptom(s) (within 2 months) to confirm the causes of their potential breast cancer symptoms or illness. Moodley et al. (2021) also confirmed these findings of early breast cancer health-seeking behavior in their study in Uganda and South Africa, where most participants (86.1%) reported their intention to seek medical help for breast cancer within a week. The high percentage of reported early (no delayed) anticipated breast cancer medical help-seeking time observed in the current study (contrary to some previous studies) could be explained by several individual-level (e.g., high perceived severity and seriousness of breast cancer, fear of death or being unable to assume social responsibilities when ill, willingness to stay healthy, high self-efficacy, or simply avoiding the socioeconomic burden associated with delayed diagnosis and potentially death), organizational level (e.g., free breast cancer screening, breast cancer awareness programs, trust in the healthcare system), social level (social capital/support) and policy level (integration of breast cancer education into a primary care setting, government-subsidized breast cancer care) factors. For example, in Mwaka et al. (2021), a study conducted in Uganda, some participants reported their fear of death and their children becoming orphans as their motivation for early health-seeking. The disagreement between the current study's findings and some previous studies' findings could also perhaps be explained by the difference in study settings (with previous studies being conducted primarily in clinical settings) and the target population (breast cancer cases in



previous studies vs. non-breast cancer patients in this study). The outcomes might have been the same under similar conditions.

The current study also demonstrated that Togolese women intended to seek help from various sources (biomedical and traditional/spiritual healing), aligning with Moodley et al. (2021).

### **Relationship Between Breast Literacy and Medical Help-Seeking**

Several previous studies have proved health literacy to be one of the individual-level modifiable factors impacting health behaviors, as it can create new, modify, or reinforce individual perspectives and clarify misconceptions/myths, beliefs, and unhealthy norms (Udoh et al., 2020). The current study found that 75.2% of participants were aware of and knowledgeable about breast cancer. Similar observations among SSA women were reported by Ramathebane et al. (2022), Nde et al. (2015), and Meacham et al. (2016), with more than 70% of each of their participants being knowledgeable about breast cancer. In a study in Togo, an even higher percentage (90.8%) of participants had heard about breast cancer (Ketevi et al., 2023). The high level of breast cancer literacy among these studies' target populations (including the current study's target population) can perhaps be attributed to the prevalence of the disease and the public health awareness efforts in SSA in recent years using several channels, such as systematic breast cancer education (about screening and symptoms) for expectant mothers during their prenatal medical visits, Breast cancer awareness month (Pink October) activities and social media campaigns. Over 80% of participants in the current study were mothers of at least one child and could have been exposed to such medical settings and breast cancer education

at some point during their pregnancies. However, the reported knowledge and awareness about breast cancer (screening, symptoms, risk factors, and treatment) did not necessarily correlate with the overall breast cancer knowledge (with varying levels of misconception and beliefs about breast cancer). They appeared to vary significantly within and between studies. For example, even though 75.2% of participants in the current study were classified as breast cancer literate (based on their overall score on the breast cancer literacy scale), and 82.8% had heard of breast cancer, only 47.2% believed that breast cancer is treatable compared to 60-75% in Zambia and Nigeria (Mckenzie et al., 2018), while 48%, 58%, 74.2%, 36.2%, 40.8%, and 71.9% agreed with the statements that “wearing tight bras, wearing bras all the times,” “putting money in one’s bra,” “being exposed to bad air or water,” “bewitched/spiritual spell/witchcraft,” and “putting a mobile phone in one’s bra” are risk factors for breast cancer, respectively. In Uganda, Scheel et al. (2017) reported a similarly high level of misconception about a breast cancer risk factor, with 95% of their participants believing that wearing tight bras can cause breast cancer.

Despite most participants in the current study being classified as breast cancer literate and the relevance of health literacy to informed cognitive health-seeking decision-making, there was only a non-statistically significant relationship between breast cancer literacy and participants’ anticipated time to seek medical help. Kohler et al. (2017) had a similar finding in their previous study in the SSA country of Malawi, as not only was the relationship between breast cancer literacy and health-seeking behavior not statistically

significant and not linear, but it was also demonstrated that breast cancer literacy alone is insufficient to decrease health-seeking time.

Contrary to the findings of the current study, previous studies conducted among SSA women and non-SSA women reported statistically significant associations between health literacy (including breast cancer literacy) and breast cancer risk perception and between health literacy and preventive and other health-seeking behaviors, including screening and other types of medical help-seeking (Agbokey et al., 2019; Grosse Frie et al., 2018; Ilaboya et al., 2018; Kolawole et al., 2022; Ogunkorode et al., 2021; Panahi et al., 2020; Rutherford et al., 2018; Sayed et al., 2019; Ströbele et al., 2017; Swinny et al., 2021). These studies demonstrated that higher breast cancer literacy was associated with a decreased misinterpretation of symptoms (Agbokey et al., 2019; Grosse Frie et al., 2018; Ogunkorode et al., 2021), increased accuracy in risk perception (Rutherford et al., 2018), shorter time to seeking medical help (Grosse Frie et al., 2018; Kagee, 2022; Moodley et al., 2018; Ströbele et al., 2017; Swinny et al., 2021) decreased use of alternative medicine (Akther et al., 2018), increased screening (Ilaboya et al., 2018; Panahi et al., 2020; Sayed et al., 2019) and early detection and diagnosis, improved treatment uptake, and better outcomes (Kolawole et al., 2022). In contrast, lower levels of or a complete lack of breast cancer literacy were associated with a longer time to seek medical help (increased delay).

As Kohler et al. (2017) demonstrated, many other factors besides breast cancer literacy might influence health-seeking decision-making. Therefore, the observed nonsignificant relationship between breast cancer literacy and anticipated time to seeking

medical help can perhaps be explained by other factors, such as socioeconomic conditions, sociocultural health beliefs, attitudes, misconceptions, severity of the symptom, self-efficacy and fear (of death or inability to assume socioeconomic roles) which were not evaluated in this study, which might also influence health-seeking behaviors. Also, previous studies demonstrated that the link between health literacy and health-seeking behaviors is not evident across all SSA populations, further supporting the current study's findings.

Even though the current study found no significant association between breast cancer literacy and medical help-seeking, the findings did not exclude the need for more targeted and population-specific breast cancer education to improve breast cancer literacy and early medical help-seeking, giving the existing evidence of the link between the two constructs.

### **Relationship Between Social Support and Medical Help-Seeking**

Social support, either informational (provision of advice, guidance, or useful information), emotional (provision of a sense of caring, empathy, sympathy, and concern), network (sense of belonging), or practical/tangible (provision of needed services or goods) (Ko et al., 2013) plays an essential role in individual and community health and socioeconomic, physical, and emotional well-being (Bekalu et al., 2019). As predicted, the current study found that participants' social support (measured as the size of the support network, emotional and practical) was linked to their anticipated time to seek medical help for a potential symptom of breast cancer, as participants with stronger social support were less likely to report an anticipated delay in seeking medical help than

those with no or poor social support. However, compared to women with no poor social support, women with moderate social support had 22.4% higher odds of reporting a delay in seeking medical help compared to those with low perceived social support. In comparison, those with strong perceived social support had only a 6.1% decrease in their odds of reporting a delay in seeking medical help. These findings suggested that the association between social support and the anticipated time to seek medical help, even those positive, is not linear or proportional. The findings of the current study (positive association between social support and anticipated time to seek medical help) were consistent with those of previous studies, which demonstrated the significant positive role of social support in health-seeking behavior, especially for stigmatized diseases like cancer and mental illness (Akuoko et al., 2017; Brown et al., 2018; Harries et al., 2018; Mburu et al., 2018; Ng et al., 2020; Ogunkorode et al., 2021; Sharp et al., 2019). Social support, whether just perceived or actually received, has been shown to play a vital role in individuals' medical help-seeking intentions and behaviors, especially among low socioeconomic deprived communities and developing nations. This positive influence of social support on help-seeking behavior could be explained by its critical role in decision-making, including health decision-making among SSA populations. This influence is more profound in socioeconomically deprived communities and SSA women due to sociocultural and gender-role reasons.

A study in a rural community in Kenya found that the support from a women's immediate entourage, such as family and friends, was instrumental in encouraging women to seek medical help for a breast bump (Sayed et al., 2019). The study also found

that women who received support from their husbands were more likely to visit health facilities for evaluation of a breast lump. Similar observations were reported by Agbokey et al. (2019) in their qualitative study in Ghana, in which women portrayed their significant others (husbands and in-laws) as critical determinants in their decisions regarding when and where to seek medical help. In several other studies, many SSA women reported that the emotional and financial support from their spouses and friends was their primary source of motivation to overcome stigma and perceived financial barriers and seek healthcare early (Brown et al., 2018; Foerster et al., 2019; Harries et al., 2020; Kagee, 2022; Mburu et al., 2021; Meacham et al., 2016; Sakafu et al., 2022). Also, in studies in Mali and Uganda conducted by Grosse Frie et al. (2018) and Sharp et al. (2019), respectively, participants reported their family, a primary source of social support, to be a significant determinant of early health-seeking, acting as a barrier when not providing support) or as a facilitator when providing support. In a systematic review, Pierz et al. (2020) reported the lack of support from the spouse to be a significant barrier to breast cancer screening uptake and timely medical help-seeking. Besides the lack of support, social support is proven to be equally detrimental to early health-seeking. Through misinformation, promotion, and reinforcement of lay cultural breast cancer beliefs and stigma, social support can negatively influence health behaviors and promote health-seeking behaviors, such as the use of traditional/spiritual healing and delayed medical help-seeking (Kohler et al., 2017; Sakafu et al., 2022).

### ***Emotional Support***

Emotional reactions of a woman, including fear, anxiety, and depression, to her discovery of potential breast cancer symptoms serve as major catalysts or limiting factors to disclosing the disease and seeking timely help (Mazzocco et al., 2019). These emotional reactions are rooted in the fear of social rejection, loss of femineity, and death (Khakbazan et al., 2014). Several studies revealed that strong social support can help alleviate these adverse (negative) emotional reactions and channel them into positive help-seeking behaviors. For example, emotional support from a woman's close entourage (e.g., spouse, family, friends, and peers) can help negate the feelings of social isolation and anxiety, as well as the stigma and the fear of death (Benson et al., 2020) and procure a sense of relevance in the eyes of others and encouragement to seek early medical help.

### ***Informational Support***

Information plays a vital role in a person's knowledge and awareness levels and his/her help-seeking behavior. Several studies have demonstrated that a woman's immediate network is an important source of breast cancer information (symptoms, detection, treatment, and survival) and of empowerment to perform health-seeking behaviors (Ghazavi-Khorasgani et al., 2018; Harries et al., 2020; Kohler et al., 2017 and Sakafu et al., 2022). In addition, Ogunkorode et al. (2021) found that peer informational support was associated with early breast cancer detection, medical help-seeking, and treatment.

Navigating the complex and, at times, seemingly unfair healthcare system can be a daunting task for many women, creating fear and anxiety. In addition to providing

information about breast cancer, a woman's family, friends, and peers can reduce this fear and anxiety by guiding how to easily navigate the healthcare system and obtain the correct medical advice and treatment. They can also be a source of informal medical referral, one of the key health-seeking behavior determinants, especially in SSA (or other low SES countries), where many lack access to routine primary healthcare services.

### ***Practical/Tangible Support***

The uncertainty over being able to afford the costs associated with breast cancer (detection, diagnosis, treatment, and potential after-death family economic challenges) remains one of the critical determinants of delayed breast cancer medical help-seeking. The perception of the availability of such tangible support (financial and instrumental) can alleviate or even offset this uncertainty and empower women to seek early breast cancer medical help.

Additionally, a strong social support system can socially normalize positive health-seeking behaviors by dispelling disease-related sociocultural stigma and perceived social rejection and creating a supportive environment of no fear and no worries, promoting early health-seeking behaviors and healthcare services utilization. As illustrated, a strong social support system is key to early breast cancer health-seeking. Conversely, the lack of social support can be detrimental to timely health-seeking.

### **Relationship Between Breast Cancer Stigma and Anticipated Time to Seek Medical Help**

Disease-related stigma (based on cultural beliefs and misconceptions) is recognized as one of the major obstacles to timely health-seeking across various



populations and health conditions, including breast cancer (Stangl et al., 2019). The link between breast cancer stigma and health-seeking behaviors has been evidenced in many studies among SSA populations, with most participants reporting not disclosing breast cancer symptoms, denying symptoms and significant delay seeking medical help for fear of social rejection or public shame (Agatha Ogunkorode et al., 2021; Foerster et al., 2019; Getachew et al., 2020; Iddrisu et al., 2020; Mburu et al., 2021; Meacham et al., 2016; Ogunkorode et al., 2021; Sanuade et al., 2019; Sayed et al., 2019). However, contrary to these previous findings of breast cancer stigma being significantly associated with reluctance to seek and receive breast cancer medical help and treatments among SSA women, the current study found nonstatistically significant association between breast cancer stigma and women's anticipated time to seek medical help for a potential breast cancer symptom. This could perhaps be explained by the high level of breast cancer literacy that was shown to exist in the current study's population. Breast cancer literacy might act as a buffer to breast cancer stigma, dispelling the unsupported cultural and negative beliefs and perceptions (e.g., social rejection, spiritual spell, etc.) about breast cancer. Another potential explanation for this lack of a significant association between breast cancer stigma and delayed seeking of medical help could be that there were other competing, more significant predictors like financial hardship, fear, and other factors not evaluated in this study. One previous study did have a similar finding, as David et al. (2022) reported a non-statistically significant association between breast cancer stigma and health-seeking behaviors.

## **Relationship Between Trust in the Healthcare System and Anticipated Time to Seek Medical Help**

Like social support, trust in the healthcare system is a key determinant of medical health-seeking behavior. The current study aimed to assess whether women's trust in their healthcare system influenced the amount of time they anticipated it would take them to seek medical help for a potential breast cancer symptom. Among the study participants, 50% reported trust in the healthcare system, and 53% found those working in the health field trustworthy. Participants' perceived trust in their healthcare system was found to be a significant predictor of their anticipated time to seek medical help in the current study, with those who distrusted the healthcare system being 6.5 times as likely as those who trusted it to report delays in anticipated time to seek medical help. These findings corroborate those of previous studies, which found distrust in the healthcare system (or healthcare professionals) to be associated with a lack of willingness or reluctance to seek timely medical help, noncompliance with medical advice and treatment, advanced disease at diagnosis, and low healthcare services utilization for breast cancer patients (Gbenonsi et al., 2021; Kohler et al., 2017; Sayed et al., 2019). Similar observations were reported in studies evaluating non-communicable diseases (Arakelyan et al., 2021; Peters & Youssef, 2016) and maternal and child services (Westgard et al., 2019). Conversely, trust in the healthcare system facilitates health-seeking by empowering women to seek healthcare (as needed) with the preconception that they will be treated appropriately, compassionately, and fairly in a timely manner by competent, knowledgeable, and trustworthy HCWs. As evidenced by Kohler et al. (2017)

in Malawi, participants who believed and trusted their healthcare system reported seeking medical help early for breast cancer-related issues. Trust in the healthcare system's role in health-seeking behavior was also evident in a mixed-method cross-sectional study in a rural community in Kenya by Sayed et al. (2019). In their systematic review of studies in SSA, Pierz et al. (2020) also validated the significant impact of trust in the medical community on health-seeking behaviors, citing earning patient respect and trust as facilitators and poor provider-patient interactions as a barrier to cervical and breast cancer screening and early health-seeking.

An important finding regarding the participants' trust in the healthcare system was the relevance of their financial situation to their perception of whether they would be discriminated against or treated fairly by their healthcare team. 40.9% of participants reported that people who work in healthcare discriminate against patients based on their ability to pay. This finding also aligned with the relationship observed between income and anticipated time to seek medical help, as those with lower income were significantly more likely to anticipate that they would delay seeking medical help. Regarding HCWs, 41.6% of the study participants reported that HCWs rush through appointments, 29% felt that HCWs put money over the needs of patients, and 46.2% said that HCWs lack judgment. These findings corroborated with findings from a previous study in Mali in which participants reported that healthcare providers did not provide care to or discriminated against patients whom they knew did not have money to pay (even if they were in agony or crying) but gave immediate attention to patients whom they knew had

money, which prompted many of the poor patients to seek help from traditional or spiritual healers, significantly delaying medical help-seeking (Grosse Frie et al., 2018).

### **Anticipated Time to Seek Medical Help and Sociodemographics**

Sociodemographics (age, education, residence, income, etc.) are significant health determinants influencing an individual's health behaviors. The current study found statistically significant associations between participants' anticipated time to seek medical help and their age, residence, and income, with younger women (except those between 18- 24 years), women residing in rural areas (villages), and low-income women ( $< 10,000$  FCFA) being more likely to report anticipate delay in seeking medical help compared to older, urban and medium/high income ( $\geq 10,000$  FCFA) women, (Figures 9, 10 and 11). The observed longer medical help-seeking delay among younger women could be explained by younger women being less aware of breast cancer than older women. This lack of or low awareness might translate into the lack of concern, misinterpretation, or denial of symptoms, with many young women (who had ever breastfed or been pregnant) interpreting their potential breast cancer symptoms as usual bodily changes related to either menstrual cycle or pregnancy and showing no concern, waiting for a menstrual cycle or until symptoms persisted or became painful, significantly prolonging medical help-seeking (Akuoko et al., 2017; Fleshner et al., 2023; Mwaka et al., 2021). Another explanation could be the perceptions of breasts as objects of attractiveness, the 'whole' and beautiful body and motherhood, which might be more prevalent in younger women, resulting in fear of losing one's beauty (due to the physical deformities associated with breast cancer and breast cancer treatment) or motherhood,

and translating into denial of symptoms, and subsequently delayed seeking medical help until symptoms worsen (Afaya et al., 2022). The lack or absence of nearby medical care facilities in rural areas, which forces rural residents to travel to urban areas to obtain healthcare, could explain the finding that participants residing in rural areas were more likely to anticipate delaying the seeking of medical help for a potential breast cancer symptom. The high costs of diagnosing and treating breast cancer could explain the finding that low-income participants were more likely to anticipate delays in seeking medical help. The average direct medical cost to make a breast cancer diagnosis in Togo was 182,080 FCFA, which was ten times as high as the average household income there (Ketevi et al., 2023b). This could have led low-income study participants to despair that they were not capable of affording breast cancer care, resulting in their reluctance to seek medical help until being forced to by the symptoms worsening and/or interfering with their daily socioeconomic responsibilities. These findings align with those of previous studies in Uganda, South Africa, Togo, and Malawi in which living in a rural area, younger age, and financial hardship (as well as the female gender, lack of/low education, single marital status, and unemployment) were barriers to early health-seeking (David et al., 2022; Foerster et al., 2019; Kagee, 2022; Kohler et al., 2017; Moodley et al., 2020). However, several previous studies among SSA women showed that these associations between sociodemographics and health-seeking behavior were not uniform across SSA populations and countries. For example, contrary to the current study, David et al. (2022) found no association between income and breast cancer health-seeking in Kenya. This

inconsistency in factors influencing breast cancer health-seeking suggested the need for population-specific studies in SSA, further validating the necessity of the current study.

### **Limitations of the Study**

Several foreseeable limitations could limit the reliability and internal validity of the current study's findings, and the external validity of inferences. The current study focused solely on the impacts of breast cancer literacy, perceived social support, breast cancer stigma, and trust in the healthcare system on breast cancer health-seeking behavior (anticipated time to seek medical help) among Togolese women. Given the multifaceted nature of health-seeking behaviors, there may be additional factors with varying levels of impact on the anticipated time to seek medical help in this population, such as perceptions of the severity of the symptoms and fear, which were not assessed in the current study. Future studies should explore these factors. The in-person data collection design and the self-reported nature of the data collected in the current study raise the possibility of social desirability and recall biases, respectively, potentially undermining the internal validity of the findings. In addition, the quantitative cross-sectional design, which only ascertains the observed links between variables but not the underlying mechanisms, limits the ability to infer causal relationships between the IVs and the DV. Future studies should consider a qualitative longitudinal research design to explore participants' experiences and help better understand and establish the temporal relationship between the IVs and the DV.

The predictive and conditional nature of the outcome (anticipated medical help-seeking time) represents another potential limitation to the internal validity of the

findings, as such predictive behavior could be different from the actual behavior when symptom detection occurs. Future studies should consider either a longitudinal design, which will allow the assessment of the outcome behavior as it occurs, or a cross-sectional design in medically known breast cancer patients.

Another potential limitation was the multilevel conceptualization of some of the study variables of interest. Assessing only one of the multiple levels of conceptual definitions may exclude unmeasured relevant construct dimensions with a potentially significant effect on the outcome variable(s), potentially undermining the reliability and validity of the study findings. For example, in the current study, social support was conceptualized as how women perceived their social support rather than a true reflection of how much support they actually received. Assessing either one of these conceptual definitions could result in different outcomes. Future studies should include all possible conceptual definitions of the variables of interest in their analyses.

Finally, even though the survey was administered in French (the official language of Togo), many participants might have been more comfortable answering in their native language (Ewe, Kabyie, Kotokoli, etc.). Therefore, some participants may not have understood the survey questions in their entirety, resulting in incorrect responses, which could have led to information bias and even potentially impacted the internal validity of the current study. Future studies should consider administering their survey in their participants' native languages.

## **Implications**

### **Public Health**

The findings of the current study revealed several challenges and opportunities to early breast cancer medical help-seeking and called for the need and opportunities for a comprehensive approach to improving breast cancer screening and early medical help-seeking for potential breast cancer symptoms among Togolese women. In terms of challenges, the findings showed that lack of social support, distrust in the healthcare system, younger age, living in rural areas, and financial hardship were associated with prolonged breast cancer medical help-seeking time, highlighting the importance of social support, trust in the healthcare system, age, residence, and financial status in promoting early breast cancer help-seeking, suggesting the need to incorporate them in breast cancer prevention and care initiatives in Togo. For example, given the importance of women's significant others, especially their partners (husbands), in terms of when and where to seek healthcare, targeting men in breast cancer awareness and education initiatives can significantly boost women's perceived social support, alleviate their breast cancer-related stigma and financial barriers, and ultimately increase their willingness to quickly seek medical help when they discover one or more potential breast cancer symptoms. In addition to men-targeted breast cancer awareness and education, family-centered and community-building public health programs aimed at creating and promoting greater and stronger social capital and togetherness could also reduce breast cancer medical help-seeking time among the target population.



Trust remains a significant predictor of early breast cancer medical health-seeking, with distrust in the healthcare system prolonging the breast cancer medical help-seeking time. This observation suggests that improving or restoring the community's trust in its local healthcare providers could significantly boost women's confidence in healthcare professionals and their willingness to seek early medical help. Breast cancer education and training programs for healthcare professionals, as well as ethical training to increase HCWs' breast cancer knowledge, improve their patient education competencies, and promote medical professional ethics (fairness, sympathy, and compassion), especially those in antenatal health and family planning clinics where women are likely to get their first professional-based breast cancer information, could perhaps lead to increased trust in the healthcare system. A study in SSA showed that only 55% of HCWs had adequate breast cancer knowledge (Akuoko et al., 2017). This lack of breast cancer knowledge could contribute to the lack of trust in the healthcare system and women's reluctance to seek medical help promptly after detecting a potential breast cancer symptom. This lack of trust was also seen in other studies in SSA where participants reported misdiagnosis, inappropriate and ineffective treatment, and poor quality of care as reasons to seek alternative (traditional/spiritual) medicine, which significantly delays the seeking of medical help (Adani-Ife, 2021; Frie et al., 2018; Gbenonsi et al., 2021; Getachew et al., 2020; Sakafu et al., 2022).

Discrimination by healthcare providers based on the perceived financial capability of their patients to afford medical care was one of the major contributors to the distrust in the healthcare system seen in the current study, with 45% of the participants reporting

that such discrimination existed. Consequently, reducing this discrimination can be instrumental in increasing trust in the healthcare system and consequently promoting early breast cancer help-seeking. Given the financial challenges faced by most Togolese women and the prohibitive costs of breast cancer care, one way to reduce financial discrimination in a healthcare setting could be to develop and implement government-subsidized breast cancer programs that will prioritize screening and early diagnosis and treatment, which could potentially alleviate the financial barriers that prevent many socioeconomically disadvantaged and rural communities from seeking healthcare in a timely manner.

Additionally, despite breast cancer literacy not being a statistically significant predictor of early breast cancer medical help-seeking in the current study, breast cancer awareness and knowledge remain key determinants to improving breast cancer health. 21% of the study participants reported lacking breast cancer knowledge, which translates to about 910,800 women nationwide (out of the 4.4 million women). Therefore, it is essential to expand breast cancer awareness and knowledge campaigns to the underserved communities that are far from major health centers.

### **Positive Social Change**

As the second leading cause of death in SSA, breast cancer remains a public health challenge and priority in the region with severe socioeconomic consequences. The insights gained from the study, which aimed to assess the socioecological factors impacting Togolese women's anticipated time to seek medical help following self-

detection of a potential breast cancer symptom (an essential step in the breast cancer care journey), have several significant positive social change implications.

First, they can be used to design potentially effective, targeted public health policies and interventions to be implemented to try and reduce the breast cancer burden and improve the health of women in Togo. For example, given the significant associations demonstrated in the current study between both participants' perceived social support and their trust in the healthcare system and their anticipated time to seek medical help, it would be appropriate to develop social support improvement initiatives at the community level (e.g., breast cancer support groups, community healthcare worker [CHW] breast cancer support programs, CHW-lead breast cancer awareness and education programs), and public trust in healthcare system promotion and improvement programs (e.g., breast cancer education and patient engagement training for HCWs.) These evidence-based initiatives could potentially promote and increase timely breast cancer health-seeking behavior, which could lead to timely diagnosis and treatment and better survival. Improved breast cancer survival (and averting many preventable premature deaths) would help reduce breast cancer mortality, direct and indirect costs of breast cancer medical care and the psychological burden, and avert breast cancer-related loss of productivity, translating into several positive health and socioeconomic changes that can result in economic development and social stability lacking in many SSA families, communities, and nations, including Togo.

The current study has the potential to promote health equity and social justice by helping address the breast cancer disparity affecting SSA women, with some population

groups not having equal access to breast cancer screening and timely care. For example, even though ethnicity was not found to be a significant predictor of Togolese women's anticipated time to seek medical help, an ethnic disparity was seen as Kabyie, Akposso/Akebu, Kotokoli, and Losso women were 1.4, 1.9, 1.8, and 3 times as likely, respectively to report delay seeking medical help compared to Ewe/Mina women. In contrast, Ouatchis women were only 0.9 times as likely to report a delay in seeking medical help (Table 17-e). By leading to the development and implementation of initiatives to promote early breast cancer health-seeking, the current study has the potential to help address the gender gap in education and associated gender inequality in Togo and SSA, which is due to many young girls having to leave school to care for their mothers who have advanced breast cancer and assume household responsibilities that their sick mothers can no longer perform (Azubuike et al., 2018).

### **Recommendations**

Considering the potential limitations described above, the following recommendations were deemed essential for future aims to elucidate the broader socioecological factors influencing breast cancer medical help-seeking among Togolese women. In order to try and mitigate the challenges resulting from the weakness of the quantitative cross-sectional design of the study (unable to explain the observed relationships), the use of self-reported data (information bias), and the predictive nature of the outcome variable anticipated time to seek medical help (which might be different from the actual behavior), a future study should adopt a qualitative study design (focus groups, case studies), a case-control study design, or a prospective cohort study design,

which would enable the study to better evaluate and explain the significance of the effect of each predictor on the outcome variable, assess the temporality of the predictors of breast cancer medical care seeking time (except qualitative and case-control designs), better capture participants' actual (rather than anticipated) reactions/behaviors to breast cancer symptoms as they discover them, and assess factors impacting their health-seeking behaviors at such time, more accurately. Also, combining self-report data with other information (such as medical records or psychological data) or data from multiple sources would help overcome the recall biases-related limitations. In addition, each future study should only assess a single predictor to address the methodological complexity related to multiple predictors. Future studies should consider adopting a completely anonymous data collection method, such as administering the survey online rather than in person, to mitigate the social desirability limitations. To try and mitigate the multi-level conceptualization of variables limitation, future studies should include all possible conceptual definitions of the variables of interest in their analyses while focusing on a single predictor at a time. By considering the recommendations mentioned above, future studies can help better elucidate factors influencing Togolese women's breast cancer health-seeking behaviors.

### **Summary**

Breast cancer remains a public health challenge and a leading cause of death in SSA, including Togo, with a 5-year survival rate of less than 50%. Even though most breast cancer cases in SSA are self-detected, few studies have explored breast cancer health-seeking behaviors in this population, especially the first attempt to make contact

with a healthcare provider following the detection of a potential breast cancer symptom. The poor breast cancer outcomes in SSA could be significantly improved by reducing the time between a woman first noticing a potential breast cancer symptom and her seeking medical help. This time frame, also known as appraisal and help-seeking interval, is critical for timely diagnosis, treatment efficacy, and greater survival. As the current study demonstrated, this interval is significantly influenced by several socioecological factors, including a woman's perceived social support, trust in the healthcare system, income, residence, and age. Future studies should examine each of these predictors alone. In addition, future studies should examine additional potential predictors of the length of this interval, such as access to care and comorbidities. Despite the limitations inherent in the current study, the insights gained from it could guide evidence-based breast cancer early health-seeking initiatives and policies and address health and socioeconomic consequences associated with delay in seeking breast cancer medical help in Togo and SSA.

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## Appendix A: Study Questionnaire

<b>PARTICIPANT IDENTIFICATION NUMBER:</b>	<b>1</b>	<b>0</b>	<b>0</b>			
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<b>SOCIODEMOGRAPHIC CHARACTERISTICS</b>			
<b>N0</b>	<b>QUESTIONS</b>	<b>ANSWERS</b>	
<b>1</b>	How old are you? (in years)		
<b>2</b>	What is your highest level of education?	No Schooling	
		Primary	
		Intermediate	
		Secondary	
		More than secondary	
<b>3</b>	What is your marital status	Married	
		Living together with a partner	
		Single	
		Separated/Divorced	
		Widowed	
<b>5</b>	Where do you live	Urban/city	
		Rural/village	
<b>6</b>	What is your current employment	Non-employed	
		Employed	Government/public
			Private
			Self
	Homemaker		
<b>7</b>	Do you have children/number of children	0	
		1-2	
		3 or more	
<b>8</b>	What is your monthly income (in Franc CFA)	<10,000	
		10,000 to <25,000	
		25,000 to <50,000	
		50,000 to <75,000	
		≥ 75,000	
<b>9</b>		Ewe /Mina Kabye	

	Which one best describes your ethnic group?	Ouatchis Akposso/Akebu
		Kotokoli Losso Others
	Which one best describes your religion?	Christian Muslin
		Voodooist Other



### Breast Cancer Literacy Questionnaire

This questionnaire is adapted from the AWACAN and BCAM. The AWACAN is a valid and reliable tool that Moodley et al. (2019) developed to evaluate breast and cervical cancer symptom awareness, risk factor awareness, lay beliefs, anticipated help-seeking behavior, and barriers to seeking care. Similarly, the BCAM is a valid and reliable tool developed by the Cancer Research UK in 2008 to evaluate breast cancer knowledge and awareness among the general population.

Instruction: The following questions pertain to your knowledge and awareness about breast cancer. Please select the answer that most reflects your opinion for each item.

	QUESTIONS	ANSWERS (Select one)
1	Have you ever heard of breast cancer?	Yes No
2	Breast cancer is treatable	Disagree Not sure Agree
3	Early detection is important to surviving breast cancer	Disagree No Agree
<b>4. The following increases any woman's chances of getting breast cancer?</b>		
a	Having had breast cancer previously	Disagree Not sure Agree
b	Drinking more than 1 bottle of beer or 1 glass of other types of alcohol per day	Disagree Not sure Agree
c	Not breastfeeding	Disagree Not sure Agree
d	Using hormone replacement therapy	Disagree Not sure

		Agree
e	Wearing a tight bra*	Disagree
		Not sure
		Agree
f	Using hormonal family planning methods (e.g., the pill, injectable contraceptives and implants)	Disagree
		Not sure
		Agree
g	Being overweight	Disagree
		Not
		Agree
h	Wearing a bra all the time, including at night when sleeping*	Disagree
		Not sure
		Agree
i	Having a family member with breast cancer	Disagree
		Not
		Agree
j	Putting money in one's bra*	Disagree
		Not sure
		Agree
k	Having no children at all	Disagree
		Not sure
		Agree
l	Having menopause late, after the age of 55 years <i>[Explanation]: This is when a woman's period stops permanently</i>	Disagree
		Not sure
		Agree
m	Being exposed to dirty air or water*	Disagree
		Not sure
		Don't know
n	Having the first child after the age of 30 years	Disagree
		Not sure
		Agree
o	Bewitched/witchcraft/evil spirits*	Disagree
		Not sure
		Agree
p	Starting your periods early, before the age of 11 years	Disagree
		Not sure
		Agree
q	Doing little physical activity or manual labor	Disagree
		Not sure
		Agree
r	Aging/growing old	Disagree
		Not sure

		Agree
s	Putting a mobile phone in one's bra*	Disagree
		Not sure
		Agree
5. The following could be signs of something serious or that something is wrong, such as breast cancer		
a	A change in the position of the nipple [Explanation]: such as pointing up or down or in a different direction to normal. <i>(Picture available to illustrate)</i>	Disagree
		Not sure
		Agree
b	Pulling in of the nipple [Explanation]: Where the nipple no longer points outwards but into the breast <i>(Picture available to illustrate)</i>	Disagree
		Not sure
		Agree
c	A change in the size or shape of the nipple, not when pregnant or breastfeeding	Disagree
		Not sure
		Agree
d	Nipple rash	Disagree
		Not sure
		Agree
e	Discharge from the nipple, not when pregnant or breastfeeding	Disagree
		Not sure
		Agree
f	Bleeding from the nipple	Disagree
		Not sure
		Agree
g	Pain in one or both breasts, not when pregnant or menstruating	Disagree
		Not sure
		Agree
h	A lump or thickening in the breast	Disagree
		Not sure
		Agree
i	A change in color of the breast skin, not when pregnant or Breastfeeding	Disagree
		Not sure
		Agree
j	Puckering or dimpling of the breast skin [Explanation]: like a dent or orange peel appearance of the skin. <i>(Picture available to illustrate)</i>	Disagree
		Not sure
		Agree
k	A change in the size or shape of the breast, not when pregnant or breastfeeding	Disagree
		Not sure

		Agree
1	A lump or thickening under the armpit/underarm	Disagree
		Not sure
		Agree
m	Pain in the armpit/underarm	Disagree
		Not sure
		Agree

Coding

1 = Yes, 0 = No; 1 = Disagree, 2 = Not sure, 3 = Agree.

Lay belief statements (items 4-e, h, j, m, o, and s) are reverse scored.

### Help-Seeking Behaviour

Instruction: The following questions pertain to your health-seeking behaviors as related to breast cancer. Please select the response/answer that best describes your behavior.

	QUESTIONS	ANSWERS
1	Do you ever check your breasts?	Yes No
2	If you noticed a change in your breast or breasts, what would you do?	Ignore it Visit a traditional/spiritual healer. Tell someone close to you. Seek medical help Don't know
3	If you noticed a change in your breast or breasts, how soon would you visit the pharmacy or clinic or health center or hospital?	Never < 1 week ≥ 1 week < 1 month ≥ 1 month < 2 months ≥ 2 month < 3 months ≥ 3 months

Adapted from the AWACAN tool by Moodley et al. (2019).

\*Reverse coded statements.

### Oslo Social Support Scale

Instruction: The following questions pertain to your social network. Please check the response that best describes your social network.

ITEMS	RESPONSES				
How many people are so close to you that you can count on them if you have great personal problems?	None	1-2	3-4	5+	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
How much interest and concern do people show in what you do?	None	Little	Uncertain	Some	A lot
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How easy is it to get practical help from neighbors if you should need it?	Very difficult	Difficult	Possible	Easy	Very easy
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



### Cancer Stigma Scale (CASS)

Once you've had cancer you can never be 'normal' again	Severity
Getting cancer means having to mentally prepare oneself for death	Severity
A person with cancer is to blame for their condition	Responsibility
Having cancer usually ruins a person's career	Severity
A person with cancer is accountable for their condition	Responsibility
Cancer usually ruins close personal relationships	Severity
Cancer devastates the lives of those it touches	Severity
A person with cancer is liable for their condition	Responsibility
If a person has cancer, it's probably their fault	Responsibility
I would feel at ease around someone with cancer	Awkwardness (R)
I would feel comfortable around someone with cancer	Awkwardness (R)
I would try to avoid a person with cancer	Avoidance
I would feel angered by someone with cancer	Avoidance
I would find it difficult being around someone with cancer	Awkwardness
I would find it hard to talk to someone with cancer	Awkwardness
I would feel irritated by someone with cancer	Avoidance
I would feel embarrassed discussing cancer with someone who had it	Awkwardness
I would distance myself physically from someone with cancer	Avoidance
If a colleague had cancer, I would try to avoid them	Avoidance
It is acceptable for banks to refuse to make loans to people with cancer	Discrimination
The needs of people with cancer should be given top priority	Policy Opposition (R)
More government funding should be spent on the care and treatment of those with cancer	Policy Opposition (R)
We have a responsibility to provide the best possible care for people with cancer	Policy Opposition (R)
Banks should be allowed to refuse mortgage applications for cancer related reasons	Discrimination
It is acceptable for insurance companies to reconsider a policy if someone has cancer	Discrimination

#### Coding

- 1 = Disagree Strongly/Definitely not
- 2 = Disagree moderately/Probably not
- 3 = Disagree slightly/Possibly not
- 4 = Agree slightly/Yes, possibly
- 5 = Agree moderately/Yes, probably
- 6 = Agree strongly/Yes, definitely
- 7 = Not sure (treated as missing)

Five items reverse scored (marked with an R)



### Modified Trust in the Health Care Team (T-HCT) Scale

***Instruction:*** The following statements pertain to your opinions and beliefs about people who work in health care (doctors, nurses, pharmacists, physician assistants, and administrative staff) in medical clinics, hospitals, and health insurance companies.

Please think about your general opinions about the health care system and people who work in health care, based on your experiences or things you have heard from family, friends, or the media. Please indicate **how much you disagree or agree with each of the statements.**

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. People who work in health care have good judgment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. People who work in health care explain the benefits and risks of treatments to patients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. People who work in health care believe patients when they say something is wrong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. People who work in health care put making money above patient needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. People who work in health care hide mistakes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
6. People who work in health care rush through appointments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. People who work in health care are held accountable if they make a mistake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. People who work in health care are held accountable if they treat patients unfairly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. People who work in health care respect patient privacy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. People who work in health care treat patients fairly, regardless of their ability to pay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. People who work in health care treat patients of all races and ethnicities fairly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
12. People who work in health care treat patients fairly, regardless of their religion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. People who work in health care treat patients fairly, regardless of their education level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. All things considered; I trust people who work in health care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. People who work in health care are trustworthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix B: Validity and Reliability of Data Collection Instruments

**BC Literacy Scale**

## Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.875	.877	35

## Summary

## Item

## Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.169	-.571	.801	1.371	-1.403	.067	35

**Social Support Scale**

## Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.909	.911	3

## Summary

## Item

## Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.774	.634	.874	.240	1.379	.012	3

**Breast Cancer Stigma Scale***Reliability Statistics*

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
<b>.981</b>	.981	25

Summary  
Item  
Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.677	.321	.971	.650	3.023	.016	25

**Trust in the Healthcare System Scale***Reliability Statistics*

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
<b>.967</b>	.966	20

Summary  
Item  
Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.585	.000	.924	.924	132853636182.5695.000	.034	20